

APPENDIX A

Abridged List of Major Federal and State Laws, Regulations, and
Policies Potentially Applicable to the
California Resources Corporation Grubb Lease (PRC 3913.1) Intake/Outfall
Structures Decommissioning Project
(Updated: December 2019)

APPENDIX A

Appendix A identifies major federal and state laws, regulations and policies (local or regional are presented for each California Environmental Quality Act (CEQA) Guidelines Appendix G resource area in Section 3 of the MND) potentially applicable to the California Resources Corporation Grubb Lease (PRC 3913.1) Intake/Outfall Structures Decommissioning Project.¹

MULTIPLE ENVIRONMENTAL ISSUES

Multiple Environmental Issues (Federal)

Coastal Zone Management Act (CZMA) (42 U.S.C. § 4321 et seq.)

The CZMA recognizes a national interest in coastal zone resources and in the importance of balancing competing uses of those resources, giving full consideration to aesthetic, cultural and historic, ecological, recreational, and other values as well as the needs for compatible economic development. Pursuant to the Act, coastal states develop and implement comprehensive coastal management programs, authorities and enforceable policies, and coastal zone boundaries, among other elements. The Act also gives state coastal management agencies regulatory control ("federal consistency" review authority) over federal activities and federally licensed, permitted or assisted activities, if the activity affects coastal resources; such activities include military projects at coastal locations and outer continental shelf oil and gas leasing, exploration and development. The California Coastal Commission (CCC) coordinates California's federally approved coastal management programs and federal consistency reviews within their respective jurisdictions.

Multiple Environmental Issues (State)

California Environmental Quality Act (CEQA; Pub. Resources Code, § 21000 et seq.)

CEQA requires state and local agencies to identify significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible. A public agency must comply with CEQA when it undertakes an activity defined by CEQA as a "project" that must receive some discretionary approval (i.e., the agency has authority to deny the requested permit or approval) which may cause either a direct physical change, or a reasonably foreseeable indirect change, in the environment.

California State Lands Commission (CSLC) and the Common Law Public Trust

The CSLC has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways, as well as certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (Pub. Resources Code, §§ 6301, 6306). All tidelands and submerged lands, granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the Common Law Public Trust. As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its admission to the U.S. in 1850. The State holds these lands for the benefit of all people of the State for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. On tidal waterways, the State's sovereign fee ownership extends landward to the ordinary high-water mark as generally shown by the mean high tide line, except for areas of fill or artificial accretion. The CSLC's jurisdiction also includes a section of tidal and submerged

¹ Environmental issue areas are found in State California Environmental Quality Act Guidelines Appendix G (http://califaep.org/docs/2019-Appendix_G_Checklist.pdf).

Multiple Environmental Issues (State)

land 3 nautical miles wide adjacent to the coast and offshore islands, including bays, estuaries, and lagoons; the waters and underlying beds of more than 120 rivers, lakes, streams, and sloughs; and 1.3 million acres of "school lands" granted to the State by the federal government to support public education. The CSLC also has leasing jurisdiction, subject to certain conditions, over mineral extraction from state property owned and managed by other state agencies (Pub. Resources Code, § 68910, subd. (b)), and is responsible for implementing a variety of state regulations for activities affecting these State Trust Lands, including implementation of CEQA.

CSLC Oil & Gas provisions (Pub. Resources Code, div. 6; Cal. Code Regs., tit. 2, div. 3, ch. 1)

The CSLC issues and administers oil and gas leases covering tide and submerged lands in accordance with Public Resources Code, division 6 (e.g., see § 6829 [methods of operation and standard requirements for conducting operations properly; prevention of waste; protection of worker safety and health; and liability of lessees for personal injuries and property damage], § 6829.2 [possible arresting or amelioration of land subsidence]; §§ 6873.2 and 6873.5 [carrying out CEQA requirements]). CSLC regulations pertaining to oil and gas leases, exploration permits, and operating requirements on tide and submerged lands under the CSLC's jurisdiction include the following:

- Articles 3.3 and 3.4 apply to operations conducted from mobile rigs, fixed offshore structures, and upland locations serving these leases. Article 3.3 provisions include prevention and elimination of any contamination or pollution of the ocean and tidelands, prevention of waste, regulations on wellhead equipment, surface and subsurface safety valves, remedial and well maintenance work, supervision and training, anomalous casing annulus pressure, subsurface injection, conversion of a well to fluid injection, waste disposal, pressure relief valves, personal protective equipment, and pipeline inspections. Article 3.4 provisions include prohibitions of pollution and contamination, suspension of operations and corrective action, disposal of drill cuttings and drilling muds, oil spill contingency plan requirements, pollution control and removal equipment, critical operations and curtailment plans, and pollution reports to the U.S. Coast Guard and State Office of Emergency Services.
- Article 3.6 pertains to operation manuals and emergency planning, and requires operators to prepare an operations manual describing equipment and procedures that the operator employs to protect the public health and safety and the environment and to prevent oil spills.

California Coastal Act (Pub. Resources Code, § 30000 et seq.) and California Federal Consistency Program

Pursuant to the Coastal Act, the CCC, in partnership with coastal cities and counties, plans and regulates the use of land and water in the coastal zone. The Coastal Act includes specific policies (see Chapter 3) that address issues such as shoreline public access and recreation, lower cost visitor accommodations, terrestrial and marine habitat protection, visual resources, landform alteration, agricultural lands, commercial fisheries, industrial uses, water quality, oil and gas development, transportation, development design, power plants, ports, and public works. Development activities in the coastal zone generally require a coastal permit from either the CCC or the local government: (1) the CCC retains jurisdiction over the immediate shoreline areas below the mean high tide line and offshore areas to the 3 nautical mile state water limit; and (2) following certification of county- and municipality-developed Local Coastal Programs, the CCC has delegated permit authority to many local governments for the portions of their jurisdictions within the coastal zone. The CCC also implements the CZMA as it applies to federal activities (e.g., development projects, permits, and licenses) in the coastal zone by reviewing specified federal actions for consistency with the enforceable policies of Chapter 3 of

Multiple Environmental Issues (State)

the Coastal Act.

AESTHETICS

There are no major federal laws, regulations, and policies potentially applicable to this project.

Aesthetics (State)

California Scenic Highway Program (Sts. & Hy. Code, § 260 et seq.)

The purpose of California's Scenic Highway Program, which was created by the Legislature in 1963 and is managed by the California Department of Transportation (Caltrans), is to preserve and protect scenic highway corridors from change which would diminish the aesthetic value of lands adjacent to highways. State highways identified as scenic, or eligible for designation, are listed in Streets and Highways Code section 260 et seq. A highway's status changes from eligible to officially designated when a local governmental agency has implemented a corridor protection program for an eligible highway that meets the standards of an official scenic highway (Caltrans 2008).

Coastal Act Chapter 3 policies (see also *Multiple Environmental Issues*)

The Coastal Act is concerned with protecting the public viewshed, including views from public areas, such as roads, beaches, coastal trails, and access ways. Section 30251 states: Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural landforms, to be visually compatible with the character of the surrounding area, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.

Section 30253 states: New development shall, where appropriate, protect special communities and neighborhoods that, because of their unique characteristics, are popular visitor destination points for recreational uses.

AGRICULTURE AND FORESTRY RESOURCES

There are no major federal or state laws, regulations, and policies potentially applicable to this project.

AIR QUALITY

Air Quality (Federal)

Federal Clean Air Act (FCAA) (42 U.S.C. § 7401 et seq.)

The FCAA requires the U.S. Environmental Protection Agency (USEPA) to identify National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. National standards are established for ozone, carbon monoxide (CO), nitrogen dioxide, sulfur dioxide, particulate matter (PM, PM₁₀ and PM_{2.5}), and lead. The Federal Clean Air Act (FCAA) mandates that states submit and implement a State Implementation Plan for local areas not meeting those standards; plans must include pollution control measures that demonstrate how the standards would be met. Pursuant to the 1990 FCAA amendments, the USEPA also regulates hazardous air pollutants, which are pollutants that result in harmful health effects, but are not specifically addressed through the establishment of NAAQS. Hazardous air pollutants require the use of the maximum or best available control technology to limit emissions. USEPA

Air Quality (Federal)

classifies air basins (or portions thereof) as in “attainment” or “nonattainment” for each criteria air pollutant by comparing monitoring data with state and federal standards to determine if the NAAQS are achieved. Areas are classified for a pollutant as follows:

- “Attainment” – the pollutant concentration is lower than the standard.
- “Nonattainment” – the pollutant concentration exceeds the standard.
- “Unclassified” – there are not enough data available for comparisons.

In 2007, the U.S. Supreme Court ruled that carbon dioxide (CO₂) is an air pollutant as defined under the FCAA, and that the USEPA has authority to regulate greenhouse gas (GHG) emissions.

The FCAA allows delegation of the enforcement of many of the federal air quality regulations to the states. In California, the California Air Resources Board (CARB) is responsible for enforcing air pollution regulations in concert with regional air pollution control districts.

Marine Diesel Engine Emission Standards

In March 2008, the USEPA adopted more stringent emission standards for locomotives and marine compression-ignition engines (73 Fed.Reg. 37096 (USEPA 2008a)). To reduce emissions from Category 1 (at least 50 horsepower [hp] but less than 7 liters per cylinder displacement) and Category 2 (7 to 30 liters per cylinder displacement) marine diesel engines, the USEPA has established emission standards for new engines, referred to as Tier 2 marine engine standards. The Tier 2 standards were phased in from 2004 to 2007 (year of manufacture), depending on the engine size (USEPA 1999). The 2008 final rule includes the first-ever national emission standards for existing marine diesel engines, applying to engines larger than 600 kilowatts (kW) when they are remanufactured. The rule also sets Tier 3 emissions standards for newly built engines that began implementation phase-in in 2009. Finally, the rule establishes Tier 4 standards for newly built commercial marine diesel engines above 600 kW, based on the application of high-efficiency catalytic after-treatment technology that began implementation in 2014 (USEPA 2008b).

The new diesel marine engine standards will reduce emissions of diesel PM by 90 percent and emissions of nitrogen oxide (NO_x) by 80 percent for engines meeting Tier 4 standards, in comparison with engines meeting the current Tier 2 standards. The USEPA’s three-part program: (1) tightened standards for existing marine diesel engines when they are remanufactured, taking effect as certified remanufacture systems are available starting in 2008; (2) sets near-term emission standards, referred to as Tier 3 standards, for newly built locomotive and diesel marine engines, which reflect the application of currently available technologies to reduce engine-out PM and NO_x emissions and phase-in starting in 2009; and (3) applies the final long-term Tier 4 emissions standards to marine diesel engines.

Non-Road Diesel Engine Emission Standards

The USEPA has established a series of cleaner emission standards for new off-road diesel engines culminating in the Tier 4 Final Rule of June 2004 (USEPA 2004a). The Tier 1, Tier 2, Tier 3, and Tier 4 standards require compliance with progressively more stringent emission standards. Tier 1 standards were phased in from 1996 to 2000 (year of manufacture), depending on the engine horsepower category. Tier 2 standards were phased in from 2001 to 2006, and the Tier 3 standards were phased in from 2006 to 2008. The Tier 4 standards complement the latest 2007 and later on-road heavy-duty engine standards by requiring 90 percent reductions in diesel PM and NO_x when compared against current emission levels. The Tier 4 standards were phased in starting with smaller engines in 2008 until all but the very largest diesel engines were to meet NO_x and PM standards in 2015.

On-Road Trucks Emission Standards

To reduce emissions from on-road, heavy-duty diesel trucks, the USEPA established a series

Air Quality (Federal)

of cleaner emission standards for new engines, starting in 1988. These emission standards regulations have been revised over time. The latest effective regulation, the 2007 Heavy-Duty Highway Rule, provides for reductions in PM, NO_x, and non-methane hydrocarbon emissions that were phased in during the model years 2007 through 2010 (USEPA 2000).

Non-Road Diesel Fuel Rule

In May 2004, the USEPA set sulfur limits for non-road diesel fuel, including locomotives but not marine fuel. Under this rule, diesel fuel used by line-haul locomotives began being limited to 500 parts per million (ppm) starting June 1, 2007, and 15 ppm starting January 1, 2012 (USEPA 2004b), at which time it would be equivalent to sulfur content restrictions of the California Diesel Fuel Regulations.

Air Quality (State)

California Clean Air Act of 1988 (CCAA)

The CCAA requires all air districts in the state to endeavor to achieve and maintain state ambient air quality standards for ozone, CO, sulfur dioxide, nitrogen dioxide, and PM. CARB sets air quality standards for the state at levels to protect public health and welfare with an adequate margin of safety. The California Ambient Air Quality Standards (CAAQS) are generally stricter than national standards for the same pollutants; California also has standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. The CAAQS describe adverse conditions (i.e., pollution levels must be below these standards before a basin can attain the standard). Air quality is considered in “attainment” if pollutant levels are continuously below or equal to the standards and violate the standards no more than once each year. The 1992 CCAA Amendments divide ozone nonattainment areas into four categories of pollutant levels (moderate, serious, severe, and extreme) to which progressively more stringent requirements apply. CARB also regulates toxic air contaminants (pollutants that result in harmful health effects, but are not specifically addressed by air quality standards) using air toxic control measures.

California Air Resources Board Programs, Regulations, and Standards

- **California Diesel Fuel Regulations** (Cal. Code Regs., tit. 13, §§ 2281-2285; Cal. Code Regs., tit. 17, § 93114). In 2004, the CARB set limits on the sulfur content of diesel fuel sold in California for use in on-road and off-road motor vehicles. Harbor craft and intrastate locomotives were later included by a 2004 rule amendment (CARB 2005a). Under this rule, diesel fuel used in motor vehicles except harbor craft and intrastate locomotives has been limited to 500 ppm sulfur since 1993. The sulfur limit was reduced to 15 ppm beginning on September 1, 2006. Diesel fuel used in harbor craft in the South Coast Air Basin also was limited to 500 ppm sulfur starting January 1, 2006, and was lowered to 15 ppm sulfur on September 1, 2006. Diesel fuel used in intrastate locomotives (switch locomotives) was limited to 15 ppm sulfur starting on January 1, 2007.
- **California Diesel Risk Reduction Plan.** CARB has adopted several regulations that are meant to reduce the health risk associated with on- and off-road and stationary diesel engine operation. This plan recommends many control measures with the goal of an 85 percent reduction in diesel PM emissions by 2020. The regulations noted below, which may also serve to significantly reduce other pollutant emissions, are all part of this risk reduction plan.
- **Commercial Harbor Craft Regulation** requires upgrades to Tier 2 or Tier 3 standards to reduce diesel PM and NO_x emissions from diesel engines used on commercial harbor craft (e.g., tugboats, crew and supply vessels, work boats, barges, dredges) operated in California Regulated Waters (internal waters, estuarine waters, ports and coastal waters within 24 nautical miles of the coast).
- **Emission Standards for On-Road and Off-Road Diesel Engines.** Similar to the USEPA standards for on-road and off-road emissions described above, the CARB has established

Air Quality (State)

emission standards for new on-road and off-road diesel engines. These regulations have model year-based emissions standards for NOx, hydrocarbons, CO, and PM.

- **Heavy Duty Diesel Truck Idling Rule – Heavy Duty Diesel Truck Idling Regulation.** This CARB rule became effective February 1, 2005, and prohibits heavy-duty diesel trucks from idling for longer than 5 minutes at a time, unless they are queuing and provided the queue is located beyond 100 feet from any homes or schools (CARB 2006).
- **In-Use Off-Road Vehicle Regulation** (Cal. Code Regs., tit. 13, § 2449). The state has also enacted a regulation to reduce diesel PM and criteria pollutant emissions from in-use off-road diesel-fueled vehicles. This regulation provides target emission rates for PM and NOx emissions from owners of fleets of diesel-fueled off-road vehicles, and applies to off-road equipment fleets of three specific sizes, as follows:
 - Small Fleet – Fleet or municipality with equipment totaling less than or equal to 2,500 hp, or municipal fleet in lower population area, captive attainment fleet, or non-profit training center regardless of horsepower.
 - Medium Fleet – Fleet with equipment totaling 2,501 to 5,000 hp.
 - Large Fleet – Fleet with equipment totaling more than 5,000 hp, or all state and federal government fleets regardless of total hp.

The target emission rates for these fleets are reduced over time. Specific regulation requirements include:

- Limit on idling, requiring a written idling policy, and disclosure when selling vehicles;
- Require all vehicles to be reported to CARB (using the Diesel Off-Road Online Reporting System [DOORS]) and labeled;
- Restrict the adding of older vehicles into fleets starting on January 1, 2014; and
- Require fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies (i.e., exhaust retrofits). (CARB 2014)
- **Ocean-Going Vessels Fuel Standards.** After January 1, 2014, ocean-going vessels within California Regulated Waters must use fuel with a maximum fuel sulfur content of 0.1 percent (using cleaner marine distillate fuels in larger ocean-going vessels reduces diesel PM, NOx, and sulfur oxide emissions)
- **Off-Road Mobile Sources Emission Reduction Program.** The CCAA mandates that CARB achieve the maximum degree of emission reductions from all off-road mobile sources (e.g., construction equipment, marine vessels, and harbor craft) to attain state ambient air quality standards. Tier 2, Tier 3, and Tier 4 exhaust emissions standards apply to off-road equipment. In addition, CARB fleet requirements specify how equipment that is already in use can be retrofitted to achieve lower emissions using the CARB-verified retrofit technologies. USEPA standards for marine compression-ignition engines address NOx and diesel PM emissions, depending on engine size and year of manufacture. Tier 2 standards for marine engines were phased in for model years 2004 to 2007, and Tier 3 standards were phased in for currently available technologies to reduce NOx and PM, starting in 2009.
- **Statewide Portable Equipment Registration Program (PERP).** The PERP establishes a uniform program to regulate portable engines and portable engine-driven equipment units (CARB 2005b). Once registered in the PERP, engines and equipment units may operate throughout California without the need to obtain individual permits from local air districts, if the equipment is located at a single location for no more than 12 months.

Health and Safety Code

- **Sections 25531-25543** (1) provide guidelines to identify a more realistic health risk; (2) require high-risk facilities to submit an air toxic emission reduction plan; (3) hold air pollution control districts accountable for ensuring that plans achieve objectives; and (4) require high-risk facilities to achieve their planned emission reductions

Air Quality (State)

- **The Air Toxics Hot Spots Information and Assessment Act (§ 44300 et seq.)** provides for the regulation of over 200 toxic air contaminants. Under the act, local air districts may request that a facility account for its toxic air contaminant emissions. Local air districts then prioritize facilities based on emissions; high priority designated facilities must submit a health risk assessment.

Coastal Act Chapter 3 policies (see also *Multiple Environmental Issues*)

Section 30253, subdivision (c) requires that new development shall be consistent with requirements imposed by an air pollution control district or CARB as to each development.

BIOLOGICAL RESOURCES

Biological Resources (Federal)

Federal Endangered Species Act (FESA) (7 U.S.C. § 136, 16 U.S.C. § 1531 et seq.)

The FESA, which is administered in California by the United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS), provides protection to species listed as threatened or endangered, or proposed for listing as threatened or endangered. When applicants propose projects with a federal nexus that “may affect” a federally listed or proposed species, the federal agency must (1) consult with the USFWS or NMFS, as appropriate, under Section 7, and (2) ensure that any actions authorized, funded, or carried out by the agency are not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of areas determined to be critical habitat. Section 9 prohibits the “take” of any member of a listed species.

- **Take** – To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct
- **Harass** – An intentional or negligent act or omission that creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavior patterns that include, but are not limited to, breeding, feeding, or sheltering
- **Harm** – Significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering

Fish and Wildlife Coordination Act of 1958

This Act requires that whenever a body of water is proposed to be controlled or modified, the lead agency must consult with the state and federal agencies responsible for fish and wildlife management (e.g., USFWS, the California Department of Fish and Wildlife [CDFW], and National Oceanic and Atmospheric Administration [NOAA]). The Act allows for recommendations addressing adverse impacts associated with a proposed project, and for mitigating or compensating for impacts on fish and wildlife.

Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. § 1801 et seq.)

The MSA governs marine fisheries management in federal waters. The MSA was first enacted in 1976 and amended by the Sustainable Fisheries Act of 1996 and the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act in 2007. Amendments require the identification of Essential Fish Habitat (EFH) for federally managed species and the implementation of measures to conserve and enhance this habitat. Any project requiring federal authorization, such as a U.S. Army Corps of Engineers (ACOE) permit, is required to complete and submit an EFH Assessment with the application and either show that no significant impacts to the essential habitat of managed species are expected or identify mitigations to reduce those impacts. Under the MSA, Congress defined EFH as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity” (16 U.S.C. § 1802(10)). The EFH provisions of the MSA offer resource managers a means to heighten

Biological Resources (Federal)

consideration of fish habitat in resource management. Federal agencies shall consult with the NMFS regarding any action they authorize, fund, or undertake that might adversely affect EFH (§ 305(b)(2)).

Marine Mammal Protection Act (MMPA) (16 U.S.C. § 1361 et seq.)

The MMPA is designed to protect and conserve marine mammals and their habitats. It prohibits takes of all marine mammals in the U.S. (including territorial seas) with few exceptions. The Act defines “take” as hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.” “Harassment” is defined as any act of pursuit, torment, or annoyance that has the potential to injure a marine mammal or marine mammal stock in the wild; or has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.

The NMFS may issue a take permit under Section 104 if the activities are consistent with the purposes of the MMPA and applicable regulations at 50 Code of Federal Regulations (CFR), Part 216. The NMFS must also find that the manner of taking is “humane” as defined in the MMPA. If lethal taking of a marine mammal is requested, the applicant must demonstrate that using a non-lethal method is not feasible. In 1994 a simplified process for obtaining “small take” exemptions was added for unintentional taking by incidental harassment only. Under this process, incidental take of small numbers of marine mammals by harassment can be authorized for periods of up to one year.

Executive Orders (EO)

- **EO 11990** requires federal agencies to provide leadership and take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. Each agency, to the extent permitted by law, must (1) avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds there is no practical alternative to such construction or the proposed action includes all practical measures to minimize harm to wetlands that may result from such use; (2) take into account economic, environmental and other pertinent factors in making this finding; and (3) provide opportunity for early public review of any plans or proposals for new construction in wetlands.
- **EO 13112** requires federal agencies to use authorities to prevent introduction of invasive species, respond to and control invasions, and provide for restoration of native species and habitat conditions in invaded ecosystems; also established the Invasive Species Council, which prepares a National Invasive Species Management Plan that details and recommends performance-oriented goals and objectives and measures of success for federal agencies.
- **EO 13158** requires federal agencies to (1) identify actions that affect natural or cultural resources that are within a Marine Protected Area (MPA); and (2) in taking such actions, to avoid harm to the natural and cultural resources that are protected by an MPA.

Other Federal Acts

- **Clean Water Act and Rivers and Harbors Act** (see *Hydrology and Water Quality*)
- **Coastal Zone Management Act** (see *Multiple Environmental Issues*)

Biological Resources (State)

California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.)

The CESA provides for the protection of rare, threatened, and endangered plants and animals, as recognized by the CDFW, and prohibits the taking of such species without its authorization. Furthermore, the CESA provides protection for those species that are designated as candidates for threatened or endangered listings. Under the CESA, the CDFW has the responsibility for maintaining a list of threatened species and endangered species (Fish & G.

Biological Resources (State)

Code, § 2070). The CDFW also maintains a list of candidate species, which are species that the CDFW has formally noticed as under review for addition to the threatened or endangered species lists. The CDFW also maintains lists of Species of Special Concern that serve as watch lists. Pursuant to CESA requirements, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project site and determine whether the proposed project will have a significant impact on such species. The CDFW encourages informal consultation on any proposed project that may affect a candidate species. The CESA also requires a permit to take a state-listed species through incidental or otherwise lawful activities (§ 2081, subd. (b)).

Marine Life Protection Act (MLPA) (Fish & G. Code, §§ 2850–2863)

Pursuant to this Act, the CDFW established and manages a network of MPAs to, among other goals, protect marine life and habitats and preserve ecosystem integrity. For the purposes of MPA planning, California was divided into five distinct regions (four coastal and San Francisco Bay) each of which had its own MPA planning process. The coastal portion of California's MPA network is now in effect statewide; options for a planning process in San Francisco Bay have been developed for consideration at a future date. The MLPA establishes clear policy guidance and a scientifically sound planning process for the siting and design of MPAs such as:

- State Marine Reserves (SMRs), which typically preclude all extractive activities (such as fishing or kelp harvesting)
- State Marine Parks (SMPs), which do not allow any commercial extraction
- State Marine Conservation Areas (SMCAs), which preclude some combination of commercial and/or recreational extraction

Other relevant California Fish and Game Code sections and Programs/Plans

- **Section 1900 et seq.** (California Native Plant Protection Act) is intended to preserve, protect, and enhance endangered or rare native plants in California. Under section 1901, a species is endangered when its prospects for survival and reproduction are in immediate jeopardy from one or more causes. A species is rare when, although not threatened with immediate extinction, it is in such small numbers throughout its range that it may become endangered. The Act includes provisions that prohibit taking of listed rare or endangered plants from the wild and a salvage requirement for landowners.
- **Sections 3503 & 3503.5** prohibit take and possession of native birds' nests and eggs from all forms of needless take and provide that it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nests or eggs of any such bird except as otherwise provided by this Code or any regulation adopted pursuant thereto.
- **Sections 3511** (birds), **4700** (mammals), **5050** (reptiles and amphibians), & **5515** (fish) designate certain species as "fully protected;" such species, or parts thereof, may not be taken or possessed at any time without permission by the CDFW.

Coastal Act Chapter 3 policies (see also *Multiple Environmental Issues*)

- **Section 30230** – Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.
- **Section 30231** – The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges

Biological Resources (State)

and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

- **Section 30232** – Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.
- **Section 30233** – applies in part to development activities within or affecting wetlands and other sensitive areas, identifies eight allowable uses, requires projects be the least environmentally damaging feasible alternative, and where applicable, requires feasible and appropriate mitigation.
- **Section 30240** – (a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas. (b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

Other

- California Department of Food and Agriculture's California Noxious and Invasive Weed Action Plan seeks to prevent and control noxious and invasive weeds.
- Lempert-Keene-Seastrand Oil Spill Prevention and Response Act (see *Hazards and Hazardous Materials*)

CULTURAL RESOURCES

Cultural Resources (Federal)

Abandoned Shipwreck Act of 1987 (43 U.S.C. § 2101–2106) and National Park Service (NPS) Abandoned Shipwreck Act Guidelines.

Asserts U.S. Government title to three categories of abandoned shipwrecks: those embedded in a state's submerged lands; those embedded in coralline formations protected by a state on its submerged lands, and those located on a state's lands that are included or determined eligible for inclusion in the National Register of Historic Places. The law then transfers title for a majority of those shipwrecks to the respective states, and provides that states develop policies for management of the wrecks so as to protect natural resources, permit reasonable public access, and allow for recovery of shipwrecks consistent with the protection of historical values and environmental integrity of wrecks and sites. The NPS has issued guidelines that are intended to: maximize the enhancement of shipwreck resources; foster a partnership among sport divers, fishermen, archeologists, sailors, and other interests to manage shipwreck resources of the states and the U.S.; facilitate access and utilization by recreational interests; and recognize the interests of individuals and groups engaged in shipwreck discovery and salvage.

Cultural Resources (Federal)

Archaeological and Historic Preservation Act (AHPA)

The AHPA provides for the preservation of historical and archaeological data that might be irreparably lost or destroyed as a result of (1) flooding, the building of access roads, the erection of workmen's communities, the relocation of railroads and highways, and other alterations of terrain caused by the construction of a dam by an agency of the U.S. or by any private person or corporation holding a license issued by any such agency; or (2) any alteration of the terrain caused as a result of a federal construction project or federally licensed project, activity, or program. This Act requires federal agencies to notify the Secretary of the Interior when they find that any federally permitted activity or program may cause irreparable loss or destruction of significant scientific, prehistoric, historical, or archaeological data. The AHPA built upon national policy, set out in the Historic Sites Act of 1935, "...to provide for the preservation of historic American sites, buildings, objects, and antiquities of national significance...."

Archaeological Resources Protection Act of 1979 (ARPA) (P.L. 96-95; 93 Stat. 712)

The ARPA states that archaeological resources on public or Indian lands are an accessible and irreplaceable part of the nation's heritage and:

- Establishes protection for archaeological resources to prevent loss and destruction due to uncontrolled excavations and pillaging;
- Encourages increased cooperation and exchange of information between government authorities, the professional archaeological community, and private individuals having collections of archaeological resources prior to the enactment of this Act;
- Establishes permit procedures to permit excavation or removal of archaeological resources (and associated activities) located on public or Indian land; and
- Defines excavation, removal, damage, or other alteration or defacing of archaeological resources as a "prohibited act" and provides for criminal and monetary rewards to be paid to individuals furnishing information leading to the finding of a civil violation or conviction of a criminal violator.

An anti-trafficking provision prohibits interstate or international sale, purchase, or transport of any archaeological resource excavated or removed in violation of a state or local law, ordinance, or regulation. ARPA's enforcement provision provides for criminal and civil penalties against violators of the Act. The ARPA's permitting component allows for recovery of certain artifacts consistent with NPS Federal Archeology Program standards and requirements.

National Historic Preservation Act of 1966 (NHPA) (16 U.S.C. § 470 et seq.) and implementing regulations (Protection of Historic Properties; 36 CFR 800) (applies only to federal undertakings)

Archaeological resources are protected through the NHPA and its implementing regulation (Protection of Historic Properties; 36 Code of Federal Regulations 800), the AHPA, and the ARPA. This Act presents a general policy of supporting and encouraging the preservation of prehistoric and historic resources for present and future generations by directing federal agencies to assume responsibility for considering the historic resources in their activities. The state implements the NHPA through its statewide comprehensive cultural resource surveys and preservation programs coordinated by the California Office of Historic Preservation (OHP) in the State Department of Parks and Recreation, which also advises federal agencies regarding potential effects on historic properties.

The OHP also maintains the California Historic Resources Inventory. The State Historic Preservation Officer (SHPO) is an appointed official who implements historic preservation programs within the state's jurisdictions, including commenting on federal undertakings. Under the NHPA, historic properties include "any prehistoric or historic district, site, building, structure,

Cultural Resources (Federal)

or object included in, or eligible for inclusion in, the National Register of Historic Places” (16 U.S.C. § 470w [5]).

Executive Order (EO) 13158

EO 13158 requires federal agencies to (1) identify actions that affect natural or cultural resources that are within an MPA; and (2) in taking such actions, to avoid harm to the natural and cultural resources that are protected by an MPA.

Cultural Resources (State)

California Register of Historical Resources (CRHR)

The CRHR is “an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change” (Pub. Resources Code, § 5024.1, subd. (a)). CRHR eligibility criteria are modeled after National Register of Historic Places (NRHP) criteria but focus on resources of statewide significance. Certain resources are determined by the statute to be automatically included in the CRHR, including California properties formally determined to be eligible for, or listed in, the NRHP. To be eligible for the CRHR, a prehistoric or historical period property must be significant at the local, state, or federal level under one or more of the following criteria (State CEQA Guidelines, § 15064.5, subd. (a)(3)):

- Criterion 1: Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage
- Criterion 2: Is associated with the lives of persons important in California’s past
- Criterion 3: Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values
- Criterion 4: Has yielded, or may be likely to yield, information important in prehistory or history

A resource eligible for the CRHR must meet one of the criteria of significance above, and retain enough of its historic character or appearance (integrity) to be recognizable as an historical resource and to convey the reason for its significance. An historic resource that may not retain sufficient integrity to meet the criteria for listing in the NRHP, may still be eligible for listing in the CRHR. Properties listed, or formally designated as eligible for listing, on the National Register are automatically listed on the CRHR, as are certain State Landmarks and Points of Interest. A lead agency is not precluded from determining that the resource may be an historical resource as defined in Public Resources Code sections 5020.1, subdivision (j), or 5024.1 (State CEQA Guidelines, § 15064.5, subd. (a)(4)).

CEQA (Pub. Resources Code, § 21000 et seq.)

CEQA section 21084.1 provides that a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. An “historical resource” includes: (1) a resource listed in, or eligible for listing in, the California Register of Historic Resources; (2) a resource included in a local register of historical or identified as significant in an historical resource surveys; and (3) any resource that a lead agency determines to be historically significant for the purposes of CEQA, when supported by substantial evidence in light of the whole record. Historical resources may include archaeological resources. Mitigation measures for significant impacts to historical resources must be identified and implemented if feasible.

Coastal Act Chapter 3 policies (see also *Multiple Environmental Issues*)

Cultural Resources (State)

Section 30244 states: Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.

CULTURAL RESOURCES – TRIBAL

Tribal Cultural Resources (Federal)

Native American Graves Protection and Repatriation Act of 1990 (P.L. 101-601; 104 Stat. 3049)

Assigns ownership or control of Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony that are excavated or discovered on federal lands or tribal lands after passage of the act to lineal descendants or affiliated Indian tribes or Native Hawaiian organizations; establishes criminal penalties for trafficking in human remains or cultural objects; and requires federal agencies and museums that receive federal funding to inventory Native American human remains and associated funerary objects in their possession or control and identify their cultural and geographical affiliations within 5 years, and prepare summaries of information about Native American unassociated funerary objects, sacred objects, or objects of cultural patrimony. This is to provide for repatriation of such items when lineal descendants, Indian tribes, or Native Hawaiian organizations request it.

Executive Order (EO) 13007, Indian Sacred Sites

EO 13007 requires federal agencies with administrative or legal responsibility to manage federal lands to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoid adversely affecting the physical integrity of such sites (to the extent practicable permitted by law and not clearly inconsistent with essential agency functions).

Tribal Cultural Resources (State)

CEQA (Pub. Resources Code, § 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3 [AB 52 (Gatto, Stats. 2014, Ch. 532)])

The Assembly Bill (AB) 52 (effective July 1, 2015) amendments to CEQA relate to consultation with California Native American tribes, consideration of tribal cultural resources, and confidentiality. The definition of tribal cultural resources considers tribal cultural values in addition to scientific and archaeological values when determining impacts and mitigation. AB 52 provides procedural and substantive requirements for lead agency consultation with California Native American tribes and consideration of effects on tribal cultural resources, as well as examples of mitigation measures to avoid or minimize impacts to tribal cultural resources. AB 52 establishes that if a project may cause a substantial adverse change in the significance of a tribal cultural resource, that project may have a significant effect on the environment. Lead agencies must avoid damaging effects to tribal cultural resources, when feasible, and shall keep information submitted by tribes confidential.

Health and Safety Code section 7050.5

This section provides for treatment of human remains exposed during construction; no further disturbance may occur until the County Coroner makes findings as to origin and disposition pursuant to Public Resources Code section 5097.98. The Coroner has 24 hours to notify the Native American Heritage Commission (NAHC) if the remains are determined to be of Native American descent. The NAHC contacts most likely descendants about how to proceed.

Tribal Cultural Resources (State)

Public Resources Code section 5097.98

This section provides (1) a protocol for notifying the most likely descendent from the deceased if human remains are determined to be Native American in origin and (2) mandated measures for appropriate treatment and disposition of exhumed remains.

Executive Order B-10-11

EO B-10-11 establishes as state policy that all agencies and departments shall encourage communication and consultation with California Indian Tribes and allow tribal governments to provide meaningful input into proposed decisions and policies that may affect tribal communities.

ENERGY

There are no major federal laws, regulations, and policies potentially applicable to this project.

Energy (State)

Legislative Requirements for Energy Efficiency Savings

In response to the energy crisis of 2000-2001, the Energy Commission, the California Public Utilities Commission (CPUC), and the California Power Authority developed "the loading order" as a joint policy vision articulated in the Energy Action Plan. The state would invest in:

1. cost-effective energy efficiency and demand-side resources
2. renewable resources and

3. clean conventional electricity supply The CPUC adopts energy efficiency goals, conducts various potential studies, and performs evaluation, measurement and verification (EM&V) for investor owned utilities (IOUs). Publicly owned utilities (POUs) are not regulated by the CPUC and are not subject to the same energy efficiency mandates as the IOUs. California Code of Regulations Title 20 §1311 requires each POU to report to the Energy Commission its annual investments in energy efficiency and demand reduction programs. Public Utilities Code §9505(d) requires each POU to provide to its customers and the Energy Commission the results of evaluation that measures and verifies their claimed energy savings and demand reduction. Since the early 1990s, the Energy Policy Act requires POUs to file Integrated Resource Plans (IRP) every five years with annual progress reports to the Western Area Power Administration (WAPA). In the IRP, each POU is required to evaluate energy efficiency as an energy supply alternative.

Senate Bill (SB) 1037 (Kehoe, Chapter 366, Statutes of 2005) requires the CPUC, in consultation with the Energy Commission, to identify all potentially achievable cost-effective electric and natural gas energy efficiency measures for the IOUs, set targets for achieving this potential, review the energy procurement plans of IOUs, and consider cost-effective supply alternatives such as energy efficiency. In addition to these IOU requirements, Senate Bill 1037 requires that all POUs, regardless of size, report investments in energy efficiency programs annually to their customers and to the Energy Commission. Assembly Bill (AB) 2021 (Levine, Chapter 734, Statutes of 2006) requires the Energy Commission to develop statewide energy efficiency potential estimates and savings targets. Assembly Bill 2021 mandates the Energy Commission to report statewide energy efficiency potential estimates and savings targets as part of its Integrated Energy Policy Report (IEPR) proceeding.

Senate Bill 488 (Pavley, Chapter 352, Statutes of 2009) requires the Energy Commission to evaluate the effectiveness of POU "comparative energy usage disclosure programs" and include POU energy savings potential in the triennial assessment of utility energy efficiency potential and targets. Assembly Bill 2227 (Bradford, Chapter 606, Statutes of 2012)

Energy (State)

consolidates reporting requirements into a single section of the Public Utilities Code, making compliance easier and more cost-effective for POUs, and amends the reporting timeline under Assembly Bill 2021 to align more closely with the IEPR timeline. Rather than providing new 10-year targets every third year, POUs will provide updated targets every fourth year.

Clean Energy and Pollution Reduction Act (SB 350; Stats. 2015, ch. 547)

This Act requires that the amount of electricity generated and sold to retail customers from renewable energy resources be increased to 50 percent by December 31, 2030, and that statewide energy efficiency savings in electricity and natural gas by retail customers be doubled by January 1, 2030.

GEOLOGY, SOILS, AND PALEONTOLOGICAL RESOURCES

Geology and Soils (Federal/International)

Building Codes

The **Uniform Building Code** (UBC) designates and ranks regions of the U.S., according to their seismic hazard potential, as Seismic Zones 1 through 4, with Zone 1 having the least seismic potential and Zone 4 having the highest seismic potential. The **International Building Code** (IBC) sets design standards to accommodate a maximum considered earthquake (MCE), based on a project's regional location, site characteristics, and other factors.

Omnibus Public Land Management Act of 2009 - Public Law 111-11 (123 Stat. 991)

Public Law 111-011 at Title VI, subtitle D lays out statutory requirements for Paleontological Resources Preservation (PRP). PRP provides definitions but requires the definition of some terms, and uses other terms and concepts that need further definition or details to clarify intent or enforcement. PRP identifies management requirements, collection requirements, curation requirements, need for both criminal and civil penalties, rewards and forfeiture, and the need for confidentiality of some significant resource locations.

Other Relevant Laws

- **Public Resources Code section 5097.5** prohibits excavation or removal of any "vertebrate paleontological site or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands"

Geology and Soils (State)

Alquist-Priolo Earthquake Fault Zoning Act (Pub. Resources Code, §§ 2621-2630)

This Act requires that "sufficiently active" and "well-defined" earthquake fault zones be delineated by the State Geologist and prohibits locating structures for human occupancy on active and potentially active surface faults. (Note that since only those potentially active faults that have a relatively high potential for ground rupture are identified as fault zones, not all potentially active faults are zoned under the Alquist-Priolo Earthquake Fault Zone, as designated by the State of California.)

California Building Code (Cal. Code Regs., tit. 23)

The California Building Code provides a minimum standard for building design, which is based on the UBC, but is modified for conditions unique to California. The Code, which is selectively adopted by local jurisdictions, based on local conditions, contains requirements pertaining to multiple activities, including: excavation, site demolition, foundations and retaining walls, grading activities including drainage and erosion control, and construction of pipelines alongside existing structures. For example, sections 3301.2 and 3301.3 contain provisions requiring protection of adjacent properties during excavations and require a 10-day written notice and access agreements with adjacent property owners.

Geology and Soils (State)
Seismic Hazards Mapping Act & Mapping Regs (Pub. Resources Code, § 2690; Cal. Code Regs., tit. 14, div. 2, ch. 8, art. 10).
These regulations were promulgated to promote public safety by protecting against the effects of strong ground shaking, liquefaction, landslides, other ground failures, or other hazards caused by earthquakes. The Act requires that site-specific geotechnical investigations be conducted identifying the hazard and formulating mitigation measures prior to permitting most developments designed for human occupancy. California Division of Mines and Geology Special Publication 117, <i>Guidelines for Evaluating and Mitigating Seismic Hazards in California</i> (1997), constitutes the guidelines for evaluating seismic hazards other than surface fault-rupture, and for recommending mitigation measures as required by Public Resources Code section 2695, subdivision (a). The Act does not apply offshore as the California Geological Survey has not zoned offshore California under the Act.
Coastal Act Chapter 3 policies (see also <i>Multiple Environmental Issues</i>)
With respect to geological resources, Section 30253 requires, in part, that new development shall: (a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard; and (b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs. Section 30243 also states in part that the long-term productivity of soils and timberlands shall be protected.
Public Resources Code division 6, parts 1 and 2 (see <i>Multiple Environmental Issues</i>)
California Code of Regulations, title 2, division 3, chapter 1, article 3 (see <i>Multiple Environmental Issues</i>)

GREENHOUSE GAS EMISSIONS

Greenhouse Gas Emissions (Federal/International)
FCAA (42 U.S.C. § 7401 et seq.)
In 2007, the U.S. Supreme Court ruled that CO ₂ is an air pollutant as defined under the Federal Clean Air Act (FCAA), and that the US Environmental Protection Agency (USEPA) has authority to regulate Greenhouse Gas (GHG) emissions.
Mandatory Greenhouse Gas Reporting (74 Fed. Reg. 56260)
On September 22, 2009, the USEPA issued the Mandatory Reporting of Greenhouse Gases Rule, which requires reporting of GHG data and other relevant information from large sources (industrial facilities and power plants that emit more than 25,000 metric tons of carbon dioxide–equivalent (MTCO ₂ e) emissions per year) in the U.S. The purpose of the Rule is to collect accurate and timely GHG data to inform future policy decisions. The Rule is referred to as 40 Code of Federal Regulations Part 98 (Part 98). Gases covered by implementation of Part 98 (GHG Reporting Program) are: CO ₂ , methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and other fluorinated gases including nitrogen trifluoride and hydrofluorinated ethers.
Kyoto Protocol and Paris Climate Agreement
On March 21, 1994, the Kyoto Protocol, the first international agreement to regulate GHG emissions, was signed. The Kyoto Protocol was a treaty made under the United Nations Framework Convention on Climate Change. If the commitments outlined in the Kyoto Protocol are met, global GHG emissions would be reduced by 5 percent from 1990 levels during the commitment period of 2008 to 2012. The U.S. was a signatory to the Kyoto Protocol; however, Congress has not ratified it and the U.S. is not bound by the Protocol's commitments.

Greenhouse Gas Emissions (Federal/International)

In December 2015, the Paris Climate Agreement was endorsed and adopted by 195 countries including the U.S. (which has since withdrawn from the Agreement). The overarching goal was to reduce pollution levels so that the rise in global temperatures is limited to no more than 2° Celsius (3.6° Fahrenheit). The Agreement included voluntary commitments to cut or limit the growth of their GHG emissions and provide regular and transparent reporting of every country's carbon reductions.

Greenhouse Gas Emissions (State)

California Global Warming Solutions Act of 2006 (AB 32, Stats. 2006, ch. 488)

Under Assembly Bill (AB) 32, the California Air Resources Board (CARB) is responsible for monitoring and reducing GHG emissions in the state and for establishing a statewide GHG emissions cap for 2020 based on 1990 emissions levels. CARB has adopted the AB 32 Climate Change Scoping Plan (Scoping Plan), initially approved in 2008 and updated in 2014, which contains the main implementation strategies for California to reduce CO₂e emissions by 169 million metric tons (MMT) from the state's projected 2020 emissions level of 596 MMT CO₂e under a business-as-usual scenario. The Scoping Plan breaks down the amount of GHG emissions reductions CARB recommends for each emissions sector of the state's GHG inventory, but does not directly discuss GHG emissions generated by construction activities.

California Global Warming Solutions Act of 2006: emissions limit (SB 32, Stats. 2016, ch. 249)

The update made by SB 32 requires a reduction in statewide GHG emissions to 40 percent below 1990 levels by 2030 to meet the target set in EO B-30-15. The 2017 Climate Change Scoping Plan provides a path to meet the SB 32 GHG emissions reduction goals and provides several GHG emissions reduction strategies to meet the 2030 interim GHG emissions reduction target including implementation of the Sustainable Freight Action Plan, Diesel Risk Reduction Plan, Renewable Portfolio Standard (50 percent by 2030), Advanced Clean Cars policy, and Low Carbon Fuel Standard.

SB 97 (Stats. 2007, ch. 185)

Pursuant to SB 97, the State Office of Planning and Research prepared, and the Natural Resources Agency adopted amendments to the state CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. Effective as of March 2010, the revisions to the CEQA Environmental Checklist Form (Appendix G) and the Energy Conservation Appendix (Appendix F) provide a framework to address global climate change impacts in the CEQA process; state CEQA Guidelines section 15064.4 was also added to provide an approach to assessing impacts from GHGs.

As discussed in state CEQA Guidelines section 15064.4, the determination of the significance of GHG emissions calls for a careful judgment by the lead agency, consistent with the provisions in section 15064. Section 15064.4 further provides that a lead agency should make a good-faith effort, to the extent possible, on scientific and factual data, to describe, calculate, or estimate the amount of GHG emissions resulting from a project.

A lead agency shall have discretion to determine, in the context of a particular project, whether to:

- Use a model or methodology to quantify GHG emissions resulting from a project, and determine which model or methodology to use. The lead agency has discretion to select the model or methodology it considers most appropriate provided it supports its decision with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use; and/or
- Rely on a qualitative analysis or performance-based standards.

Greenhouse Gas Emissions (State)

Section 15064.4 also advises a lead agency to consider the following factors, among others, when assessing the significance of impacts from GHG emissions on the environment: the extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting; whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

Other Legislation

- **AB 1493** (Stats. 2002, ch. 200) required CARB to develop and implement regulations (stricter emissions standards) to reduce automobile and light truck GHG emissions beginning with model year 2009.
- **AB 2800** (Stats. 2016, ch. 580) requires, in part, that state agencies, until 2020, take into account current and future climate change impacts when planning, designing, building, operating, maintaining, and investing in infrastructure.
- **SB 1383** (Stats. 2016, ch. 395) requires CARB to approve and begin implementing its Short-Lived Climate Pollutant Reduction Strategy by January 1, 2018, to achieve a 40 percent reduction in methane, 40 percent reduction in hydrofluorocarbon gases, and 50 percent reduction in anthropogenic black carbon by 2030, relative to 2013 levels.

Executive Orders (EOs)

- **EO B-30-15** (Governor Brown, 2015) established a new interim statewide GHG emission reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030 to ensure California meets its target to reduce GHG emissions to 80 percent below 1990 levels by 2050. State agencies with jurisdiction over sources of GHG emissions to implement measures were also directed pursuant to statutory authority, to achieve GHG emissions reductions to meet the 2030 and 2050 targets.
- **EO S-21-09** (Governor Schwarzenegger, 2009) directed CARB to adopt a regulation consistent with the goal of EO S-14-08.
- **EO S-13-08** (Governor Schwarzenegger, 2008) directed state agencies to take specified actions to assess and plan for impacts of global climate change, particularly sea-level rise.
- **EO S-01-07** (Governor Schwarzenegger, 2007) set a low carbon fuel standard for California, and directed the carbon intensity of California's transportation fuels to be reduced by at least 10 percent by 2020.
- **EO S-3-05** (Governor Schwarzenegger, 2005) directed reductions in GHG emissions to 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050.

HAZARDS AND HAZARDOUS MATERIALS

Hazards and Hazardous Materials (Federal)

Safe Drinking Water Act

The US Environmental Protection Agency (USEPA)'s authority under the Safe Drinking Water Act sets federal limits for drinking water contaminants. Water suppliers must provide water that meets these standards, called maximum contaminant levels.

Hazardous Materials Transportation Act (HMTA) (49 U.S.C. § 5901)

The HMTA delegates authority to the U.S. Department of Transportation to develop and implement regulations pertaining to the transport of hazardous materials and hazardous wastes by all modes of transportation. The USEPA's Hazardous Waste Manifest System is a set of forms, reports, and procedures for tracking hazardous waste from a generator's site to the disposal site. Applicable regulations are contained primarily in CFR Titles 40 and 49.

Hazards and Hazardous Materials (Federal)

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C., Ch. 103)

CERCLA, commonly known as Superfund, provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA establishes requirements concerning closed and abandoned hazardous waste sites, provides for liability of persons responsible for releases of hazardous waste at these sites, and establishes a trust fund to provide for cleanup when no responsible party could be identified. CERCLA was amended by the Superfund Amendments and Reauthorization Act on October 17, 1986.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR 300)

Authorized under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA: 42 U.S.C. § 9605), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA: Pub. L. 99-499); and by Clean Water Act section 311(d), as amended by the Oil Pollution Act (Pub. L. 101-380), the NCP outlines requirements for responding to oil spills and hazardous substance releases. It specifies compliance, but does not require preparation of a written plan, and provides a comprehensive system for reporting, spill containment, and cleanup. Per 40 CFR 300.175 and 40 CFR 300.120, the U.S. Coast Guard has responsibility for oversight of regional response for oil spills in “coastal zones.”

Occupational Safety and Health Act of 1970

Congress created the California Division of Occupational Safety and Health (Cal/OSHA) to assure safe and healthful working conditions for working men and women by setting and enforcing standards and by providing training, outreach, education and assistance. Cal/OSHA has entered into an agreement with California under which California regulations covers all private sector places of employment within the state with certain exceptions.

Oil Pollution Act (OPA) of 1990 (33 U.S.C. § 2712)

The OPA requires owners and operators of facilities that could cause substantial harm to the environment to prepare and submit, and maintain up-to-date, plans for responding to worst-case discharges of oil and hazardous substances and for facilities and vessels to demonstrate that they have sufficient response equipment under contract to respond to and clean up a worst-case spill. The passage of the OPA motivated California to pass a more stringent spill response and recovery regulation and the creation of the Office of Spill Prevention and Response to review and regulate oil spill plans and contracts. The OPA includes provisions to expand prevention and preparedness activities, improve response capabilities, provide funding for natural resource damage assessments, ensure that shippers and oil companies pay the costs of spills that do occur, and establish an expanded research and development program. Pursuant to a Memorandum of Understanding established to divide areas of responsibility, the U.S. Coast Guard is responsible for tank vessels and marine terminals, the USEPA for tank farms, and the Research and Special Programs Administration for pipelines; each of these agencies has developed regulations for its area of responsibility. In addition, the Secretary of Interior is responsible for spill prevention, oil-spill contingency plans, oil-spill containment and clean-up equipment, financial responsibility certification, and civil penalties for offshore facilities and associated pipelines in all federal and state waters.

Resource Conservation and Recovery Act (RCRA) (42 U.S.C. § 6901 et seq.)

The RCRA authorizes the USEPA to control hazardous waste from “cradle-to-grave” (generation, transportation, treatment, storage, and disposal). RCRA Hazardous and Solid Waste Amendments from 1984 include waste minimization, phasing out land disposal of hazardous waste, and corrective action for releases. The Department of Toxic Substances Control is the lead state agency for corrective action associated with RCRA facility investigations and remediation.

Toxic Substances Control Act (TSCA) (15 U.S.C. § 2601–2692)

Hazards and Hazardous Materials (Federal)

The TSCA authorizes the USEPA to require reporting, record-keeping, testing requirements, and restrictions related to chemical substances and/or mixtures. It also addresses production, importation, use, and disposal of specific chemicals, such as polychlorinated biphenyls (PCBs), asbestos-containing materials, lead-based paint, and petroleum.

Other Relevant Laws, Regulations, and Recognized National Codes and Standards

- **33 CFR, Navigation and Navigable Waters** regulates aids to navigation, vessel operations, anchorages, bridges, security of vessels, waterfront facilities, marine pollution financial responsibility and compensation, prevention and control of releases of materials (including oil spills) from vessels, ports and waterways safety, boating safety, and deep-water ports
- **40 CFR Parts 109, 110, 112, 113, and 114** – The Spill Prevention Countermeasures and Control (SPCC) plans covered in these regulatory programs apply to oil storage and transportation facilities and terminals, tank farms, bulk plants, oil refineries, and production facilities, and bulk oil consumers (e.g., apartment houses, office buildings, schools, hospitals, government facilities). These regulations include minimum criteria for developing oil removal contingency plans, prohibit discharge of oil such that applicable water quality standards would be violated, and address oil spill prevention and preparation of SPCC plans. They also establish financial liability limits and provide civil penalties for violations of the oil spill regulations.
- **46 CFR parts 1 through 599 and Inspection and Regulation of Vessels (46 U.S.C. Subtitle II Part B)** provide that all commercial (e.g., passengers for hire, transport of cargoes, hazardous materials, and bulk solids) vessels operating offshore on specified routes (inland, near coastal, and oceans), including those under foreign registration, are subject to requirements applicable to vessel construction, condition, and operation. These regulations also allow for inspections to verify that vessels comply with applicable international conventions and U.S. laws and regulations.
- **Act of 1980 to Prevent Pollution from Ships** requires ships in U.S. waters, and all U.S. ships to comply with International Convention for the Prevention of Pollution from Ships (MARPOL).
- **Clean Water Act** (see *Hydrology and Water Quality*)
- **Convention on the International Regulations for Preventing Collisions at Sea** establishes “rules of the road” such as rights-of-way, safe speed, actions to avoid collision, and procedures to observe in narrow channels and restricted visibility.
- **Hazardous Materials Transportation Act** (see *Transportation/Traffic*)

Hazards and Hazardous Materials (State)

California Occupational Safety and Health Act (Cal/OSHA) of 1973 and California Code of Regulations, title 8

California employers have many different responsibilities under the CalOSHA Regulations. The following represents several requirements:

- Establish, implement and maintain an Injury and Illness Prevention Program and update it periodically to keep employees safe.
- Inspect workplace(s) to identify and correct unsafe and hazardous conditions.
- Make sure employees have and use safe tools and equipment and properly maintain this equipment.
- Provide and pay for personal protective equipment.
- Use color codes, posters, labels or signs to warn employees of potential hazards.

Lempert-Keene-Seastrand Oil Spill Prevention and Response Act (OSPRA) (Gov. Code, § 8670.1 et seq., Pub. Resources Code, § 8750 et seq., and Rev. & Tax. Code, § 46001 et seq.)

Hazards and Hazardous Materials (State)

The OSPRA and its implementing regulations seek to protect state waters from oil pollution and to plan for the effective and immediate response, removal, abatement, and cleanup in the event of an oil spill. The Act requires applicable operators to prepare and implement marine oil spill contingency plans and to demonstrate financial responsibility, and requires immediate cleanup of spills, following the approved contingency plans, and fully mitigating impacts on wildlife. The Act assigns primary authority to the Office of Spill Prevention and Response (OSPR) within the California Department of Fish and Wildlife (CDFW) to direct prevention, removal, abatement, response, containment, and cleanup efforts with regard to all aspects of any oil spill in the marine waters of the state; the California State Lands Commission is also provided with authority for oil spill prevention from and inspection of marine facilities and assists OSPR with spill investigations and response. Notification is required to the State Office of Emergency Services, which in turn notifies the response agencies, of all oil spills in the marine environment, regardless of size. The Act also created the Oil Spill Prevention and Administration Fund and the Oil Spill Response Trust Fund. Pipeline operators pay fees into the first of these funds for pipelines transporting oil into California across, under, or through marine waters.

Clean Coast Act of 2005 (SB 771; Stats. 2005, ch. 588)

This Act (effective January 1, 2006) includes requirements to reduce pollution of California waters from large vessels, such as by: prohibiting and reporting of discharges of hazardous wastes, other wastes, or oily bilge water into California waters or a marine sanctuary; and prohibiting and reporting discharges of grey water and sewage into California waters from vessels with sufficient holding-tank capacity or vessels capable of discharging grey water or sewage to available shore-side reception facilities.

Coastal Act Chapter 3 policies (see also *Multiple Environmental Issues*)

Section 30232 of the Coastal Act addresses hazardous materials spills and states that “Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.”

Other Relevant Laws, Regulations, and Standards

- **Hazardous Waste Control Act (Health & Saf. Code, ch. 6.5 & Cal. Code Regs., tit. 22 and 26)** establishes criteria for defining hazardous waste and its safe handling, storage, treatment, and disposal (law is designed to provide cradle-to-grave management of hazardous wastes and reduce the occurrence and severity of hazardous materials releases).
- **Hazardous Material Release Response Plans and Inventory Law** (Health & Saf. Code, ch. 6.95) is designed to reduce the occurrence and severity of hazardous materials releases. This state law requires businesses to develop a Release Response Plan for hazardous materials emergencies if they handle more than 500 pounds, 55 gallons, or 200 cubic feet of hazardous materials. In addition, the business must prepare a Hazardous Materials Inventory of all hazardous materials stored or handled at the facility over the above thresholds, and all hazardous materials must be stored in a safe manner.
- **California Code of Regulations, title 8, division 1** sets forth the Permissible Exposure Limit, the exposure, inhalation or dermal permissible exposure limit for numerous chemicals. Included are chemicals, mixture of chemicals, or pathogens for which there is statistically significant evidence, based on at least one study conducted in accordance with established scientific principles, that acute or chronic health effects may occur in exposed employees. Title 8 sections 5191 and 5194 require a Hazard Communication Plan to ensure both employers and employees understand how to identify potentially hazardous substances in the workplace, understand the associated health hazards, and follow safe work practices.

Hazards and Hazardous Materials (State)

- **California Code of Regulations, title 19, division 2** establishes minimum statewide standards for Hazardous Materials Business Plans.
- **California Code of Regulations, title 22, division 4.5** regulates hazardous wastes and materials by implementation of a Unified Program to ensure consistency throughout the state in administration requirements, permits, inspections, and enforcement by Certified Unified Program Agencies (CUPAs).
- **California Code of Regulations, title 24, part 9 (Fire Code regulations)** – state hazardous materials should be used and storage in compliance with the state fire codes.
- **Porter-Cologne Water Quality Control Act** (see *Hydrology and Water Quality*)
- Seismic Hazards Mapping Act/Regulations (see *Geology and Soils*)
- California State Lands Commission Oil and Gas provisions and regulations (see *Multiple Environmental Issues*)

HYDROLOGY AND WATER QUALITY

Hydrology and Water Quality (Federal)

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

The CWA is comprehensive legislation (it generally includes the Federal Water Pollution Control Act of 1972, its supplementation by the CWA of 1977, and amendments in 1981, 1987, and 1993) that seeks to protect the nation's water from pollution by setting water quality standards for surface water and by limiting the discharge of effluents into waters of the U.S. These water quality standards are promulgated by the USEPA and enforced in California by the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs). Relevant CWA sections include:

- **Section 303(d) (33 U.S.C. § 1313)** requires states to list waters that are not attaining water quality standards, which is known as the 303(d) List of impaired waters. These requirements have led to the development of total maximum daily load (TMDL) guidance at the state level through the SWRCB and various RWQCBs.
- **Section 305(b) (33 U.S.C. § 1315)** requires states to assess and report on the water quality status of waters within the states.
- **Section 401 (33 U.S.C. § 1341)** specifies that any applicant for a federal permit or license to conduct any activity which may result in any discharge into the navigable waters of the U.S. to obtain a certification or waiver thereof from the state in which the discharge originates that such a discharge will comply with established state effluent limitations and water quality standards. ACOE projects are required to obtain this certification.
- **Section 402 (33 U.S.C. § 1342)** establishes conditions and permitting for discharges of pollutants under the National Pollutant Discharge Elimination System (NPDES). Under the NPDES Program, states establish standards specific to water bodies and designate the types of pollutants to be regulated, including total suspended solids and oil; all point sources that discharge directly into waterways are required to obtain a permit regulating their discharge. NPDES permits fall under the jurisdiction of the SWRCB or RWQCBs when the discharge occurs within state waters (out to 3 nautical miles).
- **Section 403 (33 U.S.C. § 1343)** provides permit issuance guidelines for ocean discharge. Section 403 provides that point source discharges to the territorial seas, contiguous zone, and oceans are subject to regulatory requirements in addition to the technology- or water quality-based requirements applicable to typical discharges. These requirements are intended to ensure that no unreasonable degradation of the marine environment will occur as a result of the discharge and to ensure that sensitive ecological communities are protected.

Hydrology and Water Quality (Federal)

- **Section 404 (33 U.S.C. § 1344)** authorizes the U.S. Army Corps of Engineers to issue permits for the discharge of dredged or fill material into waters of the U.S., including wetlands, streams, rivers, lakes, coastal waters or other water bodies or aquatic areas that qualify as waters of the U.S.

Marine Protection, Research, and Sanctuary Act (16 U.S.C. § 1431 et seq. and 33 U.S.C. § 1401 et seq.)

In 1972, this Act established the National Marine Sanctuary Program, administered by the National Oceanic and Atmospheric Administration, which has a primary goal to establish and maintain National Marine Sanctuaries and protect natural and cultural resources contained within their boundaries.

Rivers and Harbors Act (33 U.S.C. § 401)

This Act governs specified activities in “navigable waters” (waters subject to the ebb and flow of the tide or that are presently used, have been used in the past, or may be susceptible for use to transport interstate or foreign commerce). Section 10 provides that construction of any structure in or over any navigable water of the U.S., or the accomplishment of any other work affecting the course, location, condition, or physical capacity of such waters, is unlawful unless the U.S. Army Corps of Engineers approves the work and issues a Rivers and Harbors Act section 10 Permit (which may occur concurrently with Clean Water Act section 404 permits).

Other Relevant Laws and Regulations

- **Marine Plastic Pollution Research and Control Act** prohibits the discharge of plastic, garbage, and floating wood scraps within 3 nautical miles of land. Beyond 3 nautical miles, garbage must be ground to less than 1 inch, but discharge of plastic and floating wood scraps is still restricted. This Act requires manned offshore platforms, drilling rigs, and support vessels operating under a federal oil and gas lease to develop waste management plans.
- **Navigation and Navigable Waters (33 CFR) regulations** include requirements pertaining to prevention and control of releases of materials from vessels (e.g., oil spills), traffic control, and restricted areas, and general ports and waterways safety.
- **Oil Pollution Act (OPA)** (see *Hazards and Hazardous Materials*)

Hydrology and Water Quality (State)

Porter-Cologne Water Quality Control Act (Wat. Code, § 13000 et seq.) (Porter-Cologne)

Porter-Cologne is the principal law governing water quality in California. The Act established the SWRCB and nine RWQCBs, which have primary responsibility for protecting water quality and beneficial uses of state waters. Porter-Cologne also implements many provisions of the federal Clean Water Act, such as the NPDES permitting program. Pursuant to Clean Water Act section 401, applicants for a federal license or permit for activities that may result in any discharge to waters of the U.S. must seek a Water Quality Certification from the state in which the discharge originates; such Certification is based on a finding that the discharge will meet water quality standards and other appropriate requirements of state law. In California, RWQCBs issue or deny certification for discharges within their jurisdiction. The SWRCB has this responsibility where projects or activities affect waters in more than one RWQCB’s jurisdiction. If the SWRCB or a RWQCB imposes a condition on its Certification, those conditions must be included in the federal permit or license. Plans that contain enforceable standards for the various waters they address include the following:

- **Basin Plan.** Porter-Cologne (see § 13240) requires each RWQCB to formulate and adopt a Basin Plan for all areas within the region. Each RWQCB must establish water quality objectives to ensure the reasonable protection of beneficial uses, and an implementation

Hydrology and Water Quality (State)

program for achieving water quality objectives within the basin plan. In California, the beneficial uses and water quality objectives are the state's water quality standards.

- California Ocean Plan (see § 13170.2) establishes water quality objectives for California's ocean waters and provides the basis for regulating wastes discharged into ocean and coastal waters. The plan applies to point and non-point sources. In addition, the Ocean Plan identifies applicable beneficial uses of marine waters and sets narrative and numerical water quality objectives to protect beneficial uses. The SWRCB first adopted this plan in 1972, and it reviews the plan at least every 3 years to ensure that current standards are adequate and are not allowing degradation to indigenous marine species or posing a threat to human health.

RWQCBs also oversee on-site treatment of "California Designated, Non-Hazardous Waste" and enforce water quality thresholds and standards set forth in the Basin Plan. Applicants may be required to obtain a General Construction Activities Storm Water Permit under the NPDES program, and develop and implement a Storm Water Pollution Prevention Plan (SWPPP) that includes best management practices to control erosion, siltation, turbidity, and other contaminants associated with construction activities. The SWPPP would include best management practices to control or prevent the release of non-storm water discharges, such as crude oil, in storm water runoff.

Coastal Act Chapter 3 policies (see also *Multiple Environmental Issues*)

Section 30231 states that the biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Harbors and Navigation Code sections 650-674

This code specifies a state policy to "promote safety for persons and property in and connected with the use and equipment of vessels," and includes laws concerning marine navigation that are implemented by local city and county governments. This Code also regulates discharges from vessels within territorial waters of the State of California to prevent adverse impacts on the marine environment. This code regulates oil discharges and imposes civil penalties and liability for cleanup costs when oil is intentionally or negligently discharged to the waters of the State of California.

Marine Life Management Act

The Marine Life Management Act of 1999 is a plan for managing fisheries and other marine life in the state.

Marine Life Protection Act (MLPA) (Fish & G. Code, §§ 2850–2863)

Pursuant to this Act, the California Department of Fish and Wildlife (CDFW) established and manages a network of Marine Protected Areas (MPAs) to, among other goals, protect marine life and habitats and preserve ecosystem integrity.

Marine Managed Areas Improvement Act.

This Act established the California Marine Managed Areas System, extended State Parks' management jurisdiction into the marine environment, and gives priority to MPAs adjacent to protected terrestrial lands. For example, more than 25 percent of the California coastline is within the State Park System.

Other Relevant Law

Hydrology and Water Quality (State)

- Water Code section 13142.5 provides marine water quality policies stating that wastewater discharges shall be treated to protect present and future beneficial uses, and, where feasible, to restore past beneficial uses of the receiving waters. The highest priority is given to improving or eliminating discharges that adversely affect wetlands, estuaries, and other biologically sensitive sites; areas important for water contact sports; areas that produce shellfish for human consumption; and ocean areas subject to massive waste discharge.

LAND USE AND PLANNING

Land Use and Planning (Federal)

Coastal Zone Management Act (see *Multiple Environmental Issues*)

Land Use and Planning (State)

Submerged Lands Act

The State of California owns tide and submerged lands waterward of the ordinary high watermark. state law gives primary responsibility for determination of the precise boundary between these public tidelands and private lands, and administrative responsibility over state tidelands, to the CSLC. Access and use of state shoreline areas can be obtained through purchase or lease agreements.

Coastal Act Chapter 3 policies (see also *Multiple Environmental Issues*)

- **Section 30220** – Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.
- **Section 30221** – Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.
- **Section 30222** – The use of private lands suitable for visitor-serving commercial recreational facilities designed to enhance public opportunities for coastal recreation shall have priority over private residential, general industrial, or general commercial development, but not over agriculture or coastal-dependent industry.
- **Section 30223** – Upland areas necessary to support coastal recreational uses shall be reserved for such uses, where feasible.
- **Section 30224** – Increased recreational boating use of coastal waters shall be encouraged, in accordance with this division, by developing dry storage areas, increasing public launching facilities, providing additional berthing space in existing harbors, limiting non-water-dependent land uses that congest access corridors and preclude boating support facilities, providing harbors of refuge, and by providing for new boating facilities in natural harbors, new protected water areas, and in areas dredged from dry land.

MINERAL RESOURCES

There are no major federal laws, regulations, and policies potentially applicable to this project.

Mineral Resources (State)

Surface Mining and Reclamation Act (SMARA) (Pub. Resources Code, §§ 2710-2796).

The California Department of Conservation is the primary agency tasked with mineral resource protection. The Department, which is charged with conserving earth resources (Pub. Resources Code, §§ 600-690), has five program divisions: California Geological Survey (CGS); Division of Oil, Gas, and Geothermal Resources (DOGGR); Division of Land Resource

Mineral Resources (State)

Protection; State Mining and Geology Board (SMGB); and Division of Mine Reclamation. SMGB develops policy direction regarding the development and conservation of mineral resources and reclamation of mined lands. In accordance with SMARA, CGS classifies the regional significance of mineral resources and assists in designating lands containing significant aggregate resources. Four Mineral Resource Zones (MRZs) are designated to indicate the significance of mineral deposits.

- MRZ-1 – Areas where adequate information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence.
- MRZ-2 – Areas where adequate information indicates significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.
- MRZ-3 – Areas containing mineral deposits the significance of which cannot be evaluated from available data.
- MRZ-4 – Areas where available information is inadequate for assignment to any other MRZ.

The Warren-Alquist Act

This act was adopted in 1974 to encourage conservation of non-renewable energy resources.

NOISE

Noise (Federal)

Noise Control Act (42 U.S.C. § 4910) and NTIS 550\9-74-004, 1974

The Noise Control Act required the USEPA to establish noise emission criteria and noise testing methods (40 CFR Chapter 1, Subpart Q). These criteria generally apply to interstate rail carriers and to some types of construction and transportation equipment. In 1974, the USEPA provided guidance in National Technical Information Service (NTIS) 550\9-74-004 ("Information on Levels of Environmental Noise Requisite to Protect Health and Welfare with an Adequate Margin of Safety;" referenced as the "Levels Document") that established a Day Night Average Sound Level (L_{dn}) of 55 dBA as the requisite level, with an adequate margin of safety, for areas of outdoor uses including residences and recreation areas. The recommendations do not consider technical or economic feasibility (i.e., the document identifies safe levels of environmental noise exposure without consideration for achieving these levels or other potentially relevant considerations), and therefore should not be construed as standards or regulations.

Noise (State)

Land Use Compatibility Guidelines from the now defunct California Office of Noise Control

State regulations for limiting population exposure to physically and/or psychologically significant noise levels include established guidelines and ordinances for roadway and aviation noise under the California Department of Transportation and the now defunct California Office of Noise Control. Office of Noise Control land use compatibility guidelines provided the following:

- For residences, an exterior noise level of 60 to 65 dBA Community Noise Equivalent Level (CNEL) is considered "normally acceptable;" a noise level of greater than 75 dBA CNEL is considered "clearly unacceptable."
- A noise level of 70 dBA CNEL is considered "conditionally acceptable" (i.e., the upper limit of "normally acceptable" for sensitive uses [schools, libraries, hospitals, nursing homes, churches, parks, offices, commercial/professional businesses]).

Noise (State)

Other Relevant Regulation

California Code of Regulations, title 24 establishes CNEL 45 dBA as the maximum allowable indoor noise level resulting from exterior noise sources for multi-family residences.

POPULATION AND HOUSING

There are no major federal or state laws, regulations, and policies potentially applicable to this project.

PUBLIC SERVICES

Public Services (Federal)

CFR Title 29

- **29 CFR 1910.38** requires an employer, when required by a California Division of Occupational Safety and Health (Cal/OSHA) standard, to have an Emergency Action Plan that must be in writing, kept in the workplace, and available to employees for review.
- **29 CFR 1910.39** requires an employer to have a Fire Prevention Plan.
- **29 CFR 1910.155, Subpart L, Fire Protection** requires employers to place and keep in proper working order fire safety equipment within facilities.

Public Services (State)

California Code of Regulations, title 19 (Public Safety)

California State Fire Marshal regulations establish minimum standards for the prevention of fire and for protection of life and property against fire, explosion, and panic.

RECREATION

There are no major federal laws, regulations, and policies potentially applicable to this project.

Recreation (State)

Coastal Act Chapter 3 policies (see also *Multiple Environmental Issues*)

- **Section 30210** – In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.
- **Section 30220** – Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.
- **Section 30221** – Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.
- **Section 30222.5** – Oceanfront land that is suitable for coastal dependent aquaculture shall be protected for that use, and proposals for aquaculture facilities located on those sites shall be given priority, except over other coastal dependent developments or uses.

Other Relevant Regulations

- **California Ocean Sport Fishing Regulations.** Each year, the Fish and Game Commission issues regulations on the recreational fishing within state marine waters. These regulations specify season, size and bag limits, gear restrictions, as well as licensing requirements.

Recreation (State)

Following the development of the MPAs, a section on fishing restrictions within the MPAs was also included.

TRANSPORTATION / TRAFFIC

Transportation / Traffic (Federal)

Ports and Waterways Safety Act

This Act provides the authority for the U.S. Coast Guard to increase vessel safety and protect the marine environment in ports, harbors, waterfront areas, and navigable waters, including by authorizing the Vessel Traffic Service, controlling vessel movement, and establishing requirements for vessel operation.

Title 23 (Highways), CFR, Section 450.220

Requires each state to carry out a continuing, comprehensive, and intermodal statewide transportation planning process. This planning process must include the development of a statewide transportation plan and transportation improvement program that facilitates the efficient, economic movement of people and goods in all areas of the state.

Transportation / Traffic (State)

California Vehicle Code

Chapter 2, article 3 defines the powers and duties of the California Highway Patrol, which enforces vehicle operation and highway use in the state. The California Department of Transportation is responsible for the design, construction, maintenance, and operation of the California State Highway System and the portion of the Interstate Highway System within state boundaries.

Caltrans has the discretionary authority to issue special permits for the use of California State highways for other than normal transportation purposes. Caltrans also reviews all requests from utility companies, developers, volunteers, nonprofit organizations, and others desiring to conduct various activities within the California Highway right of way. The Caltrans Highway Design Manual, prepared by the Office of Geometric Design Standards (Caltrans 2012), establishes uniform policies and procedures to carry out the highway design functions of Caltrans. Caltrans has also prepared a Guide for the Preparation of Traffic Impact Studies (Caltrans 2002). Objectives for the preparation of this guide include providing consistency and uniformity in the identification of traffic impacts generated by local land use proposals.

Harbors and Navigation Code sections 650-674

This code specifies a policy to “promote safety for persons and property in and connected with the use and equipment of vessels,” and includes laws concerning marine navigation that are implemented by local city and county governments. This Code also regulates discharges from vessels within territorial waters of the state of California to prevent adverse impacts on the marine environment. This code regulates oil discharges and imposes civil penalties and liability for cleanup costs when oil is intentionally or negligently discharged to state waters.

UTILITIES AND SERVICE SYSTEMS

Utilities and Service Systems (Federal)

CFR Title 29 (see *Public Services*)

Utilities and Service Systems (State)

California Integrated Waste Management Act (AB 939; Stats. 1989, ch. 1095)

Utilities and Service Systems (State)

Assembly Bill (AB) 939 mandates management of non-hazardous solid waste throughout California. Its purpose includes: reduce, recycle, and reuse solid waste generated in the state to the maximum extent feasible; improve regulation of existing solid waste landfills; ensure that new solid waste landfills are environmentally sound; streamline permitting procedures for solid waste management facilities; and specify local government responsibilities to develop and implement integrated waste management programs. AB 939 policies preferred waste management practices include the following. The highest priority is to reduce the amount of waste generated at its source (source reduction). Second is to reuse, by extending the life of existing products and recycling those wastes that can be reused as components or feed stock for the manufacture of new products, and by composting organic materials. Source reduction, reuse, recycling and composting are jointly referred to as waste diversion methods because they divert waste from disposal. Third is disposal by environmentally safe transformation in a landfill. All local jurisdictions, cities, and counties must divert 50 percent of the total waste stream from landfill disposal by the year 2000 and each year thereafter (with 1990 as the base year).

California Code of Regulations, title 19 (Public Safety)

Title 19 sets standards for the prevention of fire and protection of property and life by the Seismic Safety Commission, Office of Emergency Services, and Office of the Fire Marshall. It also contains guidelines and standards for general fire, construction, explosives, emergency management, earthquakes, and fire.

Coastal Act Chapter 3 policies (see also *Multiple Environmental Issues*)

- **Section 30254** – New or expanded public works facilities shall be designed and limited to accommodate needs generated by development or uses permitted consistent with the provisions of this division; provided, however, that it is the intent of the Legislature that State Highway Route 1 in rural areas of the coastal zone remain a scenic two-lane road. Special districts shall not be formed or expanded except where assessment for, and provision of, the service would not induce new development inconsistent with this division. Where existing or planned public works facilities can accommodate only a limited amount of new development, services to coastal-dependent land use, essential public services and basic industries vital to the economic health of the region, state, or nation, public recreation, commercial recreation, and visitor-serving land uses shall not be precluded by other development.

WILDFIRE

There are no major federal laws, regulations, and policies potentially applicable to this project.

Wildfire (State)

State Responsibility Area (SRA)

The California Public Resources Code (Section 4101 et seq.) includes fire safety requirements for which the Department of Forestry and Fire Protection (CAL FIRE) has adopted regulations (for example, Chapters 6 and 7 of Chapter 1.5 of 14 CCR) that apply to state responsibility areas (SRAs). As the name implies, SRAs are areas where CAL FIRE has primary responsibility for fire protection. During the fire hazard season, these regulations: (a) restrict the use of equipment that may produce a spark, flame, or fire; (b) require the use of spark arrestors on equipment that has an internal combustion engine; (c) specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and (d) specify fire-suppression equipment that must be provided onsite for various types of work in fire-prone areas.

Very High Fire Hazard Severity Zones (AB337)

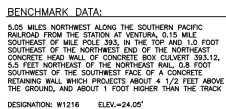
As a result of the Oakland Hills Fire (Tunnel Fire) of 1991, the Bates Bill (337) was passed in 1992 requiring CAL FIRE to work with local governments to identify high fire hazard severity

Wildfire (State)

zones within local responsibility areas throughout each county in the state. Over the years CAL FIRE has updated the maps and provided new recommendations to local governments. Following the Bill, CAL FIRE periodically gathers new data and updates the mapping. This is a massive project requiring policy and procedure staff, prevention and planning staff, and the technical geographic information system (GIS) skills of CAL FIRE's Fire and Resource Assessment Program.

APPENDIX B

Project Plans

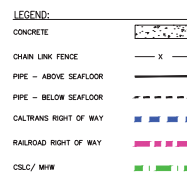


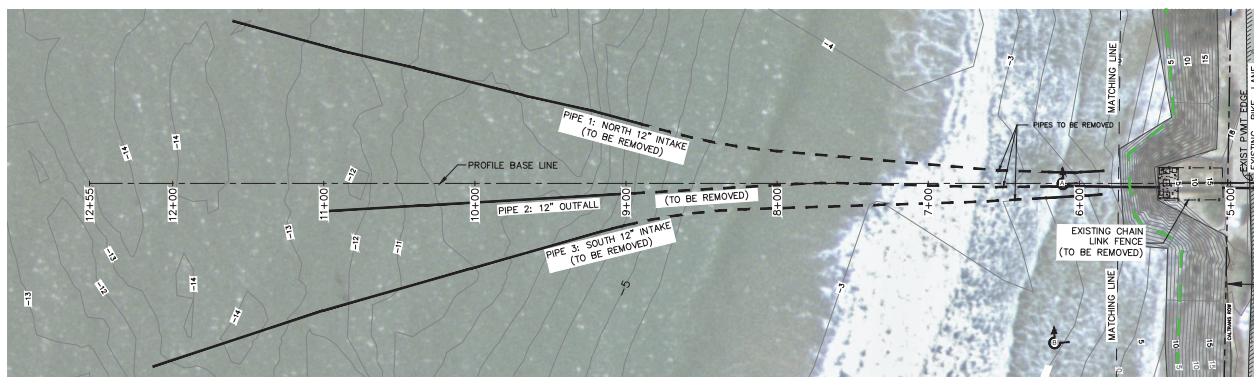
MEAN LOW LOWER WATER (MLLW) WAS CALCULATED BY INTERPOLATING BETWEEN SANTA BARBARA AND SANTA MONICA TIDE STATIONS.

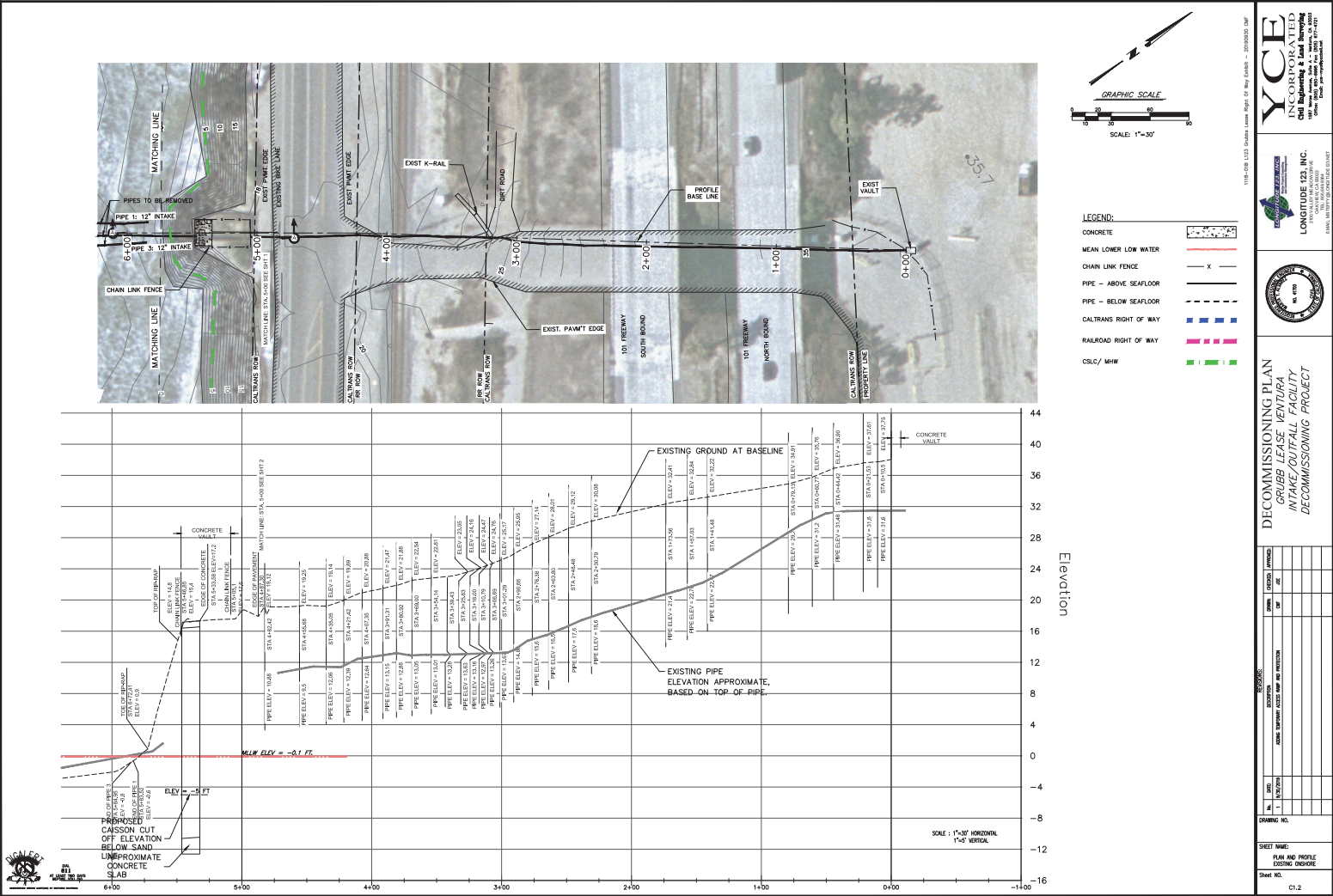
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MEAN HIGH WATER (MHW) WAS CALCULATED BY INTERPOLATING BETWEEN SANTA BARBARA AND SANTA MONICA TIDE STATIONS.

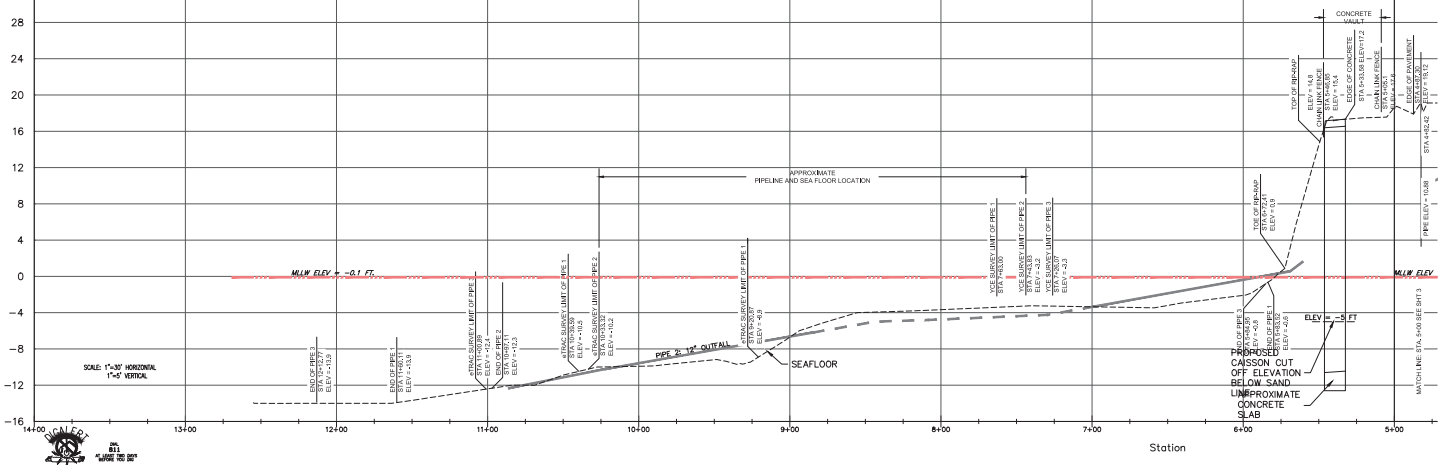
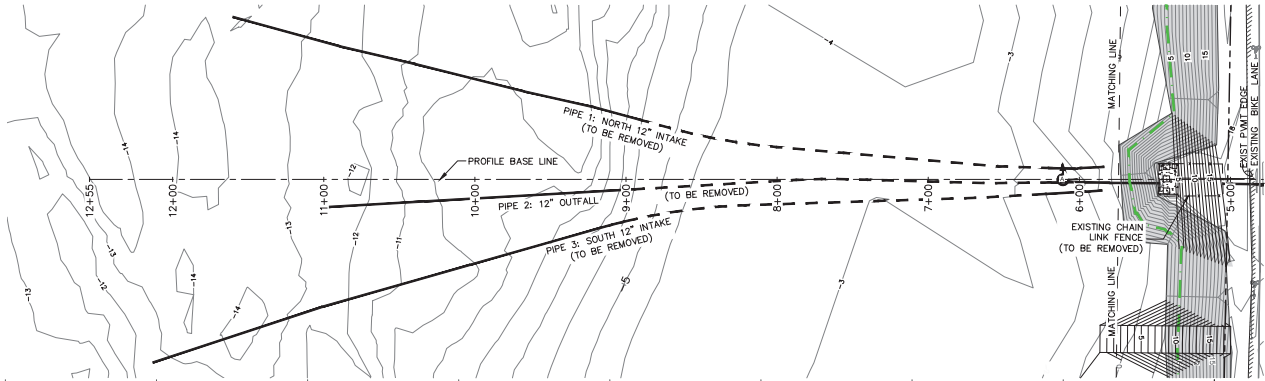
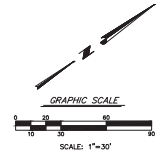
MHW ELEVATION = 4.6 FT.



[illegible]



- LEGEND:
- CONCRETE
 - MEAN LOWER LOW WATER
 - CHAIN LINK FENCE
 - PIPE - ABOVE SEAFLOOR
 - PIPE - BELOW SEAFLOOR
 - CALTRANS RIGHT OF WAY
 - RAILROAD RIGHT OF WAY
 - CSL/C/ MHW



1116-018 L23 Pipeline Location Map of Bay Bridge - 20100501.MXD

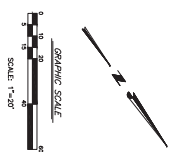
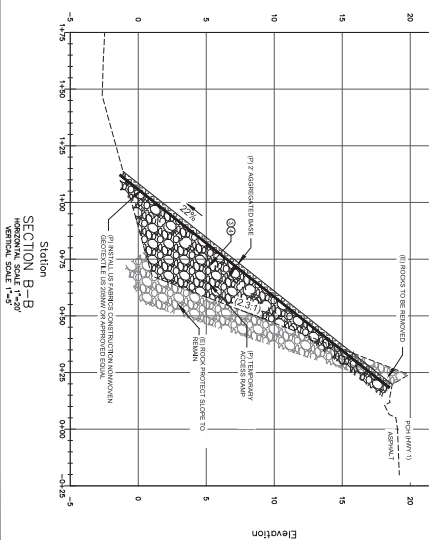
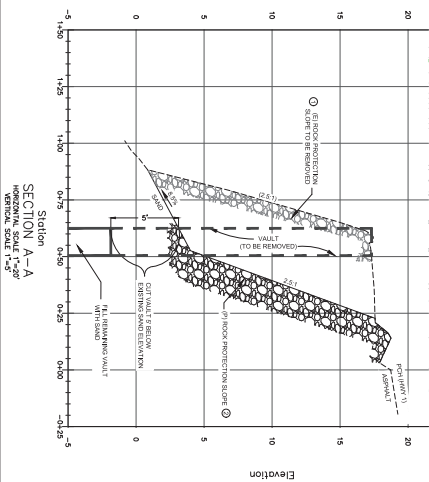
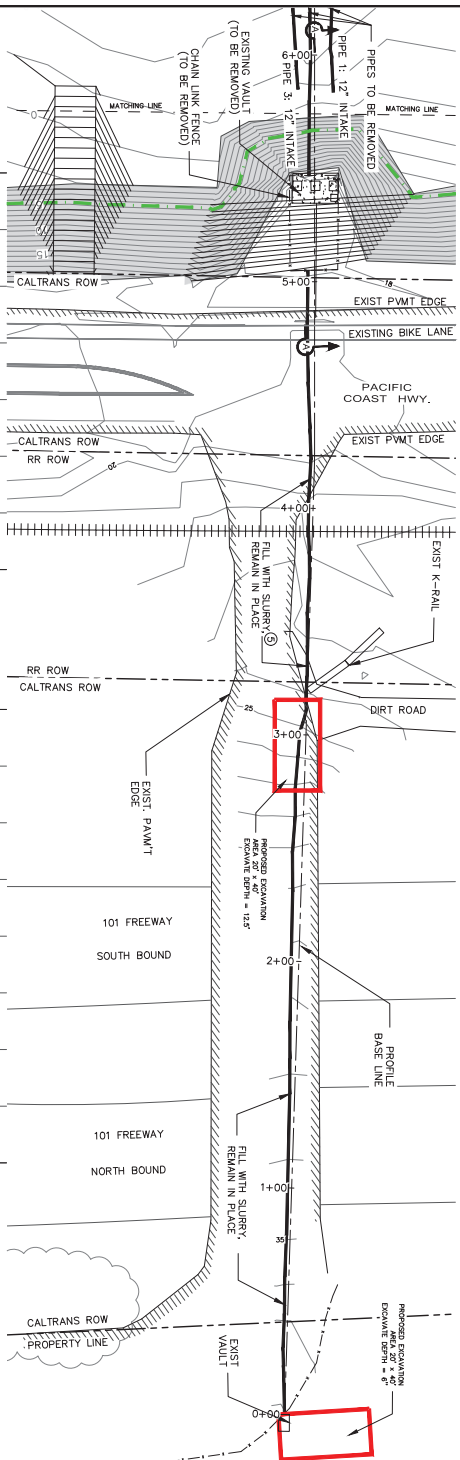
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INCORPORATED
1116-018 L23 Pipeline Location Map of Bay Bridge - 20100501.MXD
1116-018 L23 Pipeline Location Map of Bay Bridge - 20100501.MXD
1116-018 L23 Pipeline Location Map of Bay Bridge - 20100501.MXD

DECOMMISSIONING PLAN
GRUBB LEASE VENTURA
INTAKE/OUTFALL FACILITY
DECOMMISSIONING PROJECT

NO.	DATE	DESCRIPTION	BY	CHKD	APP'D
1	11/10/2011	AS-BUILT			

SHEET NO. 1
CONSTRUCTION OFFSHORE
C2.1

- ① CONSTRUCT ROCK PROTECTION SCOE USING ONE-PIECE ROCKS OR APPROVED EQUAL
- ② PROTECT AND STONE EXISTING ROCKS
- ③ CONSTRUCT TEMPORARY ACCESS RAMP USING ONE-PIECE ROCKS
- ④ AFTER DECOMMISSION, REMOVE ACCESS RAMP AND REINSTATE ROCK PROTECT SCOE TO ORIGINAL CONDITION
- ⑤ THE SUBMANTIAL SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 10,000 PSI. THE ROCK SHALL BE FREE OF CRACKS, DISINTEGRATION, AND WEATHERING. THE MAXIMUM SHALL CONSIST OF WATER, PORTLAND CEMENT, FLY ASH, AND AGGREGATE.

[illegible]

DECOMMISSIONING PLAN
GRUBB LEASE VENTURA
INTAKE/OUTFALL FACILITY
DECOMMISSIONING PROJECT



APPENDIX C

Photo Documentation



Photo 1. View of Project Site Looking Southeast (May 2019)



Photo 2. Exposed Intake/Outfall Pipelines Looking Southwest (January 2019)



Photo 3. Project Staging Area Looking Northwest along PCH (May 2019)



Photo 4. Project Staging Area Looking Southeast along PCH (May 2019)



Photo 5. View of Proposed Access Point for Temporary Ramp Construction (May 2019)



Photo 6. View Looking Northeast Across PCH to CRC Grubb Lease “A” Facility and 36-Inch Conduit Right-of-Way (May 2019)

APPENDIX D

Air Quality and Greenhouse Gas Emissions Calculations and Summary of Best Management Practices

CRC GRUBB LEASE INTAKE AND OUTFALL DECOMMISSIONING PROJECT
CRITERIA POLLUTANTS & GREENHOUSE GAS EMISSIONS
TABLE 1: CONSTRUCTION EMISSIONS SUMMARY

Source	Peak Day Emissions, lbs/day										Annual Emissions, tons/year										
	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	MTCO ₂ e
Offshore Intake Structure Removal	37.54	1.49	1.83	1.81	1.69	27.70	7.17	0.11	0.50	3,902	0.075	0.003	0.004	0.004	0.003	0.055	0.014	0.000	0.001	7.8	7.2
Onshore Casing & Pipeline Decommissioning	9.21	0.52	0.30	0.16	0.22	14.79	0.05	0.32	0.71	4,768	0.009	0.001	0.000	0.000	0.000	0.048	0.000	0.000	0.003	12.0	11.0
Onshore Pipeline Recovery & Removal	8.00	0.67	0.25	0.14	0.24	21.19	0.06	0.27	1.39	6,095	0.018	0.003	0.001	0.000	0.001	0.094	0.000	0.000	0.006	22.9	21.1
Onshore Vault Removal and Seawall Construction	9.63	0.60	2.20	0.18	0.25	15.87	0.05	0.33	1.06	5,393	0.016	0.002	0.010	0.002	0.001	0.076	0.000	0.000	0.005	19.4	17.9
Offshore Pipeline Removal Option*	38.66	1.52	1.85	1.82	1.70	27.74	7.17	0.16	0.50	4,133	0.076	0.003	0.004	0.004	0.003	0.055	0.014	0.000	0.001	7.8	7.2
Average Peak Pounds/Day	20.61	0.96	1.29	0.82	0.82	21.46	2.90	0.24	0.83	4,858	-	-	-	-	-	-	-	-	-	-	-
Peak Day within Ventura County	38.66	1.52	2.20	1.82	1.70	27.74	7.17	0.33	1.39	6,095	-	-	-	-	-	-	-	-	-	-	-
Total Annual Emissions within Ventura County	-	-	-	-	-	-	-	-	-	-	0.194	0.012	0.018	0.010	0.009	0.328	0.029	0.002	0.017	70.1	64.4
GHG - MTCO ₂ e conversions																		298	25	1	-
Total MTCO ₂ e, tons/yr																		64.4			
Daily Peak NOx lbs	38.66																				
Daily Peak ROG, lbs	1.52																				

Notes:
- EPA Emission Factors for Greenhouse Gas Inventories (298 for N₂O, 25 for CH₄, and 1 for CO₂, April 2014, Table 9- Global Warming Potentials (GWPs) - http://www.epa.gov/sites/production/files/2015-07/documents/emission-factors_2014.pdf
* - This option, if implemented, will take place within the Onshore Pipeline Recovery & Removal phase and would result in peak NOx emissions of 46.96 lbs/day for four days only.
CH₄ - Methane
CO - Carbon monoxide
CO₂ - Carbon Dioxide
DPM - Diesel Particulate Matter
GHG - Greenhouse Gas
MTCO₂e - Metric tons of carbon dioxide equivalent
NO_x - Oxides of Nitrogen
N₂O - Nitrous Oxide
PM_{2.5} - Particulate Matter 2.5 Microns or Less
PM₁₀ - Particulate Matter 10 Microns or Less
ROG - Reactive Organic Gases
SO₂ - Sulfur Dioxide

CRC GRUBB LEASE INTAKE AND OUTFALL DECOMMISSIONING PROJECT
CRITERIA POLLUTANTS & GREENHOUSE GAS EMISSIONS
TABLE 2: OFFSHORE INTAKE STRUCTURE REMOVAL

On-Site Sources

Source	BHP	Load Factor	Number	Hours/Day	Duration (days)	Emission Factors (g/bhp-hr)										Emissions (lb/day)										Total Emissions (tons)									
						NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂
Dive Support Vessel	1000	45	1	3	4	9.119	0.362	0.402	0.402	0.402	6.705	1.743	0.027	0.121	925	27.14	1.078	1.197	1.197	1.197	19.955	5.188	0.080	0.359	2754	0.054	0.002	0.002	0.002	0.002	0.040	0.010	0.000	0.001	5.508
Dive Air System	50	43	1	24	4	9.119	0.362	0.536	0.536	0.429	6.705	1.743	0.027	0.121	925	10.37	0.412	0.610	0.610	0.488	7.627	1.983	0.031	0.137	1053	0.021	0.001	0.001	0.001	0.001	0.015	0.004	0.000	0.000	2.105
						Total										37.51	1.49	1.81	1.81	1.69	27.58	7.17	0.11	0.50	3806	0.075	0.003	0.004	0.004	0.003	0.055	0.014	0.000	0.001	7.6

On-Road Sources

Source	Peak Round Trips/Day	Average Round Trips/Day	Number of Vehicles	Length of Round Trip (miles)	Duration (days)	Emission Factors (g/mile)										Peak Day Emissions (lb/day)										Total Emissions (tons)									
						NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂
Passenger Vehicle - LDA	1	1	3	20	4	0.100	0.025	0.0471	0.0015	0.000	0.822	0.003	0.009	0.006	322	0.013	0.003	0.006	0.000	0.000	0.109	0.000	0.001	0.001	42.6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.085
Light-Duty Truck - LDT2 (offsite)	1	1	3	20	4	0.075	0.011	0.1090	0.0057	0.006	0.096	0.004	0.014	0.008	399	0.010	0.001	0.014	0.001	0.001	0.013	0.001	0.002	0.001	52.8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.106
						Total										0.02	0.005	0.021	0.001	0.001	0.122	0.001	0.003	0.002	95.3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.19

- Notes:**
- Hours per day and durations provided by Project Applicant.
 - Round trips for LDA and LDT2 is estimated from Ventura Area (20-miles).

CRC GRUBB LEASE INTAKE AND OUTFALL DECOMMISSIONING PROJECT
CRITERIA POLLUTANTS & GREENHOUSE GAS EMISSIONS
TABLE 3: ONSHORE CASING & PIPELINE DECOMMISSIONING

On-Site Sources

Source	BHP	Load Factor	Number	Hours/Day	Duration (days)	Emission Factors (g/bhp-hr)										Emissions (lb/day)										Total Emissions (tons)									
						NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂
Crane	220	29	1	10	10	0.260	0.060	0.008	0.008	0.018	2.200	0.005	0.004	0.153	507	0.37	0.084	0.011	0.011	0.025	3.094	0.007	0.006	0.215	713	0.002	0.000	0.000	0.000	0.000	0.015	0.000	0.000	0.001	3.567
Cement Pump	85	74	1	10	1	0.260	0.060	0.008	0.008	0.018	3.700	0.006	0.004	0.055	568	0.36	0.083	0.011	0.011	0.025	5.131	0.008	0.006	0.076	788	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.394
Excavator	310	38	1	10	10	0.260	0.060	0.008	0.008	0.018	2.200	0.005	0.004	0.152	504	0.68	0.156	0.021	0.021	0.047	5.713	0.013	0.011	0.395	1310	0.003	0.001	0.000	0.000	0.000	0.029	0.000	0.000	0.002	6.548
						Total										1.40	0.323	0.043	0.043	0.097	13.94	0.028	0.023	0.686	2811	0.005	0.001	0.000	0.000	0.000	0.047	0.000	0.000	0.003	10.51

On-Road Sources

Source	Peak Round Trips/Day	Average Round Trips/Day	Number of Vehicles	Length of Round Trip (miles)	Duration (days)	Emission Factors (g/mile)										Peak Day Emissions (lb/day)										Total Emissions (tons)									
						NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂
Passenger Vehicle - LDA	1	1	3	20	10	0.100	0.025	0.0471	0.0015	0.0000	0.822	0.003	0.009	0.006	322	0.013	0.003	0.006	0.000	0.000	0.109	0.000	0.001	0.001	42.6	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.213	
Light-Duty Truck - LDT2 (offsite)	1	1	4	20	10	0.075	0.011	0.1090	0.0057	0.0060	0.096	0.004	0.014	0.008	399	0.013	0.002	0.019	0.001	0.001	0.017	0.001	0.002	0.001	70.4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.352	
Light-Duty Truck - LDT2 (onsite)	1	1	1	1	10	0.114	0.097	0.1157	0.0122	0.0127	0.767	0.005	0.089	0.005	647	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	1.43	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	
Med-Heavy Duty - T6 Utility (offsite)	1	1	1	20	2	1.629	0.014	0.1578	0.0084	0.009	0.053	0.010	0.162	0.001	1060	0.072	0.001	0.007	0.000	0.000	0.002	0.000	0.007	0.000	46.7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.047	
Heavy Duty Haul Truck - T7T (offsite)	1	1	3	150	1	5.987	0.135	0.1618	0.0754	0.079	0.508	0.014	0.236	0.014	1470	5.94	0.134	0.161	0.075	0.078	0.504	0.014	0.234	0.014	1458	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.73	
Heavy Duty Trucks - T7TC (offsite)	1	1	5	20	1	8.023	0.236	0.2640	0.1732	0.1810	0.995	0.015	0.245	0.016	1531	1.769	0.052	0.058	0.038	0.040	0.219	0.003	0.054	0.003	337	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.169	
						Total	7.81	0.192	0.251	0.115	0.120	0.853	0.019	0.299	0.020	1957	0.004	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.516		

- Notes:**
- Hours per day and durations provided by Project Applicant.
 - Round trips for LDA and LDT2 is estimated from Ventura Area (20-miles).
 - Estimated trucks to transport rental equipment from the Paso Robles area, 150 mile round trip.
 - Estimated trucks to transport demolition debris to Ventura Regional Sanitation Landfill, 54 mile round trip.
 - Estimated service truck from Ventura area, 20 mile round trip.
 - Estimated trucks to transport cement from Ventura area, 20 mile round trip.

CRC GRUBB LEASE INTAKE AND OUTFALL DECOMMISSIONING PROJECT
CRITERIA POLLUTANTS & GREENHOUSE GAS EMISSIONS
TABLE 4: ONSHORE PIPELINE RECOVERY AND REMOVAL

On-Site Sources

Source	BHP	Load Factor	Number	Hours/Day	Duration (days)	Emission Factors (g/bhp-hr)										Emissions (lb/day)										Total Emissions (tons)									
						NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂
Bulldozer	435	43	1	2	9	0.260	0.060	0.008	0.008	0.018	2.200	0.005	0.004	0.154	510	0.21	0.049	0.007	0.007	0.015	1.814	0.004	0.003	0.127	421	0.001	0.000	0.000	0.000	0.000	0.008	0.000	0.000	0.001	1.894
Excavator	310	38	3	10	9	0.260	0.060	0.008	0.008	0.018	2.200	0.005	0.004	0.152	504	2.03	0.467	0.062	0.062	0.140	17.140	0.039	0.033	1.184	3929	0.009	0.002	0.000	0.000	0.001	0.077	0.000	0.000	0.005	17.680
Winch	50	40	1	10	9	0.260	0.060	0.008	0.008	0.018	3.700	0.005	0.004	0.153	506	0.11	0.026	0.004	0.004	0.008	1.631	0.002	0.002	0.067	223	0.001	0.000	0.000	0.000	0.000	0.007	0.000	0.000	0.000	1.005
						Total										2.35	0.543	0.072	0.072	0.163	20.59	0.045	0.038	1.379	4573	0.011	0.002	0.000	0.000	0.001	0.093	0.000	0.000	0.006	20.58

On-Road Sources

Source	Peak Round Trips/Day	Average Round Trips/Day	Number of Vehicles	Length of Round Trip (miles)	Duration (days)	Emission Factors (g/mile)										Peak Day Emissions (lb/day)										Total Emissions (tons)									
						NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂
Passenger Vehicle - LDA	1	1	3	20	9	0.100	0.025	0.0471	0.0015	0.0000	0.822	0.003	0.009	0.006	322	0.013	0.003	0.006	0.000	0.000	0.109	0.000	0.001	0.001	42.6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.192
Light-Duty Truck - LDT2 (offsite)	1	1	4	20	9	0.075	0.011	0.1090	0.0057	0.0060	0.096	0.004	0.014	0.008	399	0.013	0.002	0.019	0.001	0.001	0.017	0.001	0.002	0.001	70.4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.317
Light-Duty Truck - LDT2 (onsite)	1	1	1	1	9	0.114	0.097	0.1157	0.0122	0.0127	0.767	0.005	0.089	0.005	647	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	1.43	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006
Med-Heavy Duty - T6 Utility (offsite)	1	1	1	20	2	1.629	0.014	0.1578	0.0084	0.009	0.053	0.010	0.162	0.001	1060	0.072	0.001	0.007	0.000	0.000	0.002	0.000	0.007	0.000	46.7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.047
Heavy Duty Haul Truck - T7T (offsite)	1	1	1	150	2	5.987	0.135	0.1618	0.0754	0.079	0.508	0.014	0.236	0.014	1470	1.98	0.045	0.054	0.025	0.026	0.168	0.005	0.078	0.005	486	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.49
Heavy Duty Haul Truck - T7T (offsite)	1	1	5	54	3	5.987	0.135	0.1618	0.0754	0.079	0.508	0.014	0.236	0.014	1470	3.56	0.080	0.096	0.045	0.047	0.302	0.008	0.140	0.009	875	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.31
						Total	5.64	0.131	0.182	0.071	0.074	0.600	0.015	0.229	0.016	1522	0.008	0.000	0.000	0.000	0.000	0.015	0.229	0.016	1522	0.008	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	2.360

- Notes:**
- Hours per day and durations provided by Project Applicant.
 - Round trips for LDA and LDT2 is estimated from Ventura Area (20-miles).
 - Estimated trucks to transport rental equipment from the Paso Robles area, 150 mile round trip.
 - Estimated trucks to transport demolition debris to Ventura Regional Sanitation Landfill, 54 mile round trip.
 - Estimated service truck from Ventura area, 20 mile round trip.

CRC GRUBB LEASE INTAKE AND OUTFALL DECOMMISSIONING PROJECT
CRITERIA POLLUTANTS & GREENHOUSE GAS EMISSIONS
TABLE 5: ONSHORE VAULT REMOVAL AND SEAWALL CONSTRUCTION

On-Site Sources

Source	BHP	Load Factor	Number	Hours/Day	Duration (days)	Emission Factors (g/bhp-hr)										Emissions (lb/day)										Total Emissions (tons)									
						NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂
Crane	220	29	3	10	10	0.260	0.060	0.008	0.008	0.018	2.200	0.005	0.004	0.153	507	1.10	0.253	0.034	0.034	0.076	9.283	0.021	0.018	0.646	2140	0.005	0.001	0.000	0.000	0.000	0.046	0.000	0.000	0.003	10.700
Excavator	310	38	1	10	10	0.260	0.060	0.008	0.008	0.018	2.200	0.005	0.004	0.152	504	0.68	0.156	0.021	0.021	0.047	5.713	0.013	0.011	0.395	1310	0.003	0.001	0.000	0.000	0.000	0.029	0.000	0.000	0.002	6.548
Total																1.77	0.409	0.055	0.055	0.122	15.00	0.034	0.029	1.040	3450	0.009	0.002	0.000	0.000	0.001	0.075	0.000	0.000	0.005	17.25

On-Road Sources

Source	Peak Round Trips/Day	Average Round Trips/Day	Number of Vehicles	Length of Round Trip (miles)	Duration (days)	Emission Factors (g/mile)										Peak Day Emissions (lb/day)										Total Emissions (tons)									
						NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂
Passenger Vehicle - LDA	1	1	3	20	10	0.100	0.025	0.0471	0.0015	0.0000	0.822	0.003	0.009	0.006	322	0.013	0.003	0.006	0.000	0.000	0.109	0.000	0.001	0.001	42.56	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.213
Light-Duty Truck - LDT2 (offsite)	1	1	4	20	10	0.075	0.011	0.1090	0.0057	0.0060	0.096	0.004	0.014	0.008	399	0.013	0.002	0.019	0.001	0.001	0.017	0.001	0.002	0.001	70.38	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.352
Light-Duty Truck - LDT2 (onsite)	1	1	1	1	10	0.114	0.097	0.1157	0.0122	0.0127	0.767	0.005	0.089	0.005	647	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	1.43	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007
Med-Heavy Duty - T6 Utility (offsite)	1	1	1	20	2	1.629	0.014	0.1578	0.0084	0.009	0.053	0.010	0.162	0.001	1060	0.072	0.001	0.007	0.000	0.000	0.002	0.000	0.007	0.000	46.74	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.047
Heavy Duty Haul Truck - T7T (offsite)	1	1	1	150	2	5.987	0.135	0.1618	0.0754	0.079	0.508	0.014	0.236	0.014	1470	1.98	0.045	0.054	0.025	0.026	0.168	0.005	0.078	0.005	486	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.49
Heavy Duty Haul Truck - T7T (offsite)	1	1	5	54	2	5.987	0.135	0.1618	0.0754	0.079	0.508	0.014	0.236	0.014	1470	3.56	0.080	0.096	0.045	0.047	0.302	0.008	0.140	0.009	875	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.87
Heavy Duty Trucks - T7TC (offsite)	1	1	5	5	1	8.023	0.236	0.2640	0.1732	0.1810	0.995	0.015	0.245	0.016	1531	0.442	0.013	0.015	0.010	0.010	0.055	0.001	0.014	0.001	84.4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.042
Heavy Duty Trucks - T7TC (offsite)	1	1	5	20	1	8.023	0.236	0.2640	0.1732	0.1810	0.995	0.015	0.245	0.016	1531	1.769	0.052	0.058	0.038	0.040	0.219	0.003	0.054	0.003	337	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.169
Total																7.85	0.196	0.255	0.119	0.124	0.874	0.019	0.297	0.020	1944	0.007	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	2.190

- Notes:**
- Hours per day and durations provided by Project Applicant.
 - Round trips for LDA and LDT2 is estimated from Ventura Area (20-miles).
 - Estimated trucks to transport rental equipment from the Paso Robles area, 150 mile round trip.
 - Estimated trucks to transport demolition debris to Ventura Regional Sanitation Landfill, 54 mile round trip.
 - Estimated vacuum truck from Ventura area, 20 mile round trip.
 - Estimated vacuum truck on offsite roads near site, 5 mile round trip.
 - Estimated service truck from Ventura area, 20 mile round trip.

CRC GRUBB LEASE INTAKE AND OUTFALL DECOMMISSIONING PROJECT
CRITERIA POLLUTANTS & GREENHOUSE GAS EMISSIONS
TABLE 6: OFFSHORE PIPELINE REMOVAL OPTION*

On-Site Sources

Source	BHP	Load Factor	Number	Hours/Day	Duration (days)	Emission Factors (g/bhp-hr)										Emissions (lb/day)										Total Emissions (tons)									
						NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂
Dive Support Vessel	1000	45	1	3	4	9.119	0.362	0.402	0.402	0.402	6.705	1.743	0.027	0.121	925	27.14	1.078	1.197	1.197	1.197	19.955	5.188	0.080	0.359	2754	0.054	0.002	0.002	0.002	0.002	0.040	0.010	0.000	0.001	5.508
Dive Air System	50	43	1	24	4	9.119	0.362	0.536	0.536	0.429	6.705	1.743	0.027	0.121	925	10.37	0.412	0.610	0.610	0.488	7.627	1.983	0.031	0.137	1053	0.021	0.001	0.001	0.001	0.001	0.015	0.004	0.000	0.000	2.105
						Total										37.51	1.49	1.81	1.81	1.69	27.58	7.17	0.11	0.50	3806	0.075	0.003	0.004	0.004	0.003	0.055	0.014	0.000	0.001	7.6

On-Road Sources

Source	Peak Round Trips/Day	Average Round Trips/Day	Number of Vehicles	Length of Round Trip (miles)	Duration (days)	Emission Factors (g/mile)										Peak Day Emissions (lb/day)										Total Emissions (tons)									
						NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂
Passenger Vehicle - LDA	1	1	3	10	4	0.100	0.025	0.0471	0.0015	0.000	0.822	0.003	0.009	0.006	322	0.007	0.002	0.003	0.000	0.000	0.054	0.000	0.001	0.000	21.3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.043
Light-Duty Truck - LDT2 (offsite)	1	1	3	10	4	0.075	0.011	0.1090	0.0057	0.006	0.096	0.004	0.014	0.008	399	0.005	0.001	0.007	0.000	0.000	0.006	0.000	0.001	0.001	26.4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.053
Heavy Duty Haul Truck - T7T (offsite)	1	1	2	43	1	5.987	0.135	0.1618	0.0754	0.079	0.508	0.014	0.236	0.014	1470	1.135	0.026	0.031	0.014	0.015	0.096	0.003	0.045	0.003	279	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.139
						Total										1.15	0.028	0.041	0.015	0.015	0.157	0.003	0.046	0.004	326	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.23

Notes:

- Hours per day and durations provided by Project Applicant.

- Round trips for LDA and LDT2 is estimated from Ventura Area (10-miles).

- Estimated trucks to transport demolition debris to Ventura Regional Sanitation Landfill, 43 mile round trip.

* - This option, if implemented, will take place within the Onshore Pipeline Recovery & Removal phase.

CRC GRUBB LEASE INTAKE AND OUTFALL DECOMMISSIONING PROJECT
CRITERIA POLLUTANTS & GREENHOUSE GAS EMISSIONS
TABLE 7: CONSTRUCTION ACTIVITY - FUGITIVE DUST EMISSIONS

Activity	Source	Source Units	Number of Days	Emission Factor	Emission Factor, Units	Peak Day Emissions (lbs/day)		Total Emissions (tons)	
						PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}
Onshore Casing & Pipeline Decommissioning - Pot Hole Excavation	0.02	acres/day	5	0.429	lbs PM10/day/acre	0.0086	0.0008	0.00002	0.00000
Onshore Vault Removal and Seawall Construction - Grading	0.06	acres/day	10	0.429	lbs PM10/day/acre	0.0257	0.0023	0.00013	0.00001
Onshore Vault Removal and Seawall Construction - Vault Demolition	230	tons/day	10	0.007917	lbs/ton	1.8209	0.0000	0.0091	0.0014
Onshore Vault Removal and Seawall Construction - Truck Loading	230	tons/day	10	1.72E-04	lbs/ton	0.0396	0.0060	0.0002	0.0000
Total						1.89	0.01	0.0095	0.0014

Fugitive Dust Emissions: Inputs for the Table

Emission factors based on following inputs

Mean number of rain days per year	0	worst case
Silt content of soil, fill storage pile, %	1.5	SCAQMD default value
Roadway inputs (paved and unpaved, as per URBEMIS)		
Roads mean vehicle weight, tons	20.61	based on project description, HHDT + LDT and vehicles weight (average of full and empty)
unpaved dirt road silt content, %	8.4	AP-42 construction sites
Truck Loading inputs		
k, particle size multiplier, default=0.35 fpr pm10	0.35	
U, mean wind speed, mph range 1.3-15	8.15	
M, moisture content, default=12%	12	
PM2.5/PM10 ratio truck loading	0.15	
Site grading emissions from CalEEMod for grading	0.091	ratio of PM2.5/PM10 CalEEMod
Demolition materials, tons/yds3	1.000	estimated for concrete debris
Fill materials, tons/yds3	1.000	estimated for soils
Mitigation: demolition area watering (fraction reduction)		
	0.61	0.61 for watering every 3 hours (SCAQMD)
Mitigation: grading/dist area watering (fraction reduction)		
	0.61	0.61 for watering every 3 hours (SCAQMD)
Mitigation: dumping soil moisture (fraction reduction)		
	0.69	0.69 for minimum 12% soil moisture (SCAQMD)
Mitigation: storage piles (fraction reduction)		
	0.90	0.90 for watering by hand and covering (SCAQMD)
Mitigation: roads (fraction reduction)		
	0.55	0.55 for watering 3X per day (SCAQMD), 0.80 for soil binders applied monthly (AP-42)

Notes:

PM2.5/PM10 ratio as per AP-42 k factor for PM10 and PM2.5
Demolition dust calculations as per EPA AP-42 11.19 and 13.2.4
Truck loading dumping cut/fill based on CalEEMod
Storage pile emissions based on SCAQMD Handbook (URBEMIS does not address emissions from storage piles)
Paved and unpaved road dust emissions based on AP-42 2006 (unpaved) Chapt 13. EPA AP-42 2006 is the same as URBEMS and CalEEMod
One month assumes 22 days of activity, as per URBEMIS

CRC GRUBB LEASE INTAKE AND OUTFALL DECOMMISSIONING PROJECT
CRITERIA POLLUTANTS & GREENHOUSE GAS EMISSIONS
TABLE 8: EMISSION FACTORS AND ASSUMPTIONS

Onsite				Emission Factors, g/bhp-hr										Emission Factors, lb/bhp-hr									
Source	Tier	Operational Horsepower	Load Factor	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂
Bulldozer	4	435	43	0.260	0.060	0.008	0.008	0.018	2.200	0.005	0.0042	0.154	510	0.0006	0.0001	0.0000	0.0000	0.0000	0.0049	0.00001	0.00001	0.00034	1.1251
Crane	4	220	29	0.260	0.060	0.008	0.008	0.018	2.200	0.005	0.004	0.153	507	0.0006	0.0001	0.0000	0.0000	0.0000	0.0049	0.00001	0.00001	0.00034	1.1181
Cement Pump	4	85	74	0.260	0.060	0.008	0.008	0.018	3.700	0.006	0.0042	0.055	568	0.0006	0.0001	0.0000	0.0000	0.0000	0.0082	0.00001	0.00001	0.00012	1.2529
Dive Support Vessel	2	1000	45	9.119	0.362	0.402	0.402	0.402	6.705	1.743	0.0268	0.121	925	0.0201	0.0008	0.0009	0.0009	0.0009	0.0148	0.00384	0.00006	0.00027	2.0399
Dive Air System	2	50	43	9.119	0.362	0.536	0.536	0.429	6.705	1.743	0.0268	0.121	925	0.0201	0.0008	0.0012	0.0012	0.0009	0.0148	0.00384	0.00006	0.00027	2.0399
Excavator	4	310	38	0.260	0.060	0.008	0.008	0.018	2.200	0.005	0.0042	0.152	504	0.0006	0.0001	0.0000	0.0000	0.0000	0.0049	0.00001	0.00001	0.00034	1.1118
Winch	4	50	40	0.260	0.060	0.008	0.008	0.018	3.700	0.005	0.0042	0.153	506	0.0006	0.0001	0.0000	0.0000	0.0000	0.0082	0.00001	0.00001	0.00034	1.1163

Offsite				Emission Factors, g/mile										Emission Factors, lb/mile									
Source	Tier	Region	Speed	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂	NO _x	ROG	PM ₁₀	PM _{2.5}	DPM	CO	SO ₂	N ₂ O	CH ₄	CO ₂
Passenger Vehicle - LDA	N/A	Ventura County	65	0.100	0.025	0.047	0.001	0.000	0.822	0.003	0.009	0.006	322	0.0002	0.0001	0.0001	0.0000	0.0000	0.0018	0.00001	0.00002	0.00001	0.7093
Light-Duty Truck - LDT2 (onsite)	N/A	Ventura County	15	0.114	0.097	0.116	0.012	0.013	0.767	0.005	0.089	0.005	647	0.0003	0.0002	0.0003	0.0000	0.0000	0.0017	0.00001	0.00020	0.00001	1.4270
Light-Duty Truck - LDT2 (offsite)	N/A	Ventura County	65	0.075	0.011	0.109	0.006	0.006	0.096	0.004	0.014	0.008	399	0.0002	0.0000	0.0002	0.0000	0.0000	0.0002	0.00001	0.00003	0.00002	0.8797
Med-Heavy Duty - T6 Utility (onsite)	N/A	Ventura County	15	4.348	0.162	0.162	0.012	0.013	0.572	0.016	0.272	0.005	1729	0.0096	0.0004	0.0004	0.0000	0.0000	0.0013	0.00004	0.00060	0.00001	3.8127
Med-Heavy Duty - T6 Utility (offsite)	N/A	Ventura County	65	1.629	0.014	0.158	0.008	0.009	0.053	0.010	0.162	0.001	1060	0.0036	0.0000	0.0003	0.0000	0.0000	0.0001	0.00002	0.00036	0.00000	2.3370
Heavy Duty Haul Truck - T7T (offsite)	N/A	Ventura County	55	5.987	0.135	0.162	0.075	0.079	0.508	0.014	0.236	0.014	1470	0.0132	0.0003	0.0004	0.0002	0.0002	0.0011	0.00003	0.00052	0.00003	3.2404
Heavy Duty Trucks - T7TC (offsite)	N/A	Ventura County	55	8.023	0.236	0.264	0.173	0.181	0.995	0.015	0.245	0.016	1531	0.0177	0.0005	0.0006	0.0004	0.0004	0.0022	0.00003	0.00054	0.00003	3.3744

Notes:

-- Equipment list and engine size provided by Project Applicant. HP were adjusted whenever data was available for the size of the equipment provided by the applicant.

-- Construction equipment criteria pollutant emission factors and load factors were obtained from CalEEMod, Appendix D 2016.

-- N2O and CH4 emission factors for construction equipment were obtained from CFR Part 98 Table C-2 and CalEEMod Appendix D- Default Data Tables, Table 3.4. Kg/mmbtu was converted to kg/bhp-hr using a diesel energy density of 7000 btu/hp-hr.

-- CO₂ emission factors for construction equipment were obtained from *CalEEMod Appendix D- Default Data Tables, Table 3.4*.

-- Emission factors and load factors for marine vessel engines were obtained from *ICF International report to the US EPA "Current Methodologies in Preparing Mobile Source Port-Related Emissions Inventories", April 2009*

-- DPM emission factors for construction equipment were obtained from *The Port of Long Beach, 2013 Emissions Inventory Appendix D- Table D-2*.

-- Emission factors for marine vessel engines were converted from g/kW-hr to g/bhp-hr by application of the following conversion 1 kw = 1.341 bhp.

Appendix D2 – Air Quality/GHG Best Management Practices
Grubb Lease Decommissioning Project

Dust Generation -

Dust generated by onshore decommissioning activities shall be kept to a minimum with a goal of retaining dust on-site to comply with VCAPCD Rule 50, 51 and 55 requirements. The following best management practices (BMPs) will be adhered to throughout the Project:

- The area disturbed by clearing, grading, earth moving, or excavation operations shall be minimized to prevent excessive amounts of dust
- Pre-grading/excavation activities shall include watering the area to be graded or excavated before commencement of grading or excavation operations. The application of water (preferably reclaimed, if available) should penetrate graded materials sufficiently to minimize fugitive dust during grading activities
- Fugitive dust produced during grading, excavation, and construction activities shall be controlled by the following activities:
 - All trucks shall be required to cover their loads as required by California Vehicle Code §23114
 - All graded and excavated material, exposed soil areas, and active portions of the Project site, including unpaved on-site roadways, shall be treated to prevent fugitive dust. Treatment shall include, but not necessarily be limited to, periodic watering, application of environmentally safe soil stabilization materials, or roll-compaction as appropriate. Watering shall be done as often as necessary and reclaimed water shall be used whenever possible
- Graded or excavated inactive areas of the Project site shall be monitored by CRC or a CRC designated contractor at least weekly for dust stabilization. Soil stabilization methods, such as water and roll-compaction, and environmentally safe dust control materials, shall be periodically applied to portions of the Project site that are inactive for over four days. If no further grading or excavation operations are planned for the area, the area should be seeded and watered until grass growth is evident, or periodically treated with environmentally safe dust suppressants, to prevent excessive fugitive dust.
- Signs shall be posted on-site limiting traffic to 15 miles per hour or less
- During periods of high winds (i.e., wind speed sufficient to cause fugitive dust to impact adjacent properties), all clearing, grading, earth moving, and excavation operations shall be curtailed to the degree necessary to prevent fugitive dust created by on-site activities from being a nuisance or hazard, either off-site or on-site. The site superintendent/supervisor shall use his/her discretion in determining when winds are excessive

- Adjacent streets and roads shall be swept at least once per day, preferably at the end of the day, if visible soil material is carried over to adjacent streets and roads

Low-Sulfur Fuels –

CRC shall require all equipment and other associated internal combustion engines to use fuel with less than 0.5 percent sulfur by weight when operating within the County, consistent with VCAPCD Rule 64 requirements. Additionally, CRC will require all vessels to use ultra-low sulfur fuel in marine vessels in accordance with the CARB Commercial Harbor Craft Regulation.

NOx/ROG Reduction –

CRC shall implement the following measures to mitigate ozone precursor emissions from motor vehicles:

- Minimize vehicle and equipment idling time
- Maintain vehicle and equipment engines in good condition and in proper tune as per manufacturers' specifications
- Use alternatively fueled vehicles and construction equipment, such as compressed natural gas (CNG), liquefied natural gas (LNG), or electric, if feasible

APPENDIX E

Biological Resources Information

Table E-1. Marine Special Status Species of the Project Region

Common Name ^{1,2} Scientific Name	Status	Habitat	Potential to Occur in Marine Study Area
Invertebrates			
Black abalone <i>Haliotis cracherodii</i>	FE	Coastal and offshore island intertidal habitats on exposed rocky shores to about 18 feet deep where bedrock provides deep, protective crevices for shelter.	Not expected to occur – Intertidal habitat within MSA lacks kelp food resources and high relief rock reef refuge habitat. Local populations of black abalone are extremely rare and have been limited to San Diego and Channel Islands.
Green abalone <i>Haliotis fulgens</i>	FSC	Coastal and offshore island intertidal habitats on exposed rocky shores to at least 30 feet deep where bedrock provides deep, protective crevices for shelter.	Not expected to occur – Intertidal and subtidal habitat within MSA lacks kelp food resources and high relief rock reef refuge habitat.
Pink abalone <i>Haliotis corrugate</i>	FSC	Coastal and offshore island subtidal habitats from 20 to 118 feet deep on submerged rock reefs where bedrock provides deep, protective crevices for shelter.	Not expected to occur – Subtidal habitat within MSA is outside of species' depth range and lacks kelp food resources and high relief rock reef refuge habitat.
Pinto abalone <i>Haliotis kamtschatkana</i>	FSC	Coastal and offshore island kelp beds found on outer exposed coasts in water depths from 30 to 330 feet deep.	Not expected to occur – Subtidal habitat with MSA is outside of species' depth range and lacks kelp food resources and high relief rock reef refuge habitat.
White abalone <i>Haliotis sorenseni</i>	FE	Coastal and offshore island subtidal habitats from 50 to 180 feet deep where bedrock provides deep, protective crevices for shelter.	Not expected to occur - Subtidal habitat within MSA is outside of species' depth range and lacks kelp food resources and high relief rock reef refuge habitat.
Fish			
Bocaccio <i>Sebastes paucispinis</i>	FSC	Range from Punta Blanca, Baja California to Gulf of Alaska in shallow rocky reefs (juveniles) and migrate to water depths between 90 and 1,300 feet.	Moderate – Potential for juveniles to occur in rock reefs within MSA but unlikely to occur in Project disturbance area which does not support kelp beds.
Sea Turtles			
Pacific olive Ridley sea turtle <i>Lepidochelys olivacea</i>	FT	Mainly pelagic in tropical/temperate regions of the Pacific, South Atlantic, and Indian Oceans but has been known to inhabit bays and estuaries.	Low – In the eastern Pacific, their range extends from southern California to northern Chile.

Common Name ^{1,2} Scientific Name	Status	Habitat	Potential to Occur in Marine Study Area
Green sea turtle <i>Chelonia mydas</i>	FT	Distributed globally; oceanic beaches (for nesting), convergence zones in the open ocean and benthic feeding grounds in coastal areas south of San Diego.	Low- In eastern Pacific, sightings from Baja California to southern Alaska but most commonly south of San Diego.
Loggerhead sea turtle <i>Caretta caretta</i>	FT	Temperate and tropical regions of Pacific, Atlantic, and Indian Oceans: terrestrial zone, the oceanic zone, and the neritic or nearshore coastal areas.	Low – Most occurrences in California waters are juveniles concentrating in areas where there are high densities of pelagic red crab (<i>Pleuroncodes planipes</i>).
Leatherback sea turtle <i>Dermochelys coriacea</i>	FE	Distributed globally; seen off west coast in deep, pelagic waters and occasionally near Monterey Bay	Low – Rarely observed offshore of Ventura County and more likely to occur July through August.
Marine Mammals			
Mysticeti			
Blue whale* <i>Balaenoptera musculus</i>	FE	Worldwide, often near the edges of physical features where krill tend to concentrate.	Not Expected - Relatively common farther offshore (56–230 miles from shore) and less common in shallow waters.
California gray whale <i>Eschrichtius robustus</i>	P	Predominantly in nearshore coastal waters of the north Pacific from Gulf of Alaska to Baja Peninsula; can be as close as a few hundred yards offshore, but more commonly found 3 to 12 miles offshore.	Moderate – Migration occurs in the Project region from February through May and could be observed during vessel transit to the Project area, but migratory path extends farther offshore than MSA.
Humpback whale <i>Megaptera novaeangliae</i>	FE	All major oceans; central California population migrates from winter calving and mating areas off Mexico to summer and fall feeding areas off coastal California. Humpback whales occur in California from late April to early December.	Moderate – Migration and feeding areas occur in the Project region and could be observed during vessel transit to Project area, but preferred habitat occurs farther offshore than MSA.
Fin whale* <i>Balaenoptera physalus</i>	FE	Deep, offshore waters of all major oceans; less common in the tropics.	Not Expected - Relatively common in California waters March through October but prefer deep water farther offshore.
Minke whale <i>Balaenopter acutorostrata</i>	P	Common in the Bearing and Chukchi Seas, but not abundant in other parts of eastern Pacific. Are considered year-round residents in coastal waters of California.	Moderate – Could be present in the Project region and may be observed during vessel transit to the Project area, but preferred habitat occurs farther offshore than MSA.

Common Name ^{1,2} Scientific Name	Status	Habitat	Potential to Occur in Marine Study Area
Northern right whale* <i>Eubalaena glacialis</i>	FE	North Pacific Ocean; seasonally migratory; colder waters for feeding, migrating to warmer waters for breeding and calving; may move far out to sea	Not expected - Unlikely to be present in the MSA because they are very rare and prefer deeper offshore waters.
Sei whale* <i>Balaenoptera borealis</i>	P	Worldwide distribution in subtropical, temperate, and subpolar waters; usually observed in deeper waters of oceanic areas far from coastline.	Not expected – No recorded occurrences in the Project vicinity; primarily occupy the open ocean and are uncommon in California waters.
Odontoceti			
Baird's beaked whale* <i>Berardius bairdii</i>	P	Deep offshore waters in the north Pacific; common along steep underwater geologic structures (e.g., submarine canyons, seamounts, and continental slopes).	Not expected – No recorded occurrences in the MSA or Project vicinity; primarily occupy the open ocean.
Bottlenose dolphin <i>Tursiops truncatus</i>	P	Worldwide in temperate and tropical waters; both coastal and offshore populations; most common dolphins in the Southern California Bight.	High – Commonly occur in MSA.
Common dolphins: Long-beaked <i>Delphinus capensis</i>	P	Shallow, warmer temperate waters relatively close to shore; most abundant cetacean from Baja California northward to central California.	High – Commonly occur in MSA.
Common dolphins: Short-beaked <i>Delphinus delphis</i>	P	More pelagic than the long-beaked common dolphin, can be found up to 300 nm from shore; majority of populations are observed off California coast, especially in warm water months.	High - Commonly occur in MSA.
Cuvier's beaked whale* <i>Ziphius cavirostris</i>	P	Temperate, tropical, and subtropical waters; associated with deep pelagic waters (usually deeper than 3,280 feet) of the continental shelf and slope, and near underwater geologic features	Not Expected – Generally occur in deeper waters offshore MSA.
Dall's porpoise <i>Phocoenoides dalli</i>	P	Throughout north Pacific, mainly in pelagic waters deeper than 590 feet, but can be found both offshore and nearshore.	Not Expected – Generally occur in deeper waters offshore the MSA.
Dwarf sperm whale* <i>Kogia sima</i>	P	Continental slope and open ocean; prefer warm tropical, subtropical, and temperate waters worldwide.	Not Expected – Generally occur in deeper waters offshore the MSA.

Common Name ^{1,2} Scientific Name	Status	Habitat	Potential to Occur in Marine Study Area
Mesoplodont beaked whales* <i>Mesoplodon sp.</i>	P	Occur over continental shelf and into open ocean warm waters of the Pacific and Indian Oceans.	Not Expected – Generally occur in deeper waters offshore the MSA.
Northern right whale dolphin* <i>Lissodelphis borealis</i>	P	Endemic to deep, cold temperate waters in north Pacific; occur over continental shelf and slope where waters are less than 66°F (18°C).	Not Expected – Generally occur in colder and deeper waters offshore the MSA.
Pacific white-sided dolphin* <i>Lagenorhynchus obliquidens</i>	P	Temperate waters of north Pacific from continental shelf to deep ocean.	Not Expected – Generally occur in deeper waters offshore the MSA.
Pygmy sperm whale* <i>Kogia breviceps</i>	P	Continental slope and open ocean in tropical, subtropical, and temperate Pacific waters, mostly offshore of Peru; strandings have been documented off Mexico and once each in New Zealand and Monterey Bay.	Not Expected – Generally occur in deeper waters offshore the MSA.
Risso's dolphin* <i>Grampus griseus</i>	P	All major oceans, generally in waters deeper than 3,280 feet and seaward of the continental shelf and slopes.	Not Expected – Generally occur in deeper waters offshore the MSA.
Short-finned pilot whale* <i>Globicephala macrohynchus</i>	P	Warmer tropical and temperate waters, commonly found along the coast close to continental shelf; forage in areas with high densities of squid.	Not Expected - Generally found in deeper and warmer waters than those in the MSA.
Sperm whale* <i>Physeter macrocephalus</i>	FE	Open ocean far from land and uncommon in waters less than 984 feet deep.	Not Expected – Generally occur in deeper waters offshore the MSA.
Striped dolphin <i>Stenella coeruleoalba</i>	P	Continental shelf to open ocean waters worldwide, often in areas of upwelling and around convergence zones.	Not Expected – Occur in warmer and deeper waters than those in MSA.
Pinnipeds			
California sea lion <i>Zalophus californianus</i>	P	Eastern north Pacific in coastal waters; commonly observed throughout the California coast.	High – Observed occasionally in MSA.
Guadalupe fur seal <i>Arctocephalus townsendi</i>	FT	Tropical waters of southern California and Mexico; breeds in rocky coastal habitats and caves mainly along the eastern coast of Guadalupe Island, approximately 124 miles west of Baja California; small population on San Miguel Island in the Channel Islands.	Not Expected – No recorded occurrences in Project region.

Common Name ^{1,2} Scientific Name	Status	Habitat	Potential to Occur in Marine Study Area
Northern elephant seal <i>Mirounga angustirostris</i>	P	Alaska to Mexico; sighted regularly over shelf, shelf-break, and slope habitats; also present in deep ocean habitats seaward of the 6,561-foot isobaths.	Low – Male elephant seals may use coastal sandy bottom habitats for foraging, but they are rarely observed in Project vicinity.
Northern fur seal <i>Callorhinus ursinus</i>	P	Forage in open ocean of north Pacific with rocky beaches for reproduction; usually only ashore in California when debilitated - however, a few individuals observed on Año Nuevo Island.	Not Expected – No recorded occurrences in Project vicinity and rare in offshore southern California.
Pacific harbor seal <i>Phoca vitulina richardsi</i>	P	From British Columbia to Baja California, most commonly observed pinniped along California coastline; favors nearshore coastal waters for foraging and beaches, offshore rocks on sand and mudflats in estuaries and bays for resting.	High—Common along the California coast.

Table E-2. Marine Wildlife Species and Periods of Occurrence

Family Common Name		Month of Occurrence ¹											
		J	F	M	A	M	J	J	A	S	O	N	D
SEA TURTLES													
Cryptodira	Green turtle ²												
	Leatherback turtle ²												
	Loggerhead turtle ²												
	Olive ridley turtle ²												
MAMMALS													
Mysticeti	Blue whale												
	California gray whale												
	Fin whale												
	Humpback whale												
	Minke whale												
	Northern right whale												
	Sei whale												
Odontoceti	Baird's beaked whale												
	Common bottlenose dolphin												
	Cuvier's beaked whale												
	Dall's porpoise												
	Dwarf Sperm Whale												
	Long-beaked common dolphin												
	Mesoplodont beaked whales												
	Northern right whale dolphin												
	Pacific white-sided dolphin												
	Pygmy sperm whale												
	Risso's dolphin												
	Short-beaked common dolphin												
	Short-finned pilot whale												
	Sperm whale												
	Striped dolphin												
Pinnipedia	California sea lion												
	Guadalupe fur seal ³												
	Northern elephant seal ⁴												
	Northern fur seal ⁵												
	Pacific harbor seal												

Code : Expected to occur in Project area ; Relatively uniform distribution ; Not expected to occur ;
More likely to occur due to seasonal distribution 

Source: Allen et al. 2011; National Centers for Coastal Ocean Science 2007; NOAA, 2019.

Notes:

- ¹ Where seasonal differences occur, individuals may also be found in off-season. Also, depending on the species, the numbers of abundant animals present in their off-season may be greater than the numbers of less common animals in their on-season.
- ² Rarely encountered but may be present year-round. Greatest abundance: July through September.
- ³ Breeding occurs almost entirely on Guadalupe Island, Mexico with a small number reported on northern Channel Islands, California.
- ⁴ Common near land during winter breeding season and spring molting season.
- ⁵ Only a small percent occurs over continental shelf (except near San Miguel rookery, May-November).

**Table E-3. Terrestrial Special-Status Plant and Wildlife
Species of the Project Region**

Common Name Scientific Name	Status	General Habitat Description <i>As described by CDFW, 2019</i>	Nearest Documented Occurrence	Habitat Present	Observed in Biological Study Area	Potential for Occurrence
Plants						
Aphanisma <i>Aphanisma blitoides</i>	1B.2	Coastal bluff scrub, coastal dunes, coastal scrub	2.2 miles southeast of the Project area, 1.5 miles west of Ventura river	X		X
Baja navarretia <i>Navarretia peninsularis</i>	1B.2	Lower montane coniferous forest, chaparral, pinyon and juniper woodland.	9.7 miles north of the Project area in Willis Canyon, Ojai Valley.			
California Orcutt grass <i>Orcuttia californica</i>	FE, 1B.1	Vernal pools, freshwater wetlands	Greater than 10 miles east of the Project area at the Tierra Rejada Vernal Pool Preserve.			
California satintail <i>Imperata brevifolia</i>	2B.1	Coastal scrub, chaparral, riparian scrub, Mojavean desert scrub.	Greater than 10 miles northeast of the Project area near Matilija dam.			
Chaparral nolina <i>Nolina cismontana</i>	1B.2	Chaparral, coastal scrub	6.0 miles north of the Project area near Coyote Creek in the vicinity of Lake Casitas.			
Coulter's goldfields <i>Lasthenia glabrata ssp. Coulteri</i>	1B.1	Coastal salt marshes, playas, vernal pools.	Near Ventura state beaches and coastal lagoon approximately 4.4 miles from Project site.			
Coulter's saltbrush <i>Atriplex coulteri</i>	1B.2	Coastal bluff scrub, coastal dunes, coastal scrub, valley and foothill grassland.	Coastal bluff along Highway 101, 2.1 miles southeast of the Project site.	X		X
Davidson's saltscale <i>Atriplex serenana var. davidsonii</i>	1B.2	Coastal bluff scrub, coastal scrub.	Cliff Drive and parking lot at Hendry's Beach, 12.4 miles southeast of the Project area.	X		
Gambel's watercress <i>Nasturtium gambellii</i>	FE, 1B.2	Wetlands, marshes, swamps.	Vandenberg Air Force Base greater than 10 miles northwest of the Project area.			
Late-flowered mariposa-lily <i>Calochortus fimbriatus</i>	1B.3	Chaparral, cismontane woodland, riparian woodland.	Red Mountain, east end of Rincon Hills, approximately 2.0 miles northeast of the Project area.			

Common Name Scientific Name	Status	General Habitat Description <i>As described by CDFW, 2019</i>	Nearest Documented Occurrence	Habitat Present	Observed in Biological Study Area	Potential for Occurrence
Marsh sandwort <i>Arenaria paludicola</i>	FE, 1B.2	Freshwater marsh	Oso Flaco Lake, San Luis Obispo County, greater than 10 miles northwest of the Project area.			
Mesa horkelia <i>Horkelia cuneate</i> var. <i>puberula</i>	1B.1	Chaparral, cismontane woodland, coastal scrub.	Casitas Pass, 4.8 miles northwest of the Project area.			
Mexican malacothrix <i>Malacothrix similis</i>	2A	Coastal dunes	Hueneme Beach, greater than 10 miles northwest of the Project area.			
Miles' milk vetch <i>Astragalus didymocarpus</i> var. <i>milesianus</i>	1B.2	Coastal scrub	Casitas Road, Ventura, approximately 3.4 miles northeast of the Project area.	X		X
Nuttall's scrub oak <i>Quercus dumosa</i>	1B.1	Closed-cone coniferous forest, chaparral, coastal scrub	Poverty Canyon, 4.8 miles north of the Project area.			
Ojai fritillary <i>Fritillaria ojaiensis</i>	1B.2	Broadleaf upland forest, chaparral, lower montane coniferous forest.	Catharina Creek in the Santa Ynez mountains, 7.6 miles north of the Project area.			
Ojai navarretia <i>Navarretia ojaiensis</i>	1B.1	Chaparral, coastal scrub, valley and foothill grassland.	Coyote Creek below Lake Casitas Dam, 4.3 miles northeast of the Project area.			
Orcutt's pincushion <i>Chaenactis glabriuscula</i> var. <i>orcuttiana</i>	1B.1	Coastal bluff scrub, coastal dunes.	West bank of Ballona Lagoon, Los Angeles, greater than 10 miles southeast of the Project area.	X		
Pale-yellow layia <i>Layia heterotricha</i>	1B.1	Cismontane woodland, coastal scrub, pinyon and juniper woodland	Stewart Canyon, Los Padres National Forest, greater than 10 miles northeast of Project area.			
Plummer's mariposa lily <i>Calochortus plummerae</i>	4.2	Coastal scrub, chaparral, valley and foothill grassland.	Near Gridley Road and Hermitage Road, Ojai, greater than 10 miles north of the Project area.			
Robinson's peppergrass <i>Lepidium virginicum</i> var. <i>robinsonii</i>	4.3	Chaparral, coastal scrub.	Ilvento Preserve, Ojai Valley, greater than 10 miles northeast of the Project area.			

Common Name Scientific Name	Status	General Habitat Description <i>As described by CDFW, 2019</i>	Nearest Documented Occurrence	Habitat Present	Observed in Biological Study Area	Potential for Occurrence
Salt marsh bird's-beak <i>Cordylanthus maritimus</i> <i>ssp. maritimus</i>	FE, 1B.2	Salt-marsh, dunes, coastal	Reintroduced occurrence in Carpinteria Marsh approximately 10 miles northwest of the Project area. One extirpated occurrence near Santa Clara river, less than five miles from Project area.	X		
Salt spring checkerbloom <i>Sidalcea neomexicana</i>	2B.2	Playas, chaparral, coastal scrub, lower montane coniferous forest.	Along Southern Pacific Railroad in Oak View, 5.5 miles northeast of the Project area.			
Sanford's arrowhead <i>Sagittaria sanfordii</i>	1B.2	Marshes and wetlands	Extirpated occurrence near Mirror Lake, Ojai Valley. Nearest occurrence in Fresno, greater than 10 miles northeast of Project area.			
Southern tarplant <i>Centromadia parryi</i> ssp. <i>Australis</i>	1B.1	Marshes and swamp margins, valley and foothill grassland, vernal pools.	Pitas Point, alongside of rail lines east of mouth of Padre John Canyon approximately 1 mile west of Project area; possibly extirpated.			
South coast saltscale <i>Atriplex pacifica</i>	1B.2	Coastal scrub, coastal bluff scrub, playas, coastal dunes.	Along Southern Pacific Railroad right-of-way at Highway 101 overpass, approximately 2.3 miles southeast of Project area.	X		X
Southern jewelflower <i>Streptanthus</i> <i>campestris</i>	1B.3	Chaparral, lower montane coniferous forest, pinyon and juniper.	Ocean View trail, Santa Ynez Mountains, greater than 10 miles northeast of the of the Project area.			
Spreading navarretia <i>Navarretia fossalis</i>	FT, 1B.1	Freshwater marsh, vernal pools	Plum Canyon road, north of Solemint, greater than 10 miles east of the Project area.			
Umbrella larkspur <i>Delphinium</i> <i>umbraculorum</i>	1B.3	Cismontane woodland, chaparral.	Murietta Canyon, greater than 10 miles northwest of the Project area.			
Ventura Marsh milk- vetch <i>Astragalus</i> <i>pynchnostachyus</i> var. <i>lanosissimus</i>	FE, SE, 1B.1	Marshes and swamps, coastal dunes, coastal scrub.	In vicinity of Pierpont Beach and San Buenaventura State Beach approximately 4 miles southeast of Project site; possibly extirpated.			

Common Name Scientific Name	Status	General Habitat Description <i>As described by CDFW, 2019</i>	Nearest Documented Occurrence	Habitat Present	Observed in Biological Study Area	Potential for Occurrence
White rabbit-tobacco <i>Pseudognaphalium leucocephalum</i>	2B.2	Riparian woodland, cismontane woodland, coastal scrub, chaparral.	Santa Clara River east of the 101-freeway bridge, approximately 11 miles southeast of the Project area.			
White-veined monardella <i>Monardella hypoleuca ssp. hypoleuca</i>	1B.3	Chaparral, cismontane woodland.	Casitas Pass Road south of Casitas Springs, approximately 4.0 miles northeast of the Project area.			
Woolly Seablite <i>Suaeda taxifolia</i>	4.2	Coastal bluff scrub, coastal dunes, marshes and swamps.	Observed approximately 300 feet from onshore vault during March 2019 surveys.	X	X	X
Fish						
Santa Ana sucker <i>Catostomus santaanae</i>	FT	Endemic to Los Angeles Basin south coastal streams. Prefer sand- rubble-boulder bottoms, cool, clear water with algae.	Santa Clara River, west of U.S. 101 freeway downstream to the Nature Conservancy at Strathmore.			
Steelhead Southern California DPS <i>Oncorhynchus mykiss irideus</i>	FE, CSC	Coastal streams	Lower Ventura River from river mouth to Coyote Creek, approximately 4.5 miles southeast of Project area.			
Tidewater goby <i>Eucyclogobius newberryi</i>	FE, CSC	Brackish water habitats.	Ventura River from mouth to about 2 miles upstream, 4.4 miles southeast of Project area.			
Green sturgeon <i>Acipenser medirostris</i>	FT	Marine and estuarine waters from the Bering Sea, Alaska to El Socorro, Baja Mexico.	Abundance decreases south of Point Conception. Known to spawn in the Sacramento River, Klamath River, and Humboldt Bay.			
Unarmored threespine stickleback <i>Gasterosteus aculeatus williamsoni</i>	FE, SE, FP	Weedy pools, backwaters and among emergent vegetation at stream edge in small Southern California streams.	Santa Clara River west of Highway 118 to the mouth of San Francisquito Creek, greater than 10 miles southeast of Project area.			

Common Name Scientific Name	Status	General Habitat Description <i>As described by CDFW, 2019</i>	Nearest Documented Occurrence	Habitat Present	Observed in Biological Study Area	Potential for Occurrence
Amphibians						
California red-legged frog <i>Rana draytonii</i>	FT, CSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation.	Ventura River northwest of Highway 33 at Ranch Road, approximately 5 miles northeast of Project site.			
Foothill yellow-legged frog <i>Rana boylei</i>	Candidate ST, CSC	Partly-shaded, shallow streams and riffles with rocky substrate in a variety of habitats.	Vicinity of Canada de Aliso at Canada Larga, approximately 5.5 miles northeast of Project site.			
Reptiles						
Coast (Blainsville's) horned lizard <i>Phrynosoma blainvillii</i>	CSC	Frequents a wide variety of habitats in lowlands along sandy washes with scattered low bushes.	South of the Santa Clara River near the intersection of Leland street and Ventura Road, approximately 10 miles from the Project area.	X		X
Coast patch-nosed snake <i>Salvadora hexalepis virgultea</i>	CSC	Bushy or shrubby vegetation with small mammal burrows for refuge in coastal Southern California.	Matilija Lake northwest of Highway 33 at south Matilija Hot Springs Road, approximately 12 miles north of the Project area.			
Coast Range newt <i>Taricha torosa</i>	CSC	Coastal drainages. Breeds in ponds, reservoirs and slow- moving streams.	Coyote Creek, upstream from East Fork and southeast of Chismahoo Mountain, approximately 8 miles north of the Project area.			
Coastal whiptail <i>Aspidoscelis tigris stejnegeri</i>	CSC	Deserts and semi-arid areas with sparse vegetation and open areas.	Sexton Canyon near junction of Sexton Canyon Road and Foothill Road, approximately 8 miles east of the Project area.	X		X
Southern California legless lizard <i>Anniella stebbinsi</i>	CSC	Sandy soils, sparse vegetation, prefers soils with high moisture content.	Pitas Point, between Highway 1 and U.S. Highway 101 near Padre Juan Canyon, 1.3 miles west of Project area.	X		X
Two-striped gartersnake <i>Thamnophis hammondi</i>	CSC	Highly aquatic, found in or near permanent fresh water, often along streams with rocky beds and riparian growth.	Less than one mile west of Ventura River along Mill Canyon Road, 3.6 miles east of the Project area.			

Common Name Scientific Name	Status	General Habitat Description <i>As described by CDFW, 2019</i>	Nearest Documented Occurrence	Habitat Present	Observed in Biological Study Area	Potential for Occurrence
Western pond turtle <i>Emys marmorata</i>	CSC	Ponds, marshes, rivers, streams, and irrigation ditches, usually with aquatic vegetation.	Ventura River, approximately 4.5 miles southeast of the Project site.			
Birds						
Bank swallow <i>Riparia riparia</i>	ST	Colonial nester in riparian and lowland habitats with vertical banks/cliffs with sandy soils near streams, rivers, lakes and ocean.	Believed to be extirpated as a breeder in Southern California. Nearest documented occurrence is in Monterey County.			
Belding's savannah sparrow <i>Passerculus sandwichensis beldingi</i>	SE	Coastal salt marshes, nesting on the margins of tidal flats.	North edge of McGrath State Beach on south side of Santa Clara River mouth, approximately 8.6 miles southeast of the Project area.			
Burrowing owl <i>Athene cunicularia</i>	CSC, M	Open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation.	East side of the Ventura River 0.2 miles northwest of Highway 33, approximately 4.1 miles southeast of the Project site.			
California black rail <i>Laterallus jamaicensis coturniculus</i>	ST	Freshwater marshes, wet meadows and shallow margins of saltwater marshes.	Santa Barbara east of U.S. 101 freeway at Carrillo street, greater than 10 miles northwest of the Project area.			
California condor <i>Gymnogyps californianus</i>	FE, SE	Nests in cliff caves in the mountains. Roost on large trees or snags, or on isolated rocky outcroppings. Forage in open grasslands and oak savanna.	Sighting reported at Canada Larga Road in February 2018, approximately five miles northeast of the Project area (eBird, 2019).			
California least tern <i>Sternula antillarum browni</i>	FE, SE, FP, M	Colonial breeder on bare or sparsely vegetated, sandy flat substrates. Forages in ocean and bay surface waters for small fish.	Breeding colony documented 8.65 miles southeast near the Santa Clara River mouth at McGrath Beach. Potential for terns to forage in Project area waters.	X		X
Least bell's vireo <i>Vireo belli pusillus</i>	FE, SE, M	Low riparian vegetation in vicinity of water or in dry river bottoms.	Lower Ventura River just west of western end of Ramona Street, approximately 4.1 miles southeast of Project site.			

Common Name Scientific Name	Status	General Habitat Description <i>As described by CDFW, 2019</i>	Nearest Documented Occurrence	Habitat Present	Observed in Biological Study Area	Potential for Occurrence
Light-footed clapper rail <i>Rallus longirostris levipes</i>	FE, SE, M	Southern California coastal-wetlands, lagoons and salt marshes	Mugu Lagoon, greater than 10 miles southeast of the Project area (USFWS, 2005).			
Marbled murrelet <i>Brachyramphus marmoratus</i>	FT, SE	Pelagic, but nest in old-growth forests characterized by coastal redwood and Douglas fir trees.	No nesting population in Southern California. Nearest documented occurrence in Santa Cruz county.			
Southwestern willow flycatcher <i>Empidonax traillii extimus</i>	FE, SE	Dense riparian vegetation and shrub communities near surface water.	Santa Clara River east of Clow Road, greater than 10 miles east of the Project area.			
Tricolored blackbird <i>Agelaius tricolor</i>	Candidate SE CSC, M	Open water, protected nesting substrate, and forage in areas with insect prey.	Along Ventura River, about 0.5 miles southwest of Highway 33 and Stanley Avenue, approximately 3.5 miles southeast of the Project site.			
Western snowy plover <i>Charadrius alexandrinus nivosus</i>	FT, CSC, M	Sandy beaches, salt pond levees and shores of large alkali lakes.	All occurrences in Project region are reported as extirpated.			
Western yellow-billed cuckoo <i>Coccyzus americanus occidentalis</i>	FT, SE	Riparian forest nester along flood-bottoms of large river systems.	Santa Clara River northwest of south Mountain Road, greater than 10 miles east of the Project area.			
Yellow warbler <i>Setophaga petechia</i>	CSC, BCC, M	Riparian plant associations in proximity to water. Frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants.	Ventura River, 0.2 miles southeast of Highway 33 at Casitas Vista road, 4.2 miles northeast of the Project site.			
Mammals						
American badger <i>Taxidea taxus</i>	CSC	Dry open stages of shrub, forest, and herbaceous habitats with friable soils.	Foster park and Ventura River along south side of Highway 33, approximately 4.2 miles from Project area.			
Dulzura pocket mouse <i>Chaetodipus californicus femoralis</i>	CSC	Coastal scrub, chaparral and grasslands.	Near Weldon, approximately 3.5 miles from Project area.			

Common Name Scientific Name	Status	General Habitat Description <i>As described by CDFW, 2019</i>	Nearest Documented Occurrence	Habitat Present	Observed in Biological Study Area	Potential for Occurrence
Mexican long-tongued bat <i>Choeronycteris mexicana</i>	CSC	Roosts in well-lit caves and around buildings near Pinon Juniper woodlands and riparian scrub.	Ventura near river mouth, approximately 4.4 miles southeast of Project site.			
Pallid bat (roost sites) <i>Antrozous pallidus</i>	CSC	Deserts, grasslands, shrublands, woodlands, and forests, open dry habitats with rocky outcrops for roosting.	In the city of Ventura, approximately 5 miles southeast of the Project site.			
San Diego desert woodrat <i>Neotoma lepida intermedia</i>	CSC	Coastal scrub of Southern California, particularly abundant in rock outcrops, cliffs, and slopes.	Captured on Pitas Point, 1.3 miles west of Project area.			
Western mastiff bat <i>Eumops perotis californicus</i>	CSC	Open, semi-arid to arid habitats including conifer and deciduous woodlands, coastal scrub, grasslands, and chaparral.	Near Weldon, approximately 3.5 miles from the Project area.			

Source: California Department of Fish and Wildlife, 2019.

Plant Status Ranking:

Rank 1B	Plants Rare, Threatened, or Endangered in California and Elsewhere (California Native Plant Society)
0.1	Seriously Endangered in California
0.2	Fairly Endangered in California
0.3	Not very Endangered in California
Rank 2A	Plants Presumed Extirpated in California, but More Common Elsewhere
Rank 2B	Plants Rare, Rare, Threatened, or Endangered in California, but More Common Elsewhere (California Native Plant Society)
Rank 3	Plants for Which we Need More Information – Review List (CNPS)
Rank 4	Plants of Limited Distribution – Watch List
0.1	Seriously Threatened in California
0.2	Moderately Threatened in California
0.3	Not very Threatened in California

Animal Status Codes:

BCC	Birds of Conservation Concern (U.S. Fish and Wildlife Service)
FE	Federally Endangered (U.S. Fish and Wildlife Service / National Marine Fisheries Service)
SE	State Endangered (California Department of Fish and Wildlife)
FT	Federally Threatened (U.S. Fish and Wildlife Service / National Marine Fisheries Service)
ST	State Threatened (California Department of Fish and Wildlife)
CSC	California Species of Special Concern (California Department of Fish and Wildlife)
FP	Fully Protected (California Department of Fish and Wildlife)
M	Migratory Bird Treaty Act (USFWS)

November 13, 2018
Project No. 1802-2271

California Resources Petroleum Corporation
2575 Vista del Mar Drive, Suite 101
Ventura, California 93001

Attention: Mr. Bruce Carter

Subject: Pre-Construction Marine Biological Dive Survey Letter-Report

Dear Mr. Carter:

This marine biological dive survey report (Report) summarizes the results of pre-construction surveys conducted for California Resources Petroleum Corporation (CRC) at the Grubb Lease Intake/Outfall Structure located on California State Lands Commission (CSLC) Lease PRC 3913.1, offshore of Ventura, California (Project site). The Report describes the survey methods completed by Padre Associates, Inc. (Padre) and associated observations completed during the survey. The purpose of the marine biological survey was to document the type and location of marine plants, macro-epifauna, and fish associated with the habitats within the project areas. The resulting data will be used in the final Project planning effort, and as a baseline for comparison with post-Project marine biological conditions.

The survey consisted of a team of diver-biologists who recorded the physical condition of the offshore pipelines and completed an assessment of biological habitat types and epibiota along the existing intake and wastewater outfall pipelines. The marine portion of the intake and outfall facilities consists of two 12-inch diameter steel intake pipelines measuring a total of approximately 680 feet and 630 feet in length and an outfall pipeline measuring approximately 500 feet in overall length. All lengths are measured from the seaward side of the onshore concrete vault to the offshore terminations of each pipeline. On October 30, 2018 the intake and outfall pipelines were not visible exiting the concrete vault and were not exposed along the beach. It is estimated that the intake and outfall pipelines become exposed somewhere in the surf zone and as observed during the survey, remain exposed for their remaining length offshore.

Initially, a shore dive was attempted on October 30, 2018; however, due to unanticipated high surf it was determined by Padre that such conductions made it unsafe to conduct survey operations from the shore. CRC and Padre determined that vessel-based survey operations would be safer and more efficient in assessing the marine biological resources. The Project team returned on November 1, 2018 to conduct the dive survey from the survey vessel (S/V) *JAB*. This Report describes the equipment and methods that were used during the vessel-based dive survey operations and data recovery.

PERSONNEL AND EQUIPMENT

The Project dive team included divers Ms. Michaela Hoffman and Ms. Haleigh Damron (Padre Marine Biologists). Mr. Jeff Zane was the Padre Health and Safety Officer (HSO) and onboard licensed Emergency Medical Technician (EMT), and Padre Project Manager, Simon

Poulter, provided shore-side support of dive operations. Mr. Zachary Dransoff, CRC Environmental Project Manager observed all survey operations. All divers are certified through the Professional Association of Dive Instructors (PADI) and National Association of Underwater Instructors (NAUI), and Ms. Hoffman is an American Academy of Underwater Sciences (AAUS) certified diver.

The dive survey was conducted from S/V JAB, a 43-foot jet powered catamaran, owned and operated by Theory Marine Services, LLC. The vessel was mobilized in Ventura Harbor and transited to the dive site the morning of the survey.

Divers were equipped with open circuit scuba using steel 85 cubic-foot cylinders pressurized to approximately 3,000 pounds per square inch (psi) and equipped with a separate first and second stage regulators. Divers used transect tapes to verify survey distances and a Go Pro® camera and Olympus® Tough point-and-shoot camera to record underwater video and photographs. Divers were equipped with underwater lights and slates for data collection. A “diver down” flag was deployed from the mast of the survey vessel at the dive site.

METHODOLOGY

Prior to the dive, the survey vessel located the end of pipe using the onboard navigation system and deployed a surface buoy at the start of each transect. The divers entered the water from the survey vessel and descended the surface buoy line. Once on the bottom, the visibility was measured to determine the size of the survey corridor. The diver biologists swam three transects along the existing pipeline corridors observing and recording biological resources starting with the waste water outfall pipeline, followed by the southern and northern intake pipelines, respectively.

Transects were swam from the offshore end of each pipe and encroached as far into the surf zone as safely possible (Attachment 1 – Marine Biological Survey Area). Due to low visibility, and to reduce the chance of unsuccessful navigation underwater, each dive consisted of only one pipeline transect; all three pipelines were surveyed in a total of three dives. All observation data was recorded on pre-printed data sheets, in addition to GoPro® video cameras and still photographs on a waterproof Olympus® Tough camera (Attachment 2 – Survey Photographs). In addition, the length of the exposed pipeline and the general condition of any exposed pipeline or accessory features were noted to support future removal planning. All three pipelines were surveyed in three separate dives totaling in 124 minutes of bottom time.

RESULTS

The following section details the results of a dive survey conducted on November 1, 2018 within the Project site. Diver biologists identified habitat types and locations of marine plants, macro-epifauna, and fish associated with the wastewater outfall pipeline and the southern and northern intake pipelines, respectively.

Ocean conditions during the surveys consisted of clear skies, with calm winds in the morning (one to two miles per hour [mph]) increasing to 8 mph in the afternoon, and swell height of one to two feet. Tide was falling during the first dive from 4.3 feet at 06:10 to 2.7 feet at 11:32 and rising during the second and third dive to a 4.7-foot tide at 17:01. Underwater visibility was

3.5 feet during the first dive decreasing to 2.5 feet over the course of the survey day. Due to reduced visibility, the survey corridor was limited to approximately six feet (three feet on either side of each pipeline).

In general, substrate types were similar along all three pipelines and consisted of medium-sized cobble (four to eight-inch diameter) and small boulders (ten to 15-inch diameter), as well as low-relief sandstone bedrock and short expanses of sand in between bedrock. Sand waves of less than one inch were observed within sandy-bottom areas. A bed of giant kelp (*Macrocystis pyrifera*) was observed offshore of the Project site but appeared to end west of pipelines' termini and was not established within the survey corridors.

WASTEWATER OUTFALL PIPELINE

Approximately 237 feet of the wastewater outfall pipeline was surveyed from its offshore terminus in 15 feet of water, northeast toward shore to a depth of the nine feet where visibility and surge precluded survey operations. The pipeline was exposed and visible along its entire length. The pipeline appeared intact with no holes or visible corrosion. No diffuser was observed at the offshore terminus of the pipe; the pipeline was open to the sea water.

The habitat on the wastewater outfall pipeline consisted of low red and brown turf alga, encrusting and articulated coralline algae (*Corallina* sp., *Calliarthron* sp. and *Lithothamnium* sp.), branching red algae (*Mastocarpus [Gigartina] papillate*, *Cryptosiphonia woodii* and *Mazzaella [Rhodoglossum] affinis*) covered with epibiotic bryozoans (*Bugula neritina*).

A patch of surf grass (*Phyllospadix* sp.) was observed growing on the top of the pipeline at a water depth of 12 feet. The surfgrass patch covered a total area of approximately five square feet. Neither surfgrass or eelgrass (*Zostera marina*) were observed anywhere else within the survey corridor. No invasive species were identified (i.e., *Culerpa taxifolia* or *Sargassum horneri*). Giant kelp was observed in one location off the pipeline approximately seven feet south of the pipeline in 13 feet of water. The kelp was sparse and only two individual thalli were observed.

Epibiotia and macrofauna consisted of dense growth of bryozoans (*Hippodiplosia insculpta* and *Membranipora* sp.), stalked tunicates (*Styela montereyensis*), and Spanish shawl nudibranchs (*Flabellinopsis iodinea*). An occasional solitary anemone (*Anthopleura* sp.) was observed underneath and between the pipeline and bedrock. In addition, California spiny lobster (*Panulirus interruptus*) were observed within gaps underneath the pipeline and inside of the end of the pipeline where it is open to the seawater. Evidence of gaper clams (*Tresus* sp.) was observed within the sand and cobble substrate. No fish or abalone species were observed inside the survey corridor along the wastewater outfall pipeline.

SOUTHERN INTAKE PIPELINE

Approximately 464 feet of the southern intake pipeline was surveyed from its offshore intake structure (possible remnant filter) in 16 feet of water, northeast toward shore to a depth of ten feet where visibility and surge precluded survey operations. The southern intake pipeline was exposed and visible along its entire length. The pipeline and the offshore intake structure appeared intact with no holes or visible corrosion. Accessory pipe structures, approximately three to four inches in diameter, were identified running underneath and diagonal to the pipeline route. These accessory structures had no visible corrosion and appeared to run underneath the sand.

The general habitat and algal communities were similar to the wastewater outfall pipeline; however, no surfgrass or giant kelp were observed. Feather boa, a kelp-like brown algae (*Egregia menziesii*) was observed within the survey corridor along the southern intake pipeline. Epibiota and macrofauna were similar to the previous outfall pipeline. Fish activity inside the survey corridor was minimal, with none being identified to species due to low visibility. No abalone species were observed within the survey corridor along the southern intake pipeline.

NORTHERN INTAKE PIPELINE

Approximately 518 feet of the northern take pipeline was surveyed from the offshore intake structure in 15 feet of water, northeast toward shore to a depth of ten feet where visibility and surge precluded survey operations. The northern intake pipeline was exposed and visible along its entire length. An accessory pipeline structure, three to four inches in diameter, ran parallel approximately the entire length of the northern intake pipeline. Both the intake pipeline and accessory structures appeared to be intact with no visible corrosion. The accessory structure ran underneath and on top of the intake pipeline and was intermittently buried in the sand.

Dense beds of red alga, *Cryptosiphonia woodii* and *Mazzaella affinis*, and articulated coralline algae grew along the top of the northern intake pipeline. No kelp, surfgrass, or eelgrass species were observed within the survey corridor. Several California spiny lobster were observed underneath the pipeline and inside the offshore intake structure, as well as other invertebrate species including angular unicorn snails (*Acanthinucella spirata*), Spanish shawl nudibranch and solitary anemones. Portions of the northern intake pipeline also supported tunicates and orange and yellow sponges (*Halichondria* sp.). One sculpin (Cottidae) was identified sitting on the northern intake pipeline, but the survey corridor was generally devoid of fish activity. No abalone species were observed within the survey corridor along the northern intake pipeline.

SUMMARY AND RECOMMENDATIONS

A team of diver biologists completed a marine biological survey to identify the habitat types, macrofauna and fish present within the survey corridor along three pipelines at the Project site. Substrate consisted of mixed cobble, sandstone bedrock and sandy areas. Algal species and macrofauna observed were typical of southern California marine waters within similar depth ranges and with similar substrate types; however, the survey corridor was generally devoid of typical invertebrate and fish species associated with hard bottom habitats.

No invasive algae were observed along the pipeline corridors. No abalone, or other sensitive species were observed. Two individual kelp thalli were observed within the survey corridor; however, established kelp beds were not observed within the Project site. Dense epibiotic bryozoans and sponges were observed; however, macrofauna and fish were infrequent.

The wastewater outfall pipeline and southern and northern intake pipelines were intact with no holes or corrosion. Accessory pipeline structures were observed adjacent to the southern and northern intake pipelines, as well as the intake filter structure which appeared intact at the pipelines' termini.

Should you have any questions regarding this Report, please contact Michaela Hoffman at (805) 786-2650 ext. 47 or mhoffman@padreinc.com or Simon Poulter at (805) 683-1233 ext. 4 or spoulter@padreinc.com.

Sincerely,

Padre Associates, Inc.



Michaela Hoffman
Project Biologist

Attachments: Attachment 1 – Marine Biological Survey Area Figure
Attachment 2 – Dive Survey Photographs
Attachment 3 – Dive Survey Data Sheets

cc: Zachary Dransoff, CRC Environmental Project Manager

ATTACHMENT 1

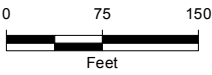
MARINE BIOLOGICAL SURVEY AREA FIGURE



LEGEND:

- Approximate Location of Giant Kelp (*Macrocystis pyrifera*)
- Approximate Pipeline Location (to be fully removed)
- Mean High Water Mark (MHW)
- 6-ft Survey Corridor
- 20ft x 40ft Concrete Vault
- Staging Area

Source: Esri Online Imagery Basemap, NOAA
 Coordinate System: NAD 1983 State Plane California V FIPS 0405 Feet
 Notes: For the purposes of this map, the NOAA defined shoreline is assumed to be consistent with the MHW line. No field studies were done to establish the MHW line.
 ft = Feet; in = Inch
 This map was created for informational and display purposes only.



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PROJECT NAME: CRC - DECOMMISSIONING OF GRUBB LEASE INTAKE/OUTFALL STRUCTURE VENTURA COUNTY, CA	
PROJECT NUMBER: 1802-2271	DATE: November 2018

MARINE BIOLOGICAL SURVEY AREA

FIGURE 1

ATTACHMENT 2

DIVE SURVEY PHOTOGRAPHS



Photo 1. Surfgrass (*Phyllospadix* sp.) and articulated coralline algae (*Corrallina* sp., *Calliarthron* sp.) growing on wastewater outfall pipeline; Date: 11/1/2018.



Photo 2. Giant kelp (*Macrocystis pyrifera*) adjacent to wastewater outfall pipeline; Date: 11/1/2018



Photo 3. California spiny lobster (*Panulirus interruptus*) underneath southern intake pipeline; Date: 11/1/2018



Photo 4. Accessory structure running underneath/diagonal to southern intake pipeline route; Date: 11/1/2018



Photo 5. Dense algal growth on southern intake pipeline; Date: 11/1/2018



Photo 6. Overview of habitat on northern intake pipeline; Date: 11/1/2018



Photo 7. California spiny lobster adjacent to northern intake pipeline; Date: 11/1/2018



Photo 8. Angular unicorn snail (*Acanthinucella spirata*) from northern intake pipeline; Date: 11/1/2018



**Photo 9. Spanish shawl nudibranch (*Flabellinopsis iodinea*) on northern intake pipeline;
Date: 11/1/2018**



**Photo 10. Solitary anemone (*Anthopleura* sp.) and Spanish shawl nudibranch on
northern intake pipeline; Date: 11/1/2018**



Photo 11. Sculpin (*Cottidae*); Date: 11/1/2018

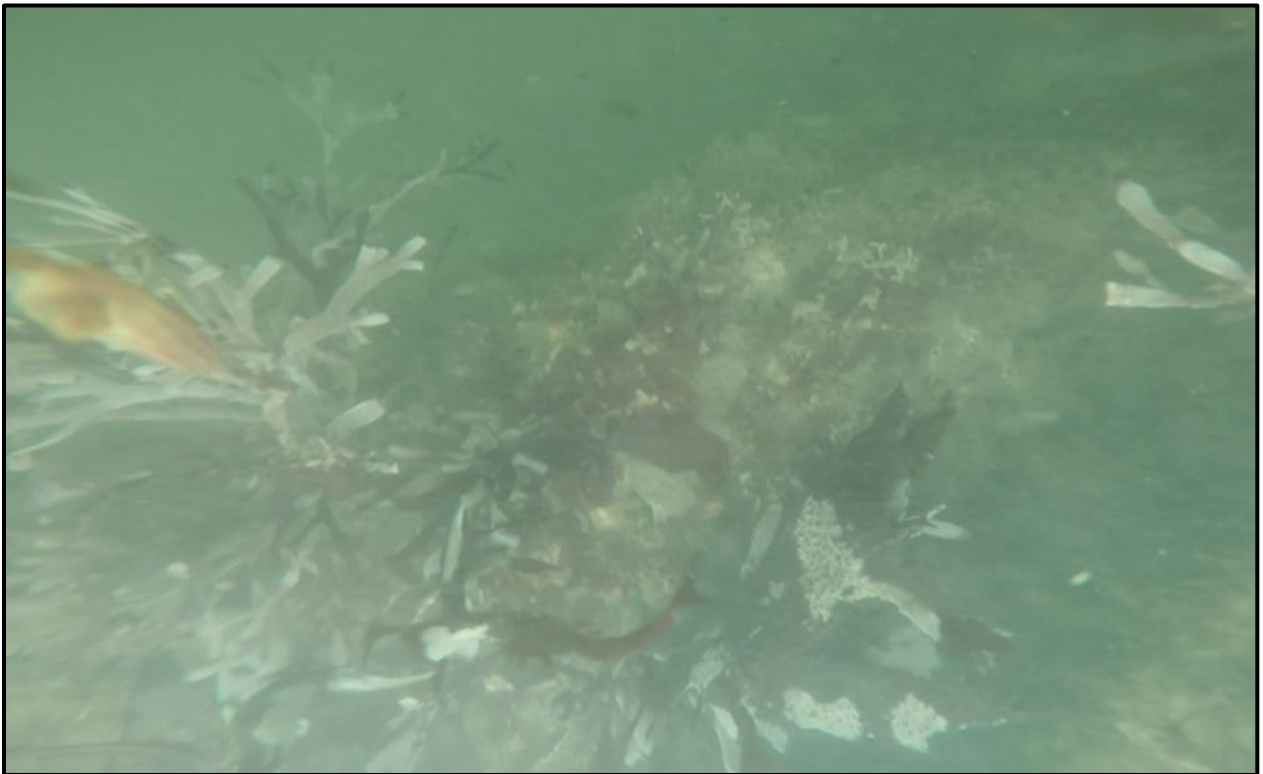


Photo 12. Low-relief hardbottom habitat adjacent to northern intake pipeline; Date: 11/1/2018



**Photo 13. Cobble substrate located under and adjacent to northern intake pipeline;
Date:11/01/18**

ATTACHMENT 3

DIVE SURVEY DATA SHEETS

270-300° shore parallel

Pre-Construction Marine Biological Data Sheet

Date: 11/1/2018	Divers: M. Hoffman H. Damron	Weather: sun, clear Swell: 1-2 ft wind: 0-2 mph
Dive Location: CRC Grubb Lease Pipes		

Transect No. Dive 1	Visibility (ft): 3.5 ft
Start: 09:16 / 10/8	Depth: 16
Stop: 10:06 / 10/24	Depth: 15 / 11
Pipe Surveyed: Waste Water Intake (202°, 22°) 12-in. outfall (North or South) (circle one) (213°, 33°) (192°, 12°)	
Estimated length of pipe exposed: 100%	

General pipe conditions: Intact, 50% max coverage w/ loose sand

Substrate: sand, low relief sand stone (0-2 ft)	Kelp: <input checked="" type="radio"/> Yes <input type="radio"/> No (circle one)
	Surfgrass: <input checked="" type="radio"/> Yes <input type="radio"/> No
	Eelgrass: <input checked="" type="radio"/> Yes <input type="radio"/> No
Invasives: Undaria <input type="radio"/> Yes <input checked="" type="radio"/> No	Sargassum muticum <input type="radio"/> Yes <input checked="" type="radio"/> No
Caulerpa <input type="radio"/> Yes <input checked="" type="radio"/> No	Sargassum horneri <input type="radio"/> Yes <input checked="" type="radio"/> No

General flora community: Low red turf, algae, Corallina, sparse kelp,
Anthothoe, Mastocarpus

General fauna community: Anthopleura, spiny lobster, Ling Cod (5 ft),
Acanthinucella spirata (Angular unicorn snail), Bryozoans

Black abalone (*Haliotis cracherodii*): Yes ☒ No
White abalone (*Haliotis sorenseni*): Yes ☒ No

Other Observations:

offshore / SW end of 12-in wastewater pipe open to
seawater. CA spiny lobster (*Panulirus interruptus*) inside
pipe.

Pre-Construction Marine Biological Data Sheet

Date: 11/1/2014	Divers: M. Hoffman H. Damron	Weather: Sun, clear. temp: 77 Swell: 1-2 ft, Wind: 0-kmph
Dive Location: CRC Grubb lease pipes		

Transect No. DIVE 2-SOUTH		Visibility (ft): 2-3 ft
Start: 1150	Depth: 16 ft	Pipe Surveyed: Waste Water Intake, 12-in outfall (North or <u>South</u>) (circle one)
Stop: 1210	Depth: 14 ft	
General pipe conditions: Intact; 3-4' accessory pipe running under		Estimated length of pipe exposed: 100% pipe hooded exposed w/ growth
Substrate: Sand, cobble (3.4-8 in) low relief, sand stone under- neath pipeline		Kelp: Yes <input type="radio"/> No (circle one)
		Surfgrass: Yes <input type="radio"/> No <input checked="" type="radio"/>
		Eelgrass: Yes <input type="radio"/> No <input checked="" type="radio"/>
Invasives: Undaria Yes <input type="radio"/> No <input checked="" type="radio"/>		Sargassum muticum Yes <input type="radio"/> No <input checked="" type="radio"/>
Caulerpa Yes <input type="radio"/> No <input checked="" type="radio"/>		Sargassum horneri Yes <input type="radio"/> No <input checked="" type="radio"/>
General flora community: low red turf algae, encrusting coralline algae.		
General fauna community: Anthopleura, CA spiny lobster, br zoans		
Black abalone (<i>Haliotis cracherodii</i>): Yes <input type="radio"/> No <input checked="" type="radio"/>		
White abalone (<i>Haliotis sorenseni</i>): Yes <input type="radio"/> No <input checked="" type="radio"/>		

Other Observations:

Surveyed inshore to 10 ft isobath. Visibility disappeared.
 Very surgy. Discontinue transect.

Pre-Construction Marine Biological Data Sheet

Date: 11/1/18	Divers: M Hoffman H. Damron	Weather: Partly cloudy sun. swell: 1-2 ft wind: 5-8 mph
Dive Location: CRC Grubb Lease Pipelines		

Transect No. Dive 3 NORTH		Visibility (ft): 2-3 ft
Start: 1305	Depth: 15	Pipe Surveyed: Waste Water Intake, 12-in outfall (North or South) (circle one)
Stop: 1330 - 23 1341	Depth: 10	
General pipe conditions: NO holes appears intact, dense growth cannot view pipe surface due to algal growth		Estimated length of pipe exposed: 100%
Substrate: sand stone low relief reef, cobble		Kelp: Yes <input type="radio"/> No (circle one)
		Surfgrass: Yes <input type="radio"/> No
		Eelgrass: Yes <input type="radio"/> No
Invasives: Undaria Yes <input type="radio"/> No	Sargassum muticum Yes <input type="radio"/> No	
Caulerpa Yes <input type="radio"/> No	Sargassum horneri Yes <input type="radio"/> No	
General flora community: low red turfs, articulated & encrusting coralline algae.		
General fauna community: spanish shawl nudibranch, Anthopleura CA spiny lobster, sculpin		
Black abalone (<i>Haliotis cracherodii</i>): Yes <input type="radio"/> No		
White abalone (<i>Haliotis sorenseni</i>): Yes <input type="radio"/> No		

Other Observations:

End transect @ 10 ft is bath; surge increase
 & vis decrease

BIOLOGICAL ASSESSMENT

CALIFORNIA RESOURCES CORPORATION DECOMMISSIONING OF THE GRUBB LEASE INTAKE/OUTFALL STRUCTURE VENTURA COUNTY, CALIFORNIA

Project No. 1802-2271

Prepared for:

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Prepared by:

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JUNE 2019



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APPENDICES

Appendix A. Oil Spill Response Plan
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LIST OF ACRONYMS

AT&T	AT&T Corporation
BA	Biological Assessment
cm	centimeter
CRC	California Resource Corporation
CSLC	California State Lands Commission
DPS	Distinct population segment
EFH	Essential fish habitat
ESCA	Endangered Species Conservation Act
FE	Federally endangered
FESA	Federal Endangered Species Act
ft	feet/foot
FT	Federally threatened
in	inch
kg	kilogram
km	kilometer
lbs	pounds
m	meter
mi	miles
MMPA	Marine Mammal Protection Act
MWCP	Marine Wildlife Contingency Plan
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
PCH	Pacific Coast Highway
sq. km.	square kilometers
PSO	Protected Species Observer
PSWP	Project Work and Safety Plan
U.S.	United States
USCG	United States Coast Guard
UPRR	Union Pacific Railroad

USFWS United States Fish and Wildlife Service

1.0 INTRODUCTION

The following Biological Assessment (BA) is for the proposed California Resources Corporation (CRC) Decommissioning of the Grubb Lease (PRC 3913.1) Intake/Outfall Structure Project (Project). The BA has been prepared to evaluate the potential affect that the proposed action may have on Federally threatened, endangered or proposed species described in this document. This BA is prepared in accordance with legal requirements set forth under Section 7 of the Federal Endangered Species Act (FESA, 16 U.S.C. 1536[c]), and follows the standard established by the National Environmental Policy Act (NEPA) and FESA guidance. In addition, the BA is prepared in accordance with the United States (U.S.) Marine Mammal Protection Act (MMPA) of 1972, amended in 1994, which protects all marine mammals by prohibiting intentional killing or harassment of cetaceans, pinnipeds, and sirenians. The species considered in this document were based on information obtained from National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) protected species list for the Project area.

1.1 SUMMARY OF PROPOSED PROJECT

CRC is proposing to decommission Project-related facilities located within Lease PRC 3913.1 in accordance with California State Lands Commission (CSLC) lease requirements prior to the lease expiration in January 2020. The lease agreement requires that CRC plan for replacement and rehabilitation of the pipelines or plan for full removal of the pipelines. The Project objective is the removal of the pipelines and appurtenant facilities to fulfill the existing lease requirements and quit claim the lease.

1.2 PROJECT WORK AREAS AND OVERVIEW

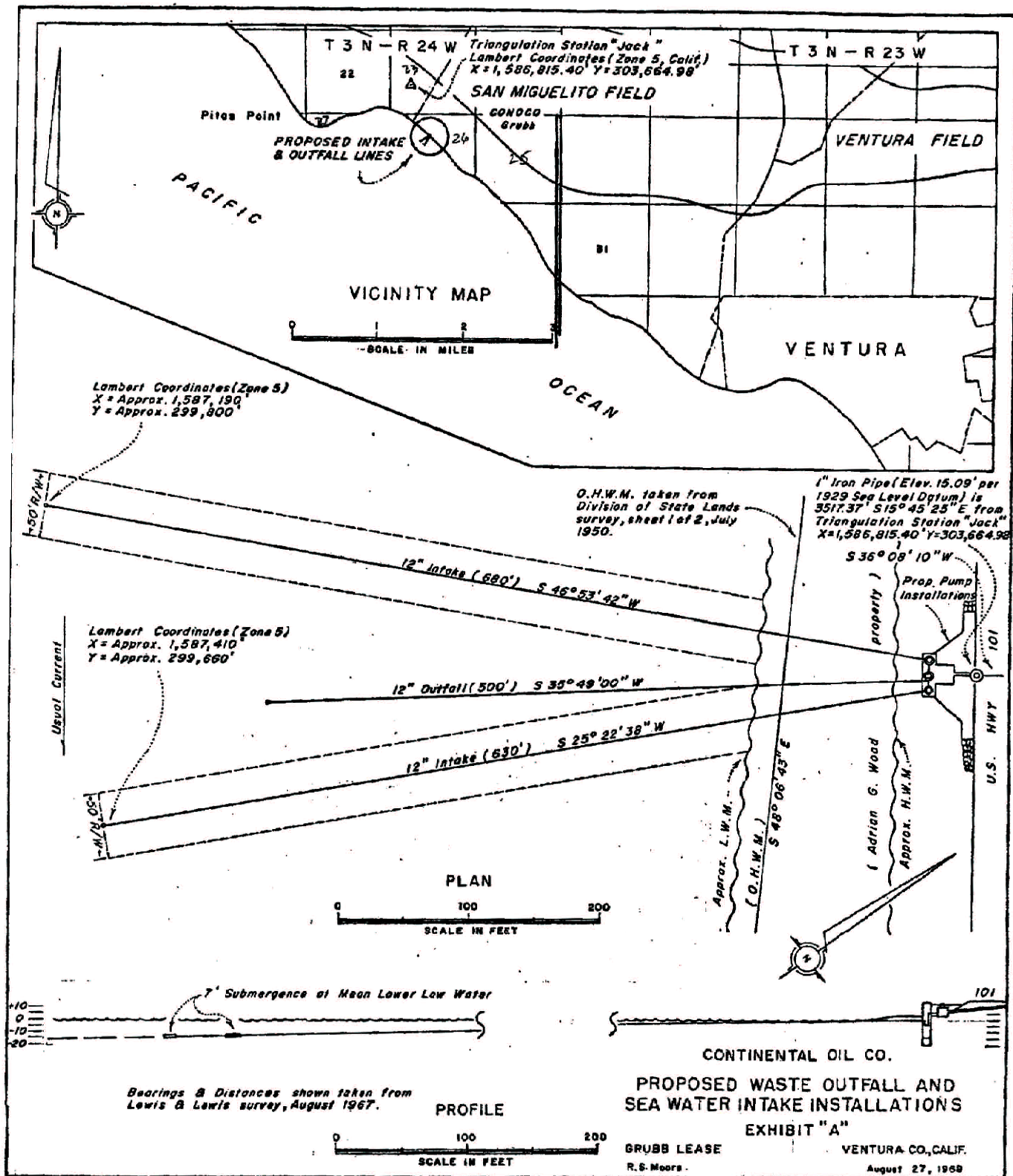
1.2.1 Offshore Intake and Outfall Pipelines

The offshore portion of the facility consists of three 12-inch (in) (30.5 centimeter [cm])-diameter steel submarine pipelines consisting of two intake pipelines and one outfall pipeline. The two intake pipelines measure approximately 680 and 630 feet (ft) (207 and 192 meters [m]) in length, and the outfall pipeline measures approximately 500 ft (152 m) in length. The original materials specification and wall thickness of these pipelines is unknown. The pipelines appear to be coated with an anti-corrosive coating or weight coating of unknown composition, but most likely somastic. The external coatings will be sampled prior to removal and tested for the presence of any hazardous materials.

All three pipelines run southwest, spaced at approximately ten-degree increments from the vault structure on the beach (Figure 1-1 – Proposed Waste Outfall and Sea Water Intake Installations). Each of the two intake pipelines has an approximately 6-ft by 6-ft (1.8-m by 1.8-m) reinforced concrete lattice box structure at the offshore end, which are presumably intake structures that provided some level of filtering or exclusion when in operation.

All three pipelines are fully severed, as a result of corrosion, just south of the southern side (seaward side) of the vault in the surf zone area (Figure 1-2 – Photograph of Severed Pipelines). At the severance points all three pipelines appear to have double walls of internal steel or plastic pipe with a mastic filler between the walls.

Offshore, the pipelines appear to be intact and buried through the surf zone. The length and depth of cover appears to vary with the season and associated annual sand migration. This approximately 200-ft (61-m) long surf zone segment has not been surveyed due to the difficulties of working in the surf zone. Further offshore, the remaining 300 to 500 ft (91 to 152 m) of pipe are exposed and laying on a bedrock and sand seafloor.



Source: CRC Figure 2.1-1
Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
Notes: This map was created for informational and display purposes only.

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PROJECT NAME: CRC - DECOMMISSIONING OF
GRUBB LEASE INTAKE/OUTFALL STRUCTURE
VENTURA COUNTY, CA

PROJECT NUMBER: 1802-2271

DATE: June 2019

CONTINENTAL OIL COMPANY PROPOSED
WASTE OUTFALL AND SEA WATER INTAKE
INSTALLATIONS - EXHIBIT "A"

FIGURE
1-1



**EXTREME LOW TIDE CONDITIONS &
WINTER SAND MIGRATION OFFSHORE**

Source: CRC Basemap Figure 2.1-2
Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
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PROJECT NAME: CRC - DECOMMISSIONING OF GRUBB LEASE INTAKE/OUTFALL STRUCTURE VENTURA COUNTY, CA	
PROJECT NUMBER: 1802-2271	DATE: June 2019

SEVERED PIPELINES

**FIGURE
1-2**

1.2.2 Shoreline Vault

The shoreline vault is a reinforced concrete and steel sheet pile structure set in the armor rock seawall between Pacific Coast Highway and the intertidal zone. The vault measures approximately 20 ft wide by 14 ft wide and 27 ft in height (6.0 m by 4.2 m by 8.2 m). The two intake pipelines and one outfall pipeline were originally connected to the seaward side of this vault. The vault is located within the intertidal zone and its seaward side is inaccessible during periods of high tide (Figure 1-3 – Onshore Project Components).

Three pipelines within a 36-in (91-cm)-diameter casing exit the vault on the north side (landward side). The vault interior is partially filled with water and still contains water pumps, piping, two levels of grating and other ancillary equipment, much of it submerged. The interior water level does not change with the tides and so appears to be isolated from the ocean. Due to the flooded condition, the vault interior has only been partially surveyed.

The vault is approximately 27 ft (8.2 m) deep and terminates approximately 12 ft (3.7 m) below the surrounding sand beach level. Large pumps and equipment appear to be fastened to the floor of the vault and the floor is assumed to be concrete. The interior vault walls and ceiling are concrete, and the exterior walls are sheathed with steel sheet pile (Figure 1-4 – Steel Sheet Piling Foundation at Concrete Vault). The vault backs up to Pacific Coast Highway on the north side and is surrounded by armor rock on the other three sides.

The top of the fenced vault enclosure is approximately 20 ft (6.1 m) wide by 42 ft (12.8 m) long and includes three approximately 3-ft by 3-ft pump caisson openings on the southern end and an access hatch with ladder on the southwest side. The area just north of the vault, between the concrete vault structure and Pacific Coast Highway, is assumed to be compacted soil covered with an asphalt layer and then a thin layer of dirt. The entire 20-ft by 42-ft (6.1-m by 12.8-m) vault enclosure is surrounded by chain link fencing with access through a locked gate on the north side.



Figure 1-3. Onshore Project Components (South Elevation)



Figure 1-4. Steel Sheet Piling Foundation at Concrete Vault

1.2.3 Onshore Facilities

The onshore facilities consist of underground pipeline and support structure that span between the northern side of the vault (landward) and the valve pit located in the CRC onshore facilities north of the Ventura Freeway – U.S. Highway 101. Exiting the interior wall on the north side of the vault is a 36-in (91.4 cm)-diameter steel casing containing one 14-in (35.6-cm)-diameter steel pipeline, one 12-in (30.5-cm)-diameter steel pipeline and one eight-inch (20.3-cm)-diameter polyvinyl chloride pipe (PVC pipe) liner inside of a second 12-in (30.5-cm)-diameter steel pipeline. The annulus between the pipelines within the 36-in (91.4-cm) steel casing are filled with a grout material where they enter the side of the vault. The extent of this grout fill is unknown and will have to be field verified during decommissioning.

Based on pipeline tracking data, the 36-inch-diameter casing appears to run underground approximately 220 ft (67.1 m) to the northeast and terminate approximately 80 ft (24.4 m) north of the Union Pacific Railroad (UPRR) easement. Pipe tracking data suggests that at least one pipeline exits the 36-in (91.4 cm)-diameter casing and extends underground via the “A” Lease Canyon Road, underneath the Ventura Freeway – U.S. Highway 101 overpass a distance of approximately 310 ft (94.5 m), and terminates in a valve box on CRC onshore property. Depth of burial to the top of the 36-in (91.4 cm)-diameter casing varies from approximately nine ft (2.7 m) at the southern side of Pacific Coast Highway to over 11 ft (3.4 m) while running under the UPRR easement and Ventura Freeway (U.S Highway 101) dirt frontage road.

1.3 PROJECT COMPONENTS

The Project would require the following primary components:

- Pre-Project Preparation Activities and Surveys
 - Construction of a temporary equipment access ramp
- Removal of the Intake/Outfall facilities within PRC 3913.1 including:
 - Recovery of the 6-ft by 6-ft by 6-ft concrete lattice box structures at the offshore end of each of the intake pipelines;
 - Recover of the two, 12-in-diameter steel intake pipelines (approximately 680 and 630 ft [207.3 m and 192.0 m] in length);
 - Recovery of the 12-in-diameter steel outfall pipeline (approximately 500 ft [152.4 m] in length); and
 - Demolition and removal of existing 20-ft tall, 20-ft by 40-ft (6.1 m by 6.1 m by 12.2 m) concrete vault and surrounding structure.
- Abandon-in-place the 36-in (91.4-cm)-diameter casing (and internal pipelines) on the onshore side of the beach vault, including:
 - Fill the casing between the onshore side of the beach vault and valve box on CRC's lower Grubb lease property with slurry.
- Ramp demolition and reconstruction of the armor rock seawall at the gap created by removal of the concrete vault

- Demobilization of equipment and disposal/recycling of recovered pipelines and appurtenant facility components (fencing, foundation piling, concrete)
- Post-Project survey to confirm removal of pipelines and any associated seafloor anomalies identified in the Pre-Project survey.

1.3.1 Pre-Project Preparation Activities and Surveys

1.3.1.1 Plans and Survey(s)

Once all regulatory permits are received, but prior commencement of Project activities, the following technical plans and surveys will be completed:

- a. A Project Work and Safety Plan (PSWP) that provides the following will be submitted to all pertinent agencies for review and approval prior to the start of site work:
 - Project-specific Emergency Action Plans
 - Project Contacts
 - Final scope of work and final dispositions
 - Updated Project Schedule
 - Step-by-step procedures with supporting engineering calculations
 - Quality Management Plan
 - Project Management and Communications Plan
 - Site Safety Plan
 - Certified Asbestos Work Plan (if asbestos is found)
 - Diving Safety Plan
 - Critical Operations and Curtailments Plan
 - Survey Plan
 - Confined Space Entry Plan
 - Hot Work Plan
 - Oil Spill Response Plan
 - Marine Safety and Anchoring Plan with anchoring pre-plot
 - Excavation Plan
 - Certified Traffic Management Plan
 - Hazardous Materials Management Plan (if hazardous materials are found)
 - Other plans and information required to perform the work safely and in compliance with all regulatory permits and permissions, Cal OSHA safety regulations, U.S. Coast Guard (USGC) safety regulations, and owner's safety requirements, as applicable.

- b. Produce a pre-project multi-beam seafloor survey, with 400 percent coverage, of the offshore area around the pipelines, including the proposed anchor spreads. This will serve as the baseline seafloor debris survey that will be compared against a post-decommissioning seafloor debris survey of the same area to ensure that no debris has been left underwater on the seafloor.
- c. Conduct a pre-project topographic survey of the armor rock seawall on each side of the vault to determine the pre-construction contours and conditions of the seawall. This will serve as the baseline for reconstructing the seawall after removal of the vault and the construction access ramp and restoration of the site to existing contours.
- d. Conduct an 811 utility location (DigAlert) survey from the northern edge to the valve pit on the CRC property to ensure that all utilities are identified and located on the survey maps.

1.3.1.2 Ramp Construction

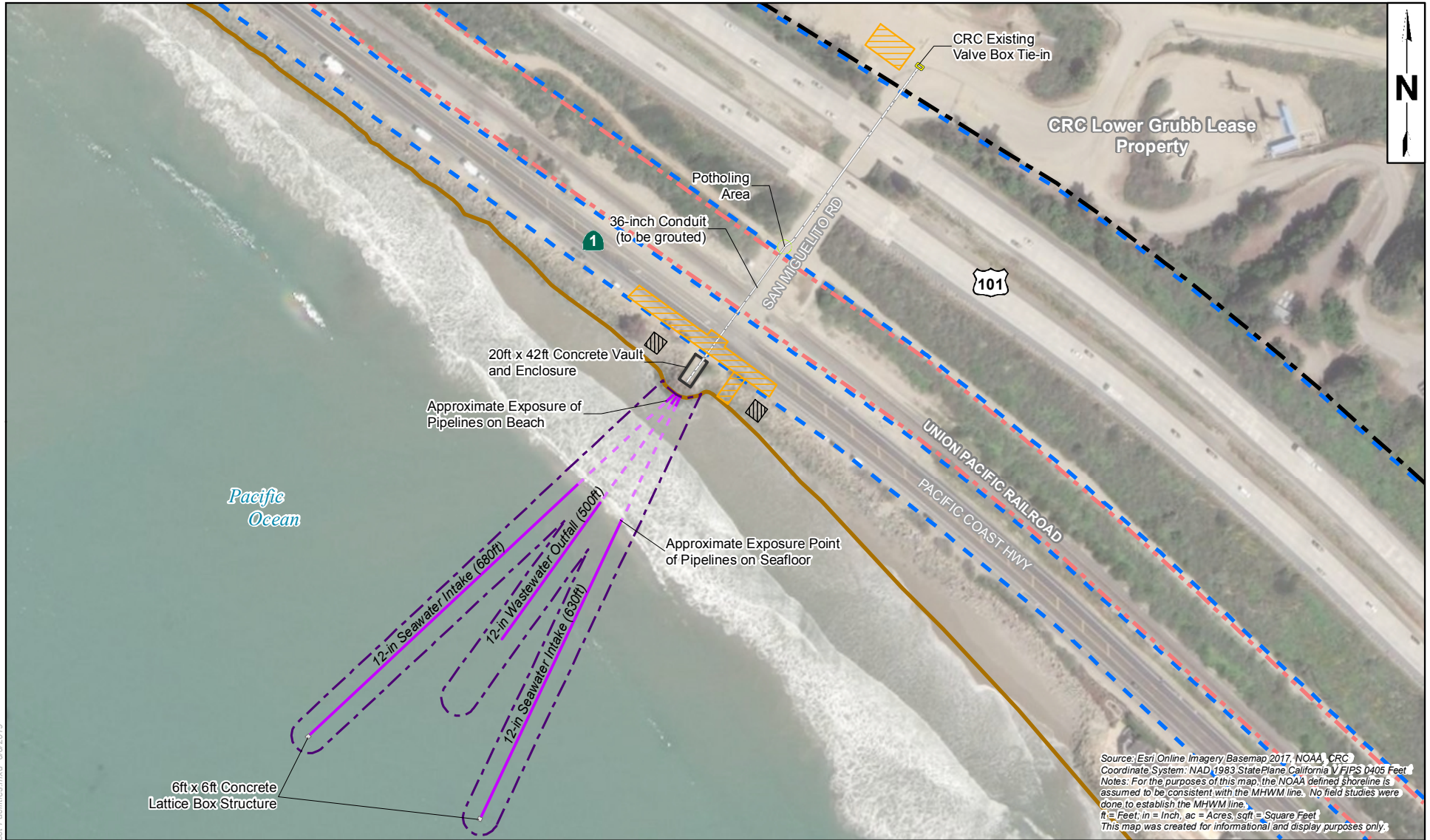
A temporary equipment access ramp will be constructed across the existing armor rock seawall approximately 50 ft (15.2 m) south of the concrete vault to provide equipment access to the Project site. An excavator will remove and relocate the existing armor rock as needed to create the foundation for the equipment access ramp. All rock removed will be stored for replacement upon completion of construction activities. An excavator and loader will place smaller rock and cobble on top of the existing armor rock seawall to create a ramp of sufficient density and strength to allow tracked construction equipment to travel across it to the beach. The equipment access ramp will be approximately 30 ft (9.1 m) wide and 60 ft (18.3 m) long.

1.3.2 Pipeline and Vault Removal

1.3.2.1 Offshore Facilities Decommissioning

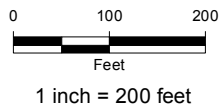
The proposed final disposition of the offshore facilities is to remove the two reinforced concrete lattice intake structures and all three 12-in (30.5-cm)-diameter submarine pipelines in their entirety.

Prior to the start of offshore and onshore decommissioning activities, the work area will be staged in accordance with the pre-approved Traffic Control Plan. This will include setting up equipment and materials staging areas along the southern shoulder of Pacific Coast Highway; most likely the closure of the eastbound bicycle and vehicle lane of Pacific Coast Highway; and the temporary rerouting of both eastbound and westbound traffic into the existing center divider and westbound lanes of Pacific Coast Highway. While occasional traffic stops on Pacific Coast Highway may be needed during equipment ingress and egress, no long-term full closure of Pacific Coast Highway is anticipated (Figure 1-5 – Project Facilities).



LEGEND:

- Approximate Pipeline Location (to be fully removed)
- - - Inferred Buried Pipeline Location (to be fully removed)
- Mean High Water Mark (MHW)
- CRC Existing Valve Box Tie-In
- Subsurface 36-inch Conduit (1,665sqft / 0.04ac)
- 20ft x 42ft Concrete Vault and Enclosure (840sqft / 0.02ac)
- 6ft x 6ft Concrete Lattice Box Structure on Intake Pipelines
- Approximate Offshore Lease Boundary
(Approximate Pipeline Disturbance Area Within Lease Boundary = 1,810sqft / 0.04ac)
- Staging / Access Areas (8,295sqft / 0.19ac)
- Temporary Rip-Rap Storage (1,022sqft / 0.02ac)
- CalTrans Right of Way
- Union Pacific Railroad
- CRC Lower Grubb Lease Property



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 VENTURA COUNTY, CA

PROJECT NUMBER: 1802-2271

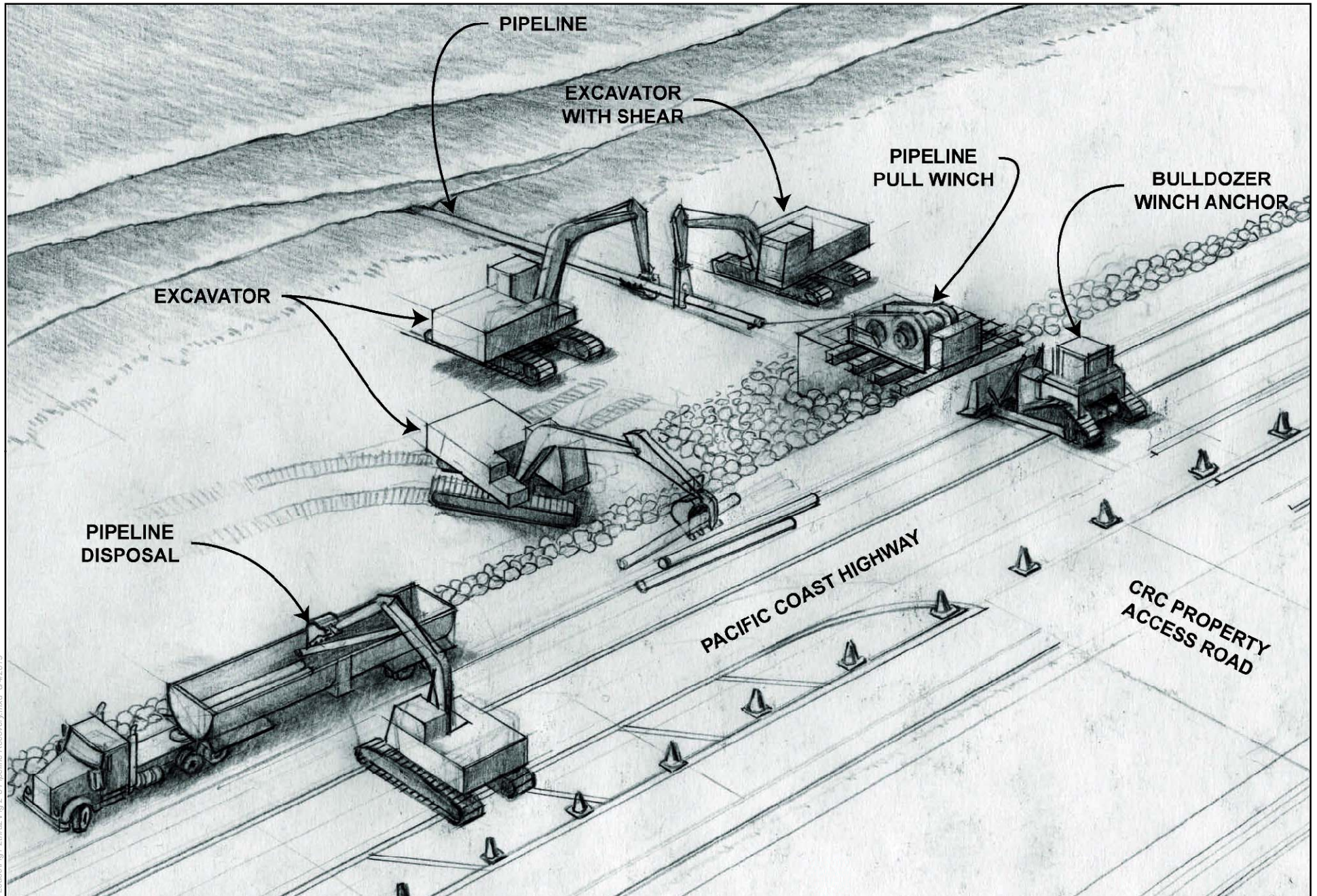
DATE: June 2019

PROJECT FACILITIES

FIGURE
 1-5

Offshore work will be initiated by the anchoring of the dive support vessel over the terminus of the intake and outfall structures (Appendix B – Anchoring Plot). Divers will be deployed to cut and remove the diffusers from each pipeline. Once cut, the diffuser structures will be winched to the surface and recovered onboard the vessel. The proposed primary submarine pipeline removal methodology consists of mounting a winch on top of the existing reinforced concrete shoreline vault and pulling the submarine pipeline segments to shore along their existing alignments. The onshore ends of each pipeline will be exposed by an excavator operating on the beach. The ends of each pipeline will be cut and prepared for attachment of a pull wire or bridle. Tension will be slowly increased on the pipeline pulling wire until the pipeline breaks free of the surf zone sand cover. The pipelines will be pulled along their existing alignments up onto the beach where they will be cut into truckable sections. Once cut, the segments will be lifted from the beach, placed on a flatbed truck and trucked to an approved offsite recycler or disposal facility (Figure 1-6 – Pipeline Recovery Illustration). This use of the vault and associated recovery of the offshore pipelines to shore will be performed prior to decommissioning the shoreline vault and armor rock.

Alternatively, should the onshore pipe recovery operation be unable to recover all the submarine pipeline segments to shore, the anchored offshore marine work spread consisting of a dive support vessel and divers will be used to recover the remaining submarine pipeline segments.



CRC Decon of Grubb Lease/Fig 1-2 thru 2/Fig 2-6 Pipeline Recovery.mxd 8/4/2019

Source: Longitude 123 Project Execution Plan Figure 6
 Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
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DATE:
 June 2019

**OFFSHORE PIPELINE PULL
 TO SHORE AND REMOVAL**

**FIGURE
 1-6**

1.3.2.2 Shoreline Vault Decommissioning

The proposed final disposition of the shoreline vault is to remove all equipment and appurtenances from inside the vault and then remove the entire vault structure down to 5 ft (1.5 m) below the existing beach contours and abandon the remaining 7 ft in place.

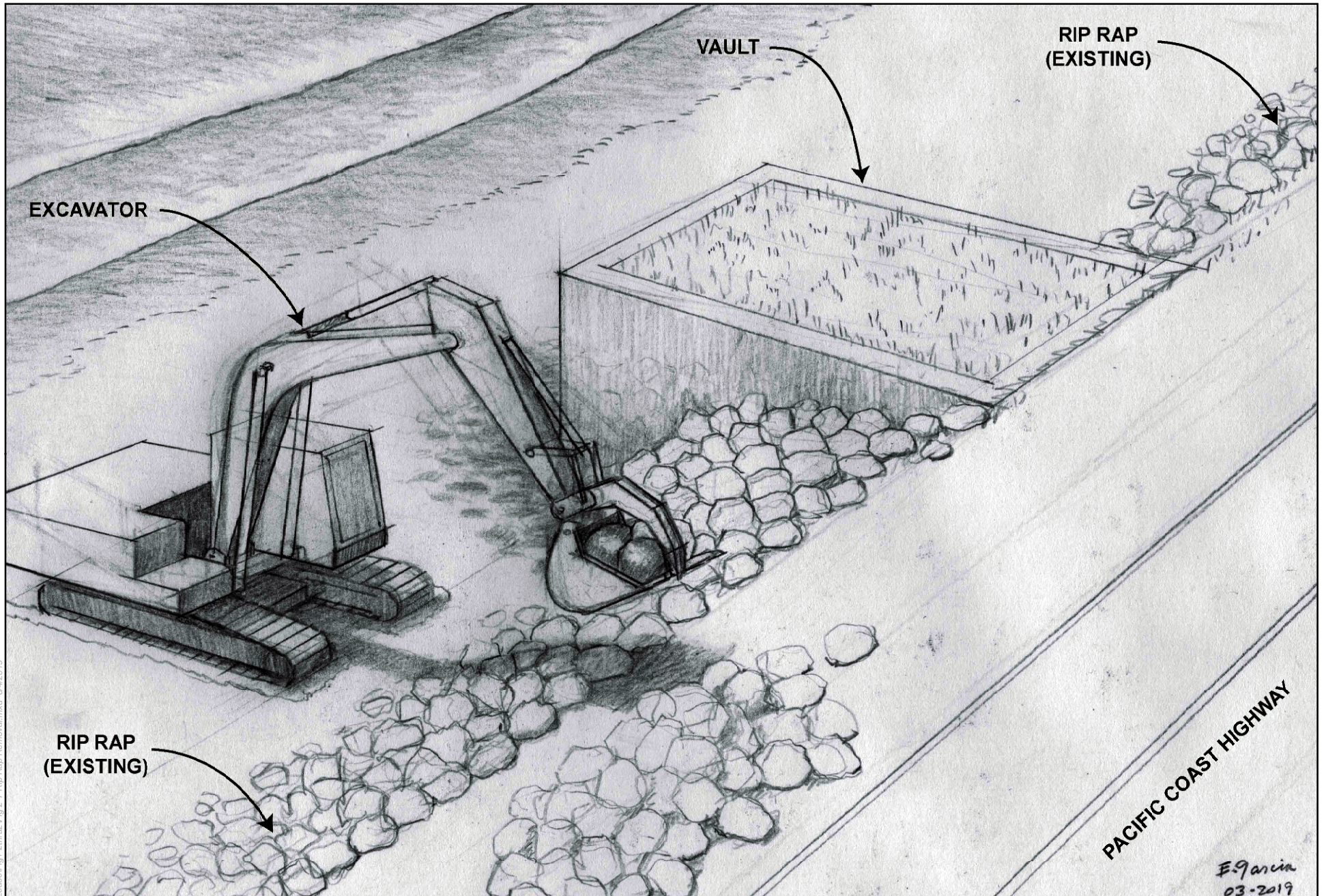
The decommissioning of the vault will begin once the submarine pipelines have been removed. To facilitate removal of the vault, all armor rock currently surrounding the vault will be removed to expose the vault walls down to the beach elevation. (Figure 1-7 – Armor Rock Removal). Most of the removed armor rock will be used to construct the equipment access ramp between the Pacific Coast Highway southern shoulder and the beach. The remaining armor rock will be stored next to the existing armor rock to the east and west of the vault.

The water in the vault will be re-sampled, pumped out, and shipped offsite for appropriate disposal. The reinforced concrete vault ceiling will be saw cut and removed and all equipment, appurtenances and debris inside the vault removed and disposed of or recycled at approved facilities.

Once the water, equipment, appurtenances and debris has been removed from the interior of the vault, the vault walls will be cut into removable sections with the use of a hydraulically powered rotary demolition saw (cuts both concrete and steel) attached to an excavator boom (Figure 1-8 – Vault Removal). In use, the excavator will reach inside the interior and make a horizontal cut around the base of the walls at an elevation at least five feet below the existing beach contours, or at a lower elevation if conditions permit. After the base cut has been completed, the saw will be used to cut the walls into vertical sections for removal. An excavator will be used to grasp the cut wall pieces and place them in trucks for offsite disposal or recycling at approved facilities.

The 36-in (91.4-cm)-diameter casing that connects into the shoreward side of the vault, and pipes contained in that casing, will be excavated and cut back approximately even with the existing earth slope of the armor rock seawalls that exist on either side of the vault. The casing and pipes contained in the casing will have been decommissioned in accordance with the description in Section 1.3.2.3 – Onshore Facility Decommissioning below.

Immediately after the vault decommissioning has been completed, a seawall will be constructed in the gap left by the removal of the vault to match the armor rock materials, slope and grade of the existing seawall on either side of the gap. The armor rock that was removed from around the vault at the beginning of the vault decommissioning will be used to construct this section of seawall. Remaining rock will be trucked away for disposal.



CRC Decon of Grubb Lease Fig 1-2 thru 2 Fig 2-7 Rip Rap Removal.mxd 6/4/2019

Source: Longitude 123 Project Execution Plan Figure 7
 Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
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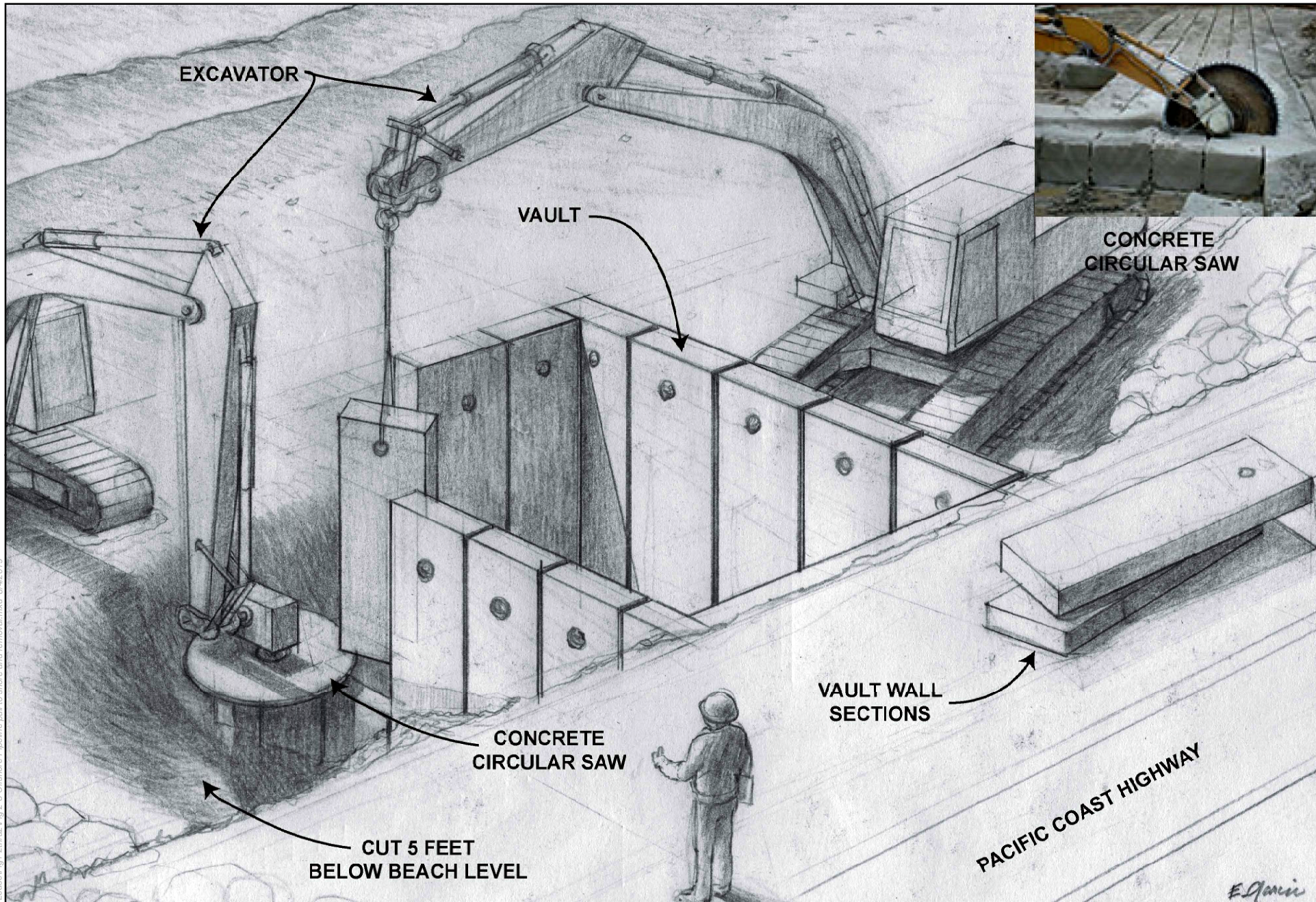
PROJECT NAME: CRC - DECOMMISSIONING OF
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 VENTURA COUNTY, CA

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DATE:
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**RIP RAP REMOVAL
 FROM AROUND VAULT**

FIGURE
1-7



Source: Longitude 123 Project Execution Plan Figure 8
 Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
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VAULT REMOVAL

FIGURE
 1-8

1.3.2.3 Onshore Facilities Decommissioning

The final disposition of the onshore facilities is to fill the 36-in (91.4-cm)-diameter casing with cement slurry and abandon it in place after the pipelines inside the casing have been removed, or alternatively, if the pipelines carried inside the 36-in (91.4-cm)-diameter casing are found to be already cemented into the 36-in (91.4-cm)-diameter casing, fill these pipelines with cement slurry and abandon the entire bundle in place. The underground pipe or pipelines between the landward end of the 36-in (91.4-cm)-diameter casing and their termination in the valve box located inside CRC onshore facilities on the north side of Ventura Freeway – U.S. Highway 101 will be filled with cement slurry and abandoned in place.

1.3.3 Ramp Demolition and Armor Rock Reconstruction

Upon completion of pipeline and vault removal activities, terrestrial construction equipment working from the shoulder of the road will deconstruct the equipment access ramp and construct the armor rock seawall at the removed vault location using original armor rock from the vault perimeter. The reconstructed armor rock seawall will match pre-decommissioning contours.

1.3.4 Post-Project Survey

Upon completion of the offshore decommissioning work, a second offshore geophysical debris survey will be performed, and the results compared to the initial baseline seafloor debris survey. Any anomalous seafloor objects located in the survey will be positively identified by divers and any remaining objects related to the decommissioning will be removed. A Project close-out report with drawings and coordinates of all facilities abandoned in place will be submitted to the CSLC within approximately 60 days of the completion of the work.

1.4 SITE ACCESS AND STAGING

There is currently only pedestrian access via a concrete stairway to the Project site from the adjacent roadway. A temporary equipment ramp will be constructed across the existing riprap approximately 50 ft (15.2 m) south of the concrete vault to provide equipment access to the Project site. Equipment will need to be moved off the beach with each tidal cycle, as the Project site becomes inundated at high tide.

Project equipment staging will occur adjacent to the Project site along Pacific Coast Highway (PCH). The staging area will be approximately 25 ft (7.6 m) by 150 ft (45.7 m).

1.5 EQUIPMENT/PERSONNEL REQUIREMENTS

The primary equipment and personnel requirements for the Project are summarized in Tables 1-1 and 1-2.

Table 1-1. Project Equipment List

Equipment Type	Quantity	Horsepower	Hours/Day	# of Days
Onshore				
Onshore Casing and Pipeline Decommissioning				
Excavator	1	310	10	10
Crane	1	220	10	10
4x4 Truck	1	325	10	1
Cement Truck	5	300	10	1
Cement Pump	1	85	10	1
Onshore Pipeline Recovery and Removal				
Excavator	3	310	10	9
Winch	1	150	10	9
Bulldozer	1	435	2	9
4x4 Truck	1	325	5	9
Onshore Vault Removal and Armor rock Re-Construction				
Excavator	3	310	10	10
Crane	1	220	10	10
4x4 Truck	1	325	5	10
Vacuum Truck	5	225	10	1
Offshore				
Offshore Intake Structure Removal				
Dive Support Vessel	1	1,000	24	4
Shallow Air Dive System	1	50	12	4
Offshore Pipeline Removal Option – Pull Offshore (Alternative)				
Dive Support Vessel	1	1,000	12	4
Shallow Air Dive System	1	50	12	4

Table 1-2. Personnel Requirements

Labor	Quantity	Hours/Day	# of Days
Onshore			
Onshore Casing and Pipeline Decommissioning			
Project Manager	1	10	10
Site Supervisor	1	10	10
Heavy Equipment Operator	3	10	10
Rigger	2	10	10
Onshore Pipeline Recovery and Removal			
Project Manager	1	10	9
Site Supervisor	1	10	9
Heavy Equipment Operator	3	10	9
Rigger	2	10	9
Onshore Vault Removal and Armor rock Re-Construction			
Project Manager	1	10	10
Site Supervisor	1	10	10
Heavy Equipment Operator	3	10	10
Rigger	2	10	10
Offshore			
Offshore Intake Structure Removal			
Project Manager	1	12	4
Dive Supervisor	1	12	4
Diver	3	12	4
Tender	1	12	4
Surveyor	1	12	4
Marine Wildlife Monitor	1	12	4
Offshore Pipeline Removal Option – Pull Offshore (Alternative)			
Project Manager	1	12	4
Dive Supervisor	1	12	4
Diver	3	12	4
Tender	2	12	4
Surveyor	1	12	4
Marine Wildlife Monitor	1	12	4

1.6 PROJECT CONSTRUCTION SCHEDULE

Project operations have been proposed to take place in Fall or Winter 2019/2020 to take advantage of low-tide conditions during that time of year. It is expected that Project activities will be conducted during daylight hours (approximately 10-12 hours/day) for approximately 73 days. Onshore and offshore removal activities would be conducted concurrently to minimize construction timing. Table 1-3 provides a summary of construction timing by task.

Table 1-3. Project Construction Duration

Activity	Duration (days)
Mobilization	
Perform Seafloor Debris Survey	2
Onshore Work	
Mobilization	15
Strip Concrete Vault – Piping/Fencing/Electric	1
Casing and Pipeline Decommissioning	15
Pipeline Recovery and Removal	15
Vault Removal and Seawall Construction	15
Demobilization	2
Offshore Work	
Mobilization	1
Recover Intake Structures	4
Demobilization	1
Final Surveys	
Perform Seafloor Debris Survey	2
Total Duration	73*

Note: *Some activities would occur simultaneously. All durations are estimates

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2.0 SPECIES ACCOUNTS AND STATUS OF SPECIES IN THE ACTION AREA

Based on the species lists provided on the USFWS and NMFS websites, an analysis of the range and habitat preferences was conducted (USFWS, 2019; and NMFS, 2019a) (Appendix C – U.S. Fish and Wildlife Service Species List). The species descriptions in this section are confined to those listed species that have a potential to occur in the Project area (Table 2-1). Certain species were eliminated from these analyses due to the absence of the preferred habitat or water depths within the Project site. Other species were eliminated from consideration because the Project site was beyond the recorded geographic range for the species.

Although marine mammals and sea turtles are not expected to occur within the immediate Project area, there is a likelihood they could be encountered during vessel transit in deeper waters; therefore, these species are included in the analyses below.

Table 2-1. Federally Listed Species Within the Project Area and Their Likelihood of Occurrence within the Project Area

Common Name	Scientific Name	Status ¹	Designated Critical Habitat	Likelihood to occur in Project Area
PLANTS				
California orcutt grass	<i>Orcuttia californica</i>	FE	None	Unlikely to Occur
Gambel's watercress	<i>Nasturtium gambellii</i>	FE	None	Unlikely to Occur
Marsh sandwort	<i>Arenaria paludicola</i>	FE	None	Unlikely to Occur
Salt marsh bird's-beak	<i>Cordylanthus maritimus</i> <i>ssp. maritimus</i>	FE	None	Unlikely to Occur
Spreading navarretia	<i>Navarretia fossalis</i>	FT	Yes, critical habitat is outside of Project area.	Unlikely to Occur
Ventura marsh milk-vetch	<i>Astragalus pycnostachys</i> <i>var. lanosissimus</i>	FE	Yes, critical habitat is outside of Project area.	Unlikely to Occur
INVERTEBRATES				
Black abalone	<i>Haliotis cracherodii</i>	FE	Yes, critical habitat is outside of Project area.	Unlikely to Occur
White abalone	<i>Haliotis sorenseni</i>	FE	None	Unlikely to Occur
REPTILES				
Olive Ridley turtle	<i>Lepidochelys olivacea</i>	FT	None	Possible
Green turtle	<i>Chelonia mydas</i>	FT	Yes, critical habitat is outside of Project area.	Possible
Loggerhead turtle	<i>Caretta caretta</i>	FE	Yes, critical habitat is outside of Project area.	Possible
Leatherback turtle	<i>Dermochelys coriacea</i>	FE	Yes, critical habitat is outside of Project area.	Possible
BIRDS				
California condor	<i>Gymnogyps californianus</i>	FE	Yes, critical habitat is outside of Project area.	Unlikely to Occur

Common Name	Scientific Name	Status ¹	Designated Critical Habitat	Likelihood to occur in Project Area
California least tern	<i>Sterna antillarum browni</i>	FE	None	Possible
Least Bell's vireo	<i>Vireo bellii pusillus</i>	FE	Yes, critical habitat is outside of Project area.	Unlikely to Occur
Light-footed clapper rail	<i>Rallus longirostris levipes</i>	FE	None	Unlikely to Occur
Marbled murrelet	<i>Brachyramphus marmoratus</i>	FT	Yes, critical habitat is outside of Project area.	Unlikely to Occur
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	FE	Yes, critical habitat is outside of Project area.	Unlikely to Occur
Western snowy plover	<i>Charadrius nivosus nivosus</i>	FT	Yes, critical habitat is outside of Project area.	Unlikely to Occur
AMPHIBIANS				
California red-legged frog	<i>Rana draytonii</i>	FT	Yes, critical habitat is outside of Project area.	Unlikely to Occur
FISH				
Tidewater goby	<i>Eucylogobius newberryi</i>	FE	Yes, critical habitat is outside of Project area.	Unlikely to Occur
Southern Steelhead	<i>Oncorhynchus mykiss</i>	FE	Yes, critical habitat is outside of Project area.	Unlikely to Occur
Green sturgeon	<i>Acipenser medirostris</i>	FT	Yes, critical habitat is outside of Project area.	Unlikely to Occur
MAMMALS				
<i>Cetaceans</i>				
Blue whale	<i>Balaenoptera musculus</i>	FE	None	Possible
Fin whale	<i>Balaenoptera physalus</i>	FE	None	Possible
Humpback whale	<i>Megaptera novaeangliae</i>	FT	None	Possible
Northern right whale	<i>Eubalaena glacialis</i>	FE	None	Unlikely to Occur
Sperm whale	<i>Physeter macrocephalus</i>	FE	None	Unlikely to Occur
Sei whale	<i>Balaenoptera borealis</i>	FE	None	Unlikely to Occur
<i>Pinnipeds</i>				
Guadalupe fur seal	<i>Arctocephalus townsendi</i>	FT	None	Unlikely to Occur

Status¹

FE = Federally endangered

FT = Federally threatened

2.1 SPECIES ACCOUNTS

This section includes a discussion of the federally listed species that are known to occur or have potential to occur in the Project area based on habitat availability and known locations of species in the Project region. These include the following species: California least tern, green turtle, loggerhead turtle, olive ridley turtle, leatherback turtle, blue whale, fin whale, and humpback whale. Certain species, such as plant, invertebrate and fish, listed in Table 2-1 above, may occur within the quadrangle and/or within five miles of the Project area; however, suitable habitat for these species do not occur in the Project area and, therefore, were not included in the discussion below. Other species may have been eliminated from consideration because the Project area is beyond the recorded geographic, elevational, or water depth range for these species.

2.1.1 California Least Tern (*Sternula antillarum*)

2.1.1.1 Status

The California least tern was listed as a Federally endangered species in 1970 (USFWS, 2017b). No critical habitat has been designated.

2.1.1.2 Range and Habitat

California least terns live along the coast from San Francisco to northern Baja California and migrate from the southern portion of their range to the north. Least terns begin arriving in southern California as early as March, migrate to nesting areas by mid- to late-April, and depart following the fledging of the young in September or October (Frost, 2017). California least terns establish nesting colonies on sandy soils with little vegetation along the ocean, lagoons, and bays, where they forage by plunge-diving for small fish. California least terns forage for small epipelagic fish (anchovy, atherinids, and shiner surfperch) primarily in nearshore ocean waters and in shallow estuaries (USFWS, 2006). The nearest nesting colony occurs at McGrath Beach, at the mouth of the Santa Clara River, approximately eight miles southeast of the Project area. During 2016 surveys, an estimated 57 breeding pairs and 62 nests were reported at the Santa Clara River/McGrath Beach colony (Frost, 2017).

2.1.1.3 Natural History

This species nest in colonies and utilize the upper portions of open beaches or inshore flat sandy areas that are free of vegetation. The typical colony size is 25 pairs. Most least terns begin breeding in their third year, and mating begins in April or May. The nest consists of a simple scrape in the sand or shell fragments and typically there are two eggs in a clutch. Egg incubation and care for the young are accomplished by both parents. Least terns can re-nest up to two times if eggs or chicks are lost early in the breeding season. At nesting colonies where feeding activities have been studied, the birds were documented foraging mostly within two miles (mi) (3.2 kilometers [km]) of the breeding area and primarily in nearshore ocean waters less than 60 feet deep (USFWS, 2006).

2.1.1.4 Population Trends

The species' population has increased from 600 in 1973 to roughly 7,100 pairs in 2005. The number of California least tern sites has nearly doubled since the time of listing. (USFWS, 2006).

2.1.2 Green Turtle (*Chelonia mydas*)

2.1.2.1 Status

The East Pacific distinct population segment (DPS) was listed as Federally threatened on April 6, 2016. Critical habitat has been designated for the species in Puerto Rico, but none in the Project area (NMFS, 2015).

2.1.2.2 Range and Habitat

Green turtles occur worldwide and are generally found in tropical and subtropical waters along continental coasts and islands between 30 degrees North and 30 degrees South. In the eastern North Pacific, green turtles have been sighted from Baja California to southern Alaska, but most commonly occur south of San Diego (NMFS, 2015).

2.1.2.3 Natural History

Green turtles can weigh 300 to 350 pounds (lbs) (135 to 160 kilograms [kg]) and are three feet (one meter) in length. They are herbivorous, feeding primarily on algae and sea grasses (NMFS, 2017c). Nesting season varies depending on location, but in the southeastern U.S., females generally nest in the summer between June and September; peak nesting occurs in June and July. During the nesting season, females nest at approximately two-week intervals, laying an average of five clutches. In Florida, green turtle nests contain an average of 135 eggs, which will incubate for approximately two months before hatching. Females will return to their natal beaches to lay eggs every two to four years. Sexual maturity in green turtles may occur anywhere between 20 and 50 years (NMFS, 2015). In the U.S., green turtles nest primarily along the central and southeast coast of Florida where an estimated 200 to 1,100 females nest annually. There are no known nesting sites along the west coast of the U.S., and the only known nesting location in the continental U.S. is on the east coast of Florida.

2.1.2.4 Population Trends

Recent minimum population estimates for green turtles indicate that at least 20,112 individuals are known to occur in the eastern Pacific (NMFS, 2015).

2.1.3 Loggerhead Turtle (*Caretta caretta*)

2.1.3.1 Status

The loggerhead was first listed as endangered throughout its range on July 28, 1978. In September 2011, NMFS and USFWS listed nine DPS of loggerhead turtles under the FESA. At that time, the North Pacific loggerhead turtle DPS was Federally listed as an endangered species (NMFS, 2011). Critical habitat is designated along the U.S. east coast for the Northwest Atlantic Ocean DPS. No critical habitat has been designated for the North Pacific DPS (NMFS, 2011).

2.1.3.2 Range and Habitat

Loggerheads are circumglobal, occurring throughout the temperate and tropical regions of the Atlantic, Pacific, and Indian Oceans. Loggerheads are the most abundant species of sea turtle found in coastal waters. Within the North Pacific, loggerhead nesting has been documented only in Japan, although low level nesting may occur outside of Japan in areas surrounding the South China Sea. In the South Pacific, nesting beaches are restricted to eastern Australia and New Caledonia and, to a much lesser extent, Vanuatu and Tokelau (NMFS, 2011). Southern California is considered to be the northern limit of loggerhead turtle distribution in the eastern Pacific; however, loggerhead turtles have been stranded on beaches as far north as Alaska (NMFS 2011). In the U.S., nesting occurs only in Florida (NMFS, 2011).

2.1.3.3 Natural History

Loggerhead turtles primarily occur in subtropical to temperate waters and are generally found over the continental shelf (NMFS, 2009). In the southeastern U.S., mating occurs in late March to early June and females lay eggs between late April and early September. Females can lay three to five nests during a single nesting season. Loggerhead sea turtles are primarily carnivorous, although they do consume some plant matter as well (NMFS, 2009).

2.1.3.4 Population Trends

The north Pacific population of loggerhead turtles is declining (NMFS and USFWS, 2008).

2.1.4 Leatherback Turtle (*Dermochelys coriacea*)

2.1.4.1 Status

The leatherback turtle was listed as Federally endangered in 1970. NMFS designated critical habitat to provide protection for endangered leatherback sea turtles along the U.S. West Coast in January 2012 (NMFS, 2017c). Critical habitat within California extends 16,910 square miles (43,798 square kilometers [sq. km.]) stretching from Point Arena to Point Arguello, east of the 9,842-ft (3,000-m) depth contour. The Project area is not located designated critical habitat for leatherback turtle.

2.1.4.2 Range and Habitat

Leatherback turtles are the most common sea turtle off the west coast of the U.S. Leatherback turtles have been sighted as far north as Alaska and as far south as Chile (Dept. of the Navy, 2000; NMFS, 2013) and their extensive latitudinal range is due to their ability to maintain warmer body temperatures in colder waters (NMFS, 2013). Off the U.S. west coast, leatherback turtles are most abundant from July to September; however, their presence off the U.S. west coast is “two pronged” with sightings occurring in northern California, Oregon, Washington, and southern California, with few sightings occurring along the intermediate (central California) coastline. Among foraging turtles tagged in coastal waters off California, the majority moved north and spent time in areas offshore of northern California and Oregon before moving towards the equatorial eastern Pacific, then eventually westward, presumably towards western Pacific Ocean nesting beaches (NMFS, 2013).

2.1.4.3 Natural History

The leatherback turtle can reach 2,000 lbs (900 kg) and get 6.5 ft (2 m) in length (Sea Turtle Conservancy, 2019). Their lifespan and age of sexual maturity are both unknown. Leatherback turtles are omnivores, but feed principally on soft prey items such as jellyfish and planktonic chordates (e.g., salps) (Sea Turtle Conservancy, 2019). The leatherback turtle lacks a hard shell, and instead has a thick, leathery carapace consisting of connective tissue covering dermal bones. Female leatherbacks lay clutches of approximately 100 eggs on sandy, tropical beaches. Females nest several times during a nesting season, typically at eight to 12-day intervals. The eggs will incubate for 60-65 days before hatching (Sea Turtle Conservancy, 2019).

2.1.4.4 Population Trends

Recent leatherback turtle eastern Pacific population estimates indicate that at least 361 nesting females are known to occur (NMFS, 2007c). This population is believed to be decreasing worldwide (NMFS, 2019b).

2.1.5 Olive Ridley Turtle (*Lepidochelys olivacea*)

2.1.5.1 Status

In 1978, the breeding populations of the olive ridley turtle on the Pacific coast of Mexico were listed as Federally endangered while all other populations were listed as Federally threatened. No critical habitat has been designed for the species.

2.1.5.2 Range and Habitat

This species is considered to be the most common of the marine turtles and is distributed circumglobally (NMFS, 2014). Within the eastern Pacific Ocean, olive ridley turtles typically occur in tropical and subtropical waters, as far south as Peru and as far north as California, but occasionally have been documented as far north as Alaska (NMFS, 2014). The olive ridley is mainly a "pelagic" sea turtle, but has been known to inhabit coastal areas, including bays and estuaries.

2.1.5.3 Natural History

Olive ridley turtles weigh on average 100 lbs (45 kg) and are 22 to 31 in (55 to 80 cm) in length. Their lifespan is unknown, but they reach sexual maturity around 15 years. Vast numbers of turtles come ashore and nest in what is known as an "arribada" during which hundreds to thousands of females come ashore to lay their eggs. At many nesting beaches, the nesting density is so high that previously laid egg clutches are dug up by other females excavating the nest to lay their own eggs. Major nesting beaches are located on the Pacific coasts of Mexico and Costa Rica (NMFS, 2014).

2.1.5.4 Population Trends

At-sea abundance estimates appear to support an overall increase in the Endangered breeding colony populations on the Pacific coast of Mexico (NMFS, 2014).

2.1.6 Blue Whale (*Balaenoptera musculus*)

2.1.6.1 Status

The blue whale was listed as Federally endangered throughout its range in 1970 under the Endangered Species Conservation Act (ESCA) of 1969 prior to the passage of the FESA in 1973. No critical habitat has been designated.

2.1.6.2 Range and Habitat

Blue whales are distributed worldwide in circumpolar and temperate waters, and although they are found in coastal waters, they are thought to occur generally offshore compared to other baleen whales (Allen et al., 2011). Like most baleen whales, they migrate between warmer water breeding and calving areas in winter and high-latitude feeding grounds in the summer. Feeding grounds have been identified in coastal upwelling zones off the coast of California primarily within two patches near the Gulf of the Farallones and at the western part of the Channel Islands (Allen et al., 2011). They migrate seasonally between summer and winter, but some evidence suggests that individuals remain in certain areas year-round. Offshore California, sightings are made seasonally between June and December in the Southern California Bight (Allen et al., 2011). Blue whales are frequently observed in the Santa Barbara Channel and around offshore oil platforms.

2.1.6.3 Natural History

Blue whales on average are 75 to 80 ft (21 to 24 m) in length and weigh 100 to 150 tons (90,700 to 136,000 kg) making it the largest animal on Earth (Allen et al., 2011). Blue whales have no known social structure and can be seen traveling alone or in groups of 19 to 80 individuals. Blue whales feed primarily on euphausiid shrimp (krill).

2.1.6.4 Population Trends

The most recent estimates of the blue whale indicate that a minimum of 1,551 individuals are known to occur off the west coast (NMFS, 2018a).

2.1.7 Fin Whale (*Balaenoptera physalus*)

2.1.7.1 Status

The fin whale was listed as a Federally endangered species in 1973, but no critical habitat has been identified for this species to date.

2.1.7.2 Range and Habitat

Fin whales are found in deep, offshore waters of all major oceans, primarily in temperate to polar latitudes, and less commonly in the tropics. Fin whales are migratory, moving seasonally into and out of high-latitude feeding areas and their wintering areas are not widely known (NMFS, 2017). They are mostly commonly seen feeding over the continental shelf in areas of high productivity. Peak abundances of fin whales in the Southern California Bight occur after periods of maximum upwelling, in summer and fall (Allen et. al., 2011).

2.1.7.3 Natural History

Fin whales are on average 59 ft (18 m) in length and weigh 50 to 70 tons (45,000 to 64,000 kg) (Allen et al., 2011). Little is known about the social and mating systems of fin whales. It is believed that males become sexually mature at six to ten years of age; and females at seven to

12 years of age. Physical maturity is attained at approximately 25 years for both sexes. Usually mating and birthing occurs in tropical and subtropical areas during midwinter. Fin whales feed on euphasiid shrimp, copepods, and small fish. Fin whales are usually found in groups of two to seven whales and are considered fast swimmers (NMFS, 2017a).

2.1.7.4 Population Trends

The most recent estimates of the fin whale population indicate that at least 8,127 individuals are known to occur off California, Oregon, and Washington (NMFS, 2017a).

2.1.8 Humpback Whale (*Megaptera novaeangliae*)

2.1.8.1 Status

The humpback whale was listed as Federally endangered in 1970. In September 2016, NMFS revised the FESA listing for the humpback whale to identify 14 DPS, list one as threatened, four as endangered, and identify nine others as not warranted for listing. The humpback whale Central America DPS is listed as Federally endangered and the Mexico DPS is listed as a Federally threatened population, both DPS feed offshore of Oregon (NMFS, 2018b). No critical habitat has been designated.

2.1.8.2 Range and Habitat

Humpback whales are distributed worldwide and travel great distance during their seasonal migration, the farthest migration of any animal. Humpback whales spend the winter and spring months offshore of Central America and Mexico for breeding and calving, and then migrate to their summer and fall range between California and southern British Columbia to feed (Allen et al., 2011). Although humpback whales typically travel over deep, oceanic waters during migration, their feeding and breeding habitats are in shallow, coastal waters over continental shelves. Cold and productive coastal waters characterize feeding grounds (NMFS, 2018b). In the North Pacific, the California/Oregon/Washington stock winters in coastal Central America and Mexico and migrates to areas ranging from the coast of California to southern British Columbia in summer/fall (NMFS, 2018b).

2.1.8.3 Natural History

Humpback whales are on average 42 ft (13 m) in length and weigh 25 to 40 tons (22,600 to 36,200 kg). Humpback whales are well known for their long pectoral fins, which can be up to 15 ft (4.6 m) long. These extensive fins give them increased maneuverability and they can be used to slow down or even go backwards. During the summer months, humpbacks spend the majority of their time feeding and building up fat stores that they will live off of during the winter. Humpbacks filter feed on tiny crustaceans (mostly krill), plankton, and small fish (Allen et al., 2011).

2.1.8.4 Population Trends

The most recent population estimates of humpback whales indicate that at least 1,876 individuals occur off California, Oregon, and Washington (NMFS, 2018b). This population appears to be increasing.

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3.0 IMPACT ASSESSMENT

This Biological Assessment has been prepared to provide information to the Federal lead agencies, NMFS and the USFWS, to determine the potential to affect threatened or endangered species, based on one of three possible findings for each species potentially affected:

- No effect: the proposed action will not affect the listed species or critical habitat;
- Not likely to adversely affect: effects of the listed species are expected to be discountable (extremely unlikely to occur), insignificant (minimal impact without take), or beneficial; and
- Likely to adversely affect: adverse effect may occur as a direct or indirect result of the proposed action, and the effect is not discountable, insignificant or beneficial.

Potential impacts due to Project activities include temporary degradation of water quality or seafloor habitats during offshore segment removal and accidental collisions with marine wildlife. Potential impacts are described below.

3.1 ONSHORE SEGMENT GROUND DISTURBANCE

Heavy equipment operation and associated noise, dust from grading and excavation, and an increase in human presence have the potential to disrupt foraging activities of some wildlife, including special-status species. Wildlife using the proposed impact area during Project activities may be temporarily displaced into adjacent habitats and may experience greater competition for food and resources. Wildlife injury or mortality due to vehicle, equipment, or foot traffic may also occur during Project activities. However, due to the short-term nature of the Project and the implementation of mitigation measures, impacts are not likely to adversely affect federally protected wildlife.

3.2 WATER QUALITY

Offshore segment removal has the potential to create localized turbidity and affect nearby soft-bottomed seafloor habitat, and/or hard-bottom substrate. Potentially significant impacts could occur if removal creates turbidity that would decrease water clarity and reduce visibility for foraging fish and birds.

California least terns are known to forage in estuaries, harbors, coastal freshwater habitats, as well as in the open ocean. California least terns usually forage within six inches (15 cm) of the water's surface and are more likely to forage within two miles (3.2 km) from nesting sites (Keane and Smith, 2016); however, there is the potential they could occur within the Project area outside of nesting season. Project impacts are not expected to adversely affect the foraging success of California least terns based on their foraging ecology and limited disturbance to the sea floor. Any turbidity created by pipeline recovery will originate on the seafloor and have a limited range in shallow water depths. In addition, recent foraging studies of California least terns during and outside of dredging events suggest that the turbidity plums caused by dredging and disposal operations do not sustainably alter their foraging activity (Keane and Smith, 2016).

Each pipeline will be pulled along its existing alignment to reduce the likelihood of suspending sediments. Given the limited disturbance area and temporary nature of the Project,

pipeline recovery activities are not likely to adversely affect marine species and any impacts to foraging birds are expected to be minimal and temporary.

3.3 DISTURBANCE TO SEAFLOOR HABITATS

Organisms residing on the seafloor along the pipelines' corridors and adjacent to the recovery areas could be suspended in water, possibly exposing them to fish and macroinvertebrate predators during the removal process. Therefore, some mortality of benthic organisms residing within the seafloor sediments in areas within or adjacent to underwater excavations is assumed. Large, mobile organisms (e.g., fish, large crustaceans) are expected to depart the area during the disturbance and no Federally protected species were observed along the pipeline corridor; therefore, impacts are expected to have no effect on protected species.

Marine biological dive surveys were conducted of the three exposed pipelines and pipeline corridors in November 2018 (Padre, 2018). The nearshore marine habitats and biota are typical of those found in similar water depths along the Ventura County coastline. The seafloor habitat inshore of the 16-ft (4.9-m) isobath includes mixed substrate types consisting of medium-sized cobble (4 to 8-in [10 to 20-cm]-diameter) and small boulders (10 to 15-in [25 to 38-cm]-diameter), as well as low-relief sandstone bedrock and expanses of sand in between bedrock. Sand waves of less than one inch (2.5 cm) were observed within sandy-bottom areas. A bed of giant kelp (*Macrocystis pyrifera*) occurs offshore of the Project site, but its density becomes sparse southwest of pipelines' termini and was not established within the survey corridors during the November 2018 survey. Kelp bed density fluctuates with the seasons increasing during the summer months and decreasing after winter storms. Kelp is not present within the surf zone where wave action disturbs the seafloor.

During dive surveys, a patch of surf grass (*Phyllospadix* sp.) was observed growing on the top of the wastewater outfall pipeline at a water depth of 12 ft (3.7 m). The surfgrass patch was minimal and covered a total area of approximately five square feet (0.5 square meters). Neither surfgrass nor eelgrass (*Zostera marina*) was observed anywhere else within the survey corridor. In addition, no invasive species were identified (i.e., *Culerpa taxifolia* or *Sargassum horneri*). No abalone species were observed during dive surveys and the area appeared generally devoid of fish species although a few perch (Embiotocidae) and sculpin (Cottidae) species were present. There was no additional seagrass or kelp observed during the November 2018 dive surveys on the adjacent pipelines and the habitat is generally similar along all three pipelines.

Pipeline recovery impacts to hard-bottom can occur if offshore segments are pulled across and cut into sensitive habitats. However, the hard-bottom habitats that were observed beneath the pipelines were primarily devoid of vegetation due to their location in the surf zone where they are considered less sensitive because they are routinely subjected to natural disturbances (i.e., storm waves) and do not support vegetation or long-lived, slow-growing organisms that are particularly sensitive to disturbance.

The rocky substrate within the Project area appears to be routinely subjected to substantial sand scour and supports only a limited algal and invertebrate community. Damage could occur to the rocky substrate from anchoring of Project vessels or from diver activities. Seafloor disturbances from offshore decommissioning activities will be limited to a few isolated anchoring sites and a narrow corridor of sedimentary seafloor within which the pipelines will be removed.

The sedimentary bottom will be disturbed only during removal activities and any Project vessels will not anchor in hard bottom habitat or within areas of sensitive resources. Kelp beds were not observed to be established within the Project area; however, kelp beds that could potentially provide essential fish habitat (EFH) to groundfish and pelagic fish species are located adjacent to the Project area. Project activities are not likely to adversely affect sensitive seafloor habitats with the implementation of mitigation.

3.4 VESSEL COLLISION

Impacts from vessel operations can range from a change in the animal's travel route or time on the surface to direct mortality. During vessel transit and operations, there is the potential for incidental collisions with marine mammals and sea turtles. Such collisions have been documented in southern California; however, those collisions are typically associated with areas with higher population densities of marine wildlife, large ship interactions, and slow moving marine wildlife on the ocean surface.

The Project vessel(s) will transit each work day from Ventura Harbor to the Project site. While there is the potential to encounter whales and dolphins near shore, the smaller vessels can easily change course or reduce speed if marine wildlife is observed in the path of the vessel. With the exception of vessel transit for mobilization and demobilization, pipeline recovery operations will occur nearshore and within shallow water depths, so it is unlikely marine wildlife will be present within the Project area. Therefore, the potential for vessel collision impacts are not expected to adversely affect sensitive marine wildlife. In addition, CRC has proposed additional monitoring and mitigation measures to further reduce any potential impact.

3.5 OIL SPILL POTENTIAL

The unintentional release of petroleum from Project vessels into the marine environment from proposed Project activities could result in potentially significant impacts to the marine biota, particularly avifauna and early life stage forms of fish and invertebrates, which are sensitive to those chemicals. Refined products (i.e., diesel, gasoline.) are more toxic than heavier crude or Bunker-type products, and the loss of a substantial amount of fuel or lubricating oil during survey operations could affect the water column, seafloor, intertidal habitats, and associated biota, resulting in their mortality or substantial injury, and in alteration of the existing habitat quality. The release of petroleum into the marine environment is considered a potentially significant impact. A Project Oil Spill Response Plan (Appendix A) will be prepared and implemented as necessary for in water Project activities. The purpose of the offshore pipelines was to supply seawater and discharge treated, clean water back into the ocean and none of the pipelines were ever used for the transmission of hydrocarbon content; therefore, there is no risk of petroleum release from the pipelines during removal activities.

Although many marine organisms have created adaptive strategies to survive in their environment, when these marine organisms are introduced to oil, it adversely affects them physiologically. For example, physiological effects from oil spills on marine life could include the contamination of protective layers of fur or feathers, loss of buoyancy, and loss of locomotive capabilities. Direct lethal toxicity or sub-lethal irritation and temporary alteration of the chemical make-up of the ecosystem can also occur.

3.5.1 Turtles

Oil spills are not considered a high cause for mortality for sea turtles, although recent reports from the Gulf of Mexico Deepwater Horizon spill indicate a possible increase in strandings of oil impacted turtles. Since sea turtle species have been listed as threatened or endangered under the FESA, there is very little direct experimental evidence about the toxicity of oil to sea turtles. Sea turtles are negatively affected by oil at all life stages: eggs on the beach, post hatchings, young sea turtles in near shore habitats, migrating adults, and foraging grounds. Each life stage varies depending on the rate, severity, and effects of exposure.

Sea turtles are more vulnerable to oil impacts due to their biological and behavior characteristics including indiscriminate feeding in convergence zones, long pre-dive inhalations, and lack of avoidance behavior (Milton et al., 1984). A sea turtle's diving behavior puts individuals at risk because they inhale a large amount of air before diving and will resurface over time. During an oil spill, this would expose sea turtles to long periods of both physical exposure and petroleum vapors, which can be the most harmful during an oil spill.

3.5.2 Marine Birds

Marine birds can be affected by direct contact with oil in three ways: (1) thermal effects due to external oiling of plumage; (2) toxic effects of ingested oil as adults; and (3) effects on eggs, chicks, and reproductive abilities.

The loss of waterproofing is the primary external effect of oil on marine birds and buoyancy can be lost if the oiling is severe. A main issue with oil on marine birds is the damage oil does to the arrangement of feathers, which is responsible of water repellency (Fabricius, 1959). Without water repellency, the water can go through the dense layers of feathers to the skin exposing the bird to cold water temperatures. To survive, the bird must metabolize fat, sugar, and eventually skeletal muscle proteins to maintain body heat. The cause of oiled bird deaths can be the result from exposure and loss of these energy reserves as well as the toxic effects of ingested oil (Schultz et al., 1983). The internal effect of oil on marine birds varies. Anemia can be the result of bleeding from inflamed intestinal walls. Oil passing into the trachea and bronchi could result in the development of pneumonia. A bird's liver, kidney, and pancreatic functions can be disturbed due to internal oil exposure. Ingested oil can inhibit a bird's mechanism for salt excretion that enables seabirds to obtain fresh water from salt water and could result in dehydration (Holmes and Cronshaw, 1975).

A bird's vulnerability to an oil spill depends on each individual species' behavioral and other attributes. Some of the more vulnerable species are alcids and sea ducks due to the large amount of time they spend on the ocean surface, the fact that they dive when disturbed, and their gregarious behavior. Also, alcids and other birds have low reproductive rates, which result in a lengthy population recovery time. A bird's vulnerability depends on the season as well. For example, colonial seabirds are most vulnerable between early spring through autumn because they are tied to breeding colonies.

3.5.3 Marine Mammals

The impact of direct contact with oil on the animal's skin varies by species. Cetaceans have no fur; therefore, they are not susceptible to the insulation effects of hypothermia in other

mammals. However, external impacts to cetaceans from direct skin contact with oil could include: eye irritation, burns to mucous membranes of eyes and mouth, and increase vulnerability to infection.

Baleen whales skim the surface of water for feeding and are particularly vulnerable to ingesting oil and baleen fouling. Adult cetacean would most likely not suffer from oil fouling of their blowholes because they spout before inhalation, clearing the blowhole. Younger cetaceans are more vulnerable to inhale oil. Internal injury from oil is more likely for cetaceans due to oil. Oil inhaled could result in respiratory irritation, inflammation, emphysema, or pneumonia. Ingestion of oil could cause ulcers, bleeding, and disrupt digestive functions. Both inhalation and ingested chemicals could cause damage in the liver, kidney, lead to reproductive failure, death, or result in anemia and immune suppression.

The small size of Project vessels and limited amount of petroleum-fueled equipment on board greatly reduces the likelihood that a release would occur; therefore, impacts from the accidental release of petroleum are not likely to adversely affect threatened and endangered species. In order to reduce the potential impacts from oil spills, CRC has prepared an OSRP that will detail emergency response protocols in case of a petroleum release and the equipment and resources that will be available on the Project vessels (Appendix A).

4.0 PROJECT INCORPORATED MEASURES

The applicant proposed mitigation measures detailed in the following section will be implemented to further minimize the potential disturbance of federally protected species during Project operations. The Project incorporates both design and operational procedures for minimizing potential impacts to special-status species.

4.1 PRE-ACTIVITY ENVIRONMENTAL ORIENTATION

A biologist will present an environmental orientation for all Project personnel prior to conducting work. The purpose of the orientation is to educate Project personnel on identification of wildlife in the Project area and to provide an overview of the mitigation measures that will be implemented during the Project. Specifically, the orientation will include, but not be limited to, the following:

- Identification of wildlife expected to occur in the Project area and periods of occurrence;
- Overview of the MMPA, FESA, and California Endangered Species Act (ESA), regulatory agencies responsible for enforcement of the regulations, and penalties associated with violations;
- Procedures to be followed during transit of Project vessels;
- Reporting requirements in the event of an inadvertent collision and/or injury to a marine wildlife or sensitive habitats; and
- Review of mitigation measures that must be implemented to avoid or minimize potential impacts to biological resources.

4.2 MONITORING

A qualified biological monitor shall be present on site to survey the work area prior to the commencement of Project activities to minimize the potential for impacts to any sensitive species or other wildlife that may be present during Project implementation. In addition, the biological monitor shall be on site at all times during Project operations. If at any time during Project operations special-status species (including but not limited to California least terns) are observed within the Project site, or within a predetermined radius surrounding the onshore portion of the Project site (as to be determined by the on-site biologist), all work shall be stopped or redirected to an area within the Project site that would not impact these species.

4.2.1 Marine Wildlife Contingency Plan

CRC will implement a Marine Wildlife Contingency Plan (MWCP) that includes measures designed to reduce the potential impacts on marine wildlife, particularly marine mammals, by the proposed offshore segment removal operations. The MWCP will be implemented by an experienced Protected Species Observer (PSO) who will be stationed onshore, above the high-high water line throughout the duration of the nearshore in water operations.

4.2.1.1 Monitoring Data

Information for each observation will be recorded by the PSO and will include the following data:

- Species, group size, age/size/sex categories (if determinable), behavior when first sighted and after initial sighting, heading (if determinable), distance from offshore operations, apparent reaction to activities (e.g., none, avoidance, approach, paralleling, etc.);
- Time and activity of the vessel, sea state, and visibility; and,
- The positions of other vessel(s) near the Project area.

The weather, distance of dive vessel from shore, sea state, and visibility will also be recorded at the start and end of each day, and whenever there is a substantial change in any of those variables. The PSO will record their observations onto datasheets or directly into handheld computers. Data will be summarized each day for reporting, and will facilitate transfer of the data to statistical, graphical, or other programs for further processing.

4.2.1.2 Protected Species Observers

Shore-based monitoring for marine wildlife will be performed by trained PSOs throughout the period of pipeline removal activities. The PSO will monitor the occurrence and behavior of marine wildlife near the Project vessel and in proximity to pipelines during all operations. PSO duties will include watching for and identifying marine wildlife; recording their numbers, distances, and reactions to the Project operations. One PSO will be present during all nearshore in water Project operations; however, if conditions change that reduce the PSOs ability to monitor the entire offshore Project area then additional PSOs will be retained to provide complete coverage.

The PSO will have the appropriate safety and monitoring equipment to conduct their observations, such as low light reticulated binoculars and spotting scope, as needed. The PSO may require a handheld radio for communication with the Project vessel, as necessary. In addition, cell phones, VHS radio, and email capabilities will be available to communicate with offshore personnel.

The PSO will coordinate with the captain of the Project vessel and the CRC Field Supervisor to select an appropriate monitoring position where they can monitor and will have a clear view of the area of ocean. The MWMs will observe marine wildlife and will request procedures to avoid potential collisions and/or entanglement with marine wildlife.

During active pipeline removal operations, the PSO shall establish avoidance Safety Zones around the primary work area for the protection of marine wildlife. A 500-ft (152-m)-radius avoidance Safety Zone will be implemented, and the Safety Zone will be based on the radial distance from either side of the pipeline corridor that is being actively removed. If the PSO should observe marine wildlife within the Safety Zone, the behavior of marine animal will be monitored, and the CRC Field Supervisor or Project Manager will be alerted of the potential for an imminent shut down. If the marine animal within the Safety Zone displays abnormal behaviors or distress, the monitor will immediately report that observation to the CRC Field Supervisor who will shut-down operations, if deemed necessary by the PSO, unless those actions will jeopardize the safety of the vessel or crew. Distress can be defined as any abnormal behavior that appears to be

related to Project operations such as sudden change in direction, rapid breathing, and sudden or erratic changes in behavior. The PSO will have the authority to stop any work that is perceived to be harming marine wildlife.

4.2.1.3 Reporting

Throughout the Project, observers will prepare a daily report summarizing the recent results of the monitoring program or at such other intervals as required by regulatory and resource agencies. The reports will summarize the species, number of marine wildlife sighted, and any required actions taken.

4.2.1.4 Injured or Dead Animals

If an injured or dead animal is sighted within Project area, activities will be shut down while the PSO conducts a brief investigation. Activities can resume after the PSO has (to the best of his/her ability) determined that the injury resulted from something other than pipeline recovery or Project vessel operations. After documenting those observations, including supporting documents (e.g., photographs or other evidence), the operations will resume. Within 24 hours of the observation, the PSO will notify NMFS and provide them with a copy of the written documentation. If the cause of injury or death cannot be immediately determined by the PSO, the incident will be reported immediately to either the NMFS Office of Protected Resources or the NMFS West Coast Regional Office.

4.3 MEASURES TO REDUCE POTENTIAL IMPACTS TO HARDBOTTOM HABITAT

An anchor pre-plot will be developed specific to the Project site and Project activities (Appendix B) which will be submitted with the Contractor Work Plan for review and approval by applicable agencies. Based on a recent geophysical survey of the Project area, the anchor plot illustrates the hard bottom areas that will be avoided during installation of moorings for the dive vessel. All mooring locations will be outside of established kelp beds.

Anchors will be lowered to the seafloor in a controlled manner and will be recovered using a crown line to pull it vertically through the water column reducing sediment resuspension, seafloor alteration, and potential damage to rocky substrate.

In addition, to reduce the likelihood of damage to seafloor habitats, each pipeline will be pulled along its existing alignment. The proposed Project has been engineered without the need for trenching or excavating because the pipeline has been observed to be exposed on top of the seafloor.

4.4 MEASURES TO REDUCE POTENTIAL VESSEL COLLISION IMPACTS ON MARINE WILDLIFE

During offshore segment removal, a dive support vessel will be stationary; therefore, collisions with marine wildlife are very unlikely in the immediate Project area. However, the potential exists for such collisions when transiting to the Project site. The following measures and procedures will be implemented to minimize the possibility of such collisions.

Vessel operators and on-board personnel will be watchful for marine mammals and turtles during vessel transit and Project activities. Slower moving and surface-dwelling turtles and larger

cetaceans could potentially be affected. More common marine mammals in the Project area, such as dolphins and pinnipeds, would be agile enough to avoid vessels. Regardless, all vessel operators shall observe the following guidelines:

- Make every effort to maintain the appropriate separation distance from sighted whales and other marine wildlife (e.g., sea turtles);
- Do not cross directly in front of (perpendicular to) migrating whales or any other marine mammal or turtle;
- When paralleling whales, vessels will operate at a constant speed that is not faster than that of the whales;
- Care will be taken to ensure that female whales are not be separated from their calves; and
- If a whale engages in evasive or defensive action, vessels will reduce speed or stop until the animal calms or moves out of the area.

If a collision with a marine mammal or turtle occurs, the vessel operator must document the conditions under which the accident occurred, including the following:

- Location of the vessel when the collision occurred (latitude and longitude);
- Date and time;
- Speed and heading of the vessel;
- Observation conditions (e.g., wind speed and direction, swell height, visibility in miles or kilometers, and presence of rain or fog);
- Species of marine wildlife contacted;
- Whether an observer was standing watch for the presence of marine wildlife; and
- Name of vessel, operator (the company), and captain or officer in charge of the vessel at time of accident.

Following an unanticipated strike, the vessel will stop if safe to do so. The vessel is not obligated to stand by and may proceed after confirming that it will not further damage the animal by doing so. The vessel will then communicate by radio or telephone all details to the vessel's base of operations. From the vessel's base of operations, a telephone call will be placed to the Stranding Coordinator, NMFS West Coast Region, Long Beach, California or other regulatory agency representatives to obtain instructions as required by Project permits.

Alternatively, the vessel captain may contact the NMFS' Stranding Coordinator directly using the marine operator to place the call or directly from an onboard telephone, if available. Under the MMPA, the vessel operator is not allowed to aid injured marine wildlife or recover the carcass unless requested to do so by the NMFS Stranding Coordinator. The Stranding Coordinator will then coordinate subsequent action, including enlisting the aid of marine mammal rescue organizations, if appropriate. As proposed, and with the existing measures incorporated into the vessel operations, vessel strikes could, but are not likely to, affect Federally listed marine species.

4.5 MEASURES TO REDUCE POTENTIAL OIL SPILL IMPACTS

An oil spill prevention plan will be used to avoid any release of oil-based products into the marine environment, and the existing oil spill response and recovery plan will be used to reduce the effects of accidentally discharged petroleum by facilitating rapid response and cleanup operations. Any Project vessel will be subject to the requirements and guidelines included within the Project-specific Oil Spill Contingency Plan (Appendix A). All vessel discharges will comply with the requirements of the Clean Water Act under the U.S. Coast Guard (USCG) regulation including the proper treatment and monitoring of vessel effluents as necessary.

Potential spill sources of hydrocarbons during Project activities include releases from offshore equipment (including Project vessels) used during the pipeline recovery activities, and/or accidental discharges from onshore fuel storage and refueling operations of construction equipment. Any Project vessel will fuel itself in harbor, prior to departure to the offshore Project site and will not require bunkering during Project activities. All Project vessels will have some equipment requiring fuel on board; however, the potential for a release from diesel-powered equipment onboard the vessels is minimal due to the small volume of fuel contained within each piece of equipment. Equipment that is used on a day-to-day basis will be monitored for leaks; if a leak is observed, the faulty equipment will cease operation and appropriate clean-up and corrective measures will be implemented. All equipment will have drip pans under them, and sorbent pads will be available on the vessel for clean-up of minor hydrocarbon leaks from the deck equipment. All equipment refueling will be conducted over secondary containment to minimize the potential for fuel spillage. All hydrocarbon-based fluids stored onboard the vessels will be in appropriate containers and will include secondary containment structures.

In the event of a spill, notifications will be made to the Project team, emergency agencies, clean-up contractors (if required), and other interested parties. If a spill impacts navigable waters, notification of the National Response Center is mandatory and normally results in simultaneous notification of the USCG.

5.0 CUMULATIVE EFFECTS

FESA Regulations at 50 CFR 402.14(g)(3)(4) require Federal agencies to “evaluate the effects of the action and cumulative effects on the listed species or critical habitat” and “formulate its biological opinion as to whether the action, taken together with cumulative effects, is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.”

According to the Endangered Species Consultation Handbook (USFWS and NMFS, 1998), cumulative effects include the effects of future State, local or private actions that are reasonably certain to occur in the action area considered in a biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to Section 7 of FESA. Indicators of effects “reasonably certain to occur” may include but are not limited to: approval of the action by State or local agencies or governments (e.g., permits, grants); indications by granting authorities that an action is imminent; assurances by project sponsors that an action will proceed; the obligation of venture capital; and/or initiation of contracts. Speculative non-Federal actions that may never be implemented are not factored into cumulative effects analyses. The following is a summary of the other marine projects conducted or proposed in the Project area.

5.1 COMPLETED PROJECTS

There are no known completed projects in the region that would contribute to the cumulative effects of the Project.

5.2 PROPOSED PROEJCTS

There are no known proposed projects in the region that would contribute to the cumulative effects of the Project.

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6.0 CONCLUSION AND DETERMINATION

Implementation of the Project will involve potential impacts to marine species and habitats that could affect threatened and endangered species in the Project area. A total of 30 Federally listed species have been analyzed in this BA. Table 6-1 provides an analysis of the potential Project effects on the following: habitat loss, mortality, harassment, loss of prey, loss of shelter/cover, loss of access to habitats, noise and light effects, habitat fragmentation, urbanization, increased predation, and critical habitat.

The proposed Project may affect, but is not likely to adversely affect, the listed and proposed species for the following reasons:

- The Project would not involve temporary or permanent loss of habitat;
- The Project would be of limited geographic effect; and
- The Project will include avoidance, minimization, and mitigation measures, as detailed in Section 4.0, to avoid and minimize potential adverse effects.

Table 6-1. Potential Effects Matrix for Protected Species

Species	Loss of Habitat ¹	Mortality ²	Harassment ³	Loss of Prey ⁴	Loss of Cover ⁵	Loss of Access ⁶	Noise/Light ⁷	Habitat Fragmentation ⁸	Urbanization ⁹	Predation ¹⁰	Critical Habitat ¹¹	Effect Determination ¹²
California orcutt grass	a,b	a	a	a	a	a	a	a	a	a	a	a
Gambel's watercress	a,b	a	a	a	a	a	a	a	a	a	a	a
Marsh sandwort	a,b	a	a	a	a	a	a	a	a	a	a	a
Salt marsh bird's-beak	a,b	a	a	a	a	a	a	a	a	a	a	a
Spreading navarretia	a,b	a	a	a	a	a	a	a	a	a	b	a
Ventura marsh milk-vetch	a,b	a	a	a	a	a	a	a	a	a	b	a
Black abalone	a,b	a	a	a	a	a	a	a	a	a	b	a
White abalone	a,b	a	a	a	a	a	a	a	a	a	a	a
California condor	a,b	a	a	a	a	a	a	a	a	a	b	a
California least tern	b	c	b	b	b	b	b,c	b	a	b	a	b
Least Bell's vireo	a,b	a	a	a	a	a	a	a	a	a	b	a
Light-footed clapper rail	a,b	a	a	a	a	a	a	a	a	a	a	a
Marbled murrelet	a,b	a	a	a	a	a	a	a	a	a	b	a
Southwestern willow flycatcher	a,b	a	a	a	a	a	a	a	a	a	b	a
Western snowy plover	a,b	a	a	a	a	a	a	a	a	a	b	a
California red-legged frog	a,b	a	a	a	a	a	a	a	a	a	b	a
Green turtle	b	b,c	b	b	b	b	b	b	a	b	b	b

Species	Loss of Habitat ¹	Mortality ²	Harassment ³	Loss of Prey ⁴	Loss of Cover ⁵	Loss of Access ⁶	Noise/Light ⁷	Habitat Fragmentation ⁸	Urbanization ⁹	Predation ¹⁰	Critical Habitat ¹¹	Effect Determination ¹²
Loggerhead turtle	b	b,c	b	b	b	b	b	b	a	b	b	b
Leatherback turtle	b	b,c	b	b	b	b	b	b	a	b	b	b
Olive ridley turtle	b	b,c	b	b	b	b	b	b	a	b	a	b
Tidewater goby	a	a	a	a	a	a	a	a	a	a	b	a
Southern Steelhead	a	a	a	a	a	a	a	a	a	a	b	a
Green sturgeon	a	a	a	a	a	a	a	a	a	a	b	a
Blue whale	b	b,c	b	b	b	b	b	b	a	b	a	b
Fin whale	b	b,c	b	b	b	b	b	b	a	b	a	b
Humpback whale	b	b,c	b	b	b	b	b	b	a	b	a	b
Northern right whale	a	a	a	a	a	a	a	a	a	a	a	a
Sperm whale	a	a	a	a	a	a	a	a	a	a	a	a
Sei whale	a	a	a	a	a	a	a	a	a	a	a	a
Guadalupe fur seal	a	a	a	a	a	a	a	a	a	a	a	a

Potential Effects Codes

¹Loss of Habitat Codes

- a. Species not expected to occur in Project area.
- b. No habitat will be temporarily or permanently lost.

²Mortality Codes

- a. Species not expected to occur in Project area.
- b. Collisions with vessels resulting in the death of listed species have occurred in the recent past. However, due to the Project's close proximity to shore, as

³Harassment

- a. Species not expected to occur in Project area.
- b. Project incorporated measures will eliminate the likelihood harassment will occur.

⁴Loss of Prey

- a. Species not expected to occur in Project area.
- b. No permanent loss of prey expected. Short-term displacement of prey from immediate area of operations could occur.

well as proposed mitigation measures, collisions are a low probability event.

- c. Oil spills from the Project vessels is a low probability event based on the nature of the Project.

⁵Loss of Shelter/Cover

- a. Species not expected to occur in Project area.
- b. Temporary displacement during Project activities within immediate work area. No permanent loss of cover.

⁹Urbanization

- a. Not applicable

⁶Loss of Access

- a. Species not expected to occur in Project area.
- b. Temporary displacement during Project operations likely only when vessel is in immediate area. No permanent loss of access.

¹⁰Increased Predation

- a. Species not expected to occur in Project area.
- b. Not likely to be vulnerable to increased predation due short duration of Project operations.

⁷Noise/Light Impacts

- a. Species not expected to occur in Project area.
- b. No anticipated light impact. Work is planned for daylight hours only.
- c. General construction noise will be minimal and temporary.

¹¹Critical Habitat

- a. No critical habitat designated for species.
- b. Critical habitat designated for species, but none occurring in Project area.

⁸Habitat Fragmentation

- a. Species not expected to occur in Project area.
- b. No temporary or permanent loss of habitat will occur. Consequently, no fragmentation.

¹²Effect Determination

- a. No effect
- b. May affect, but not likely to adversely affect
- c. May affect and likely to adversely affect

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APPENDIX A

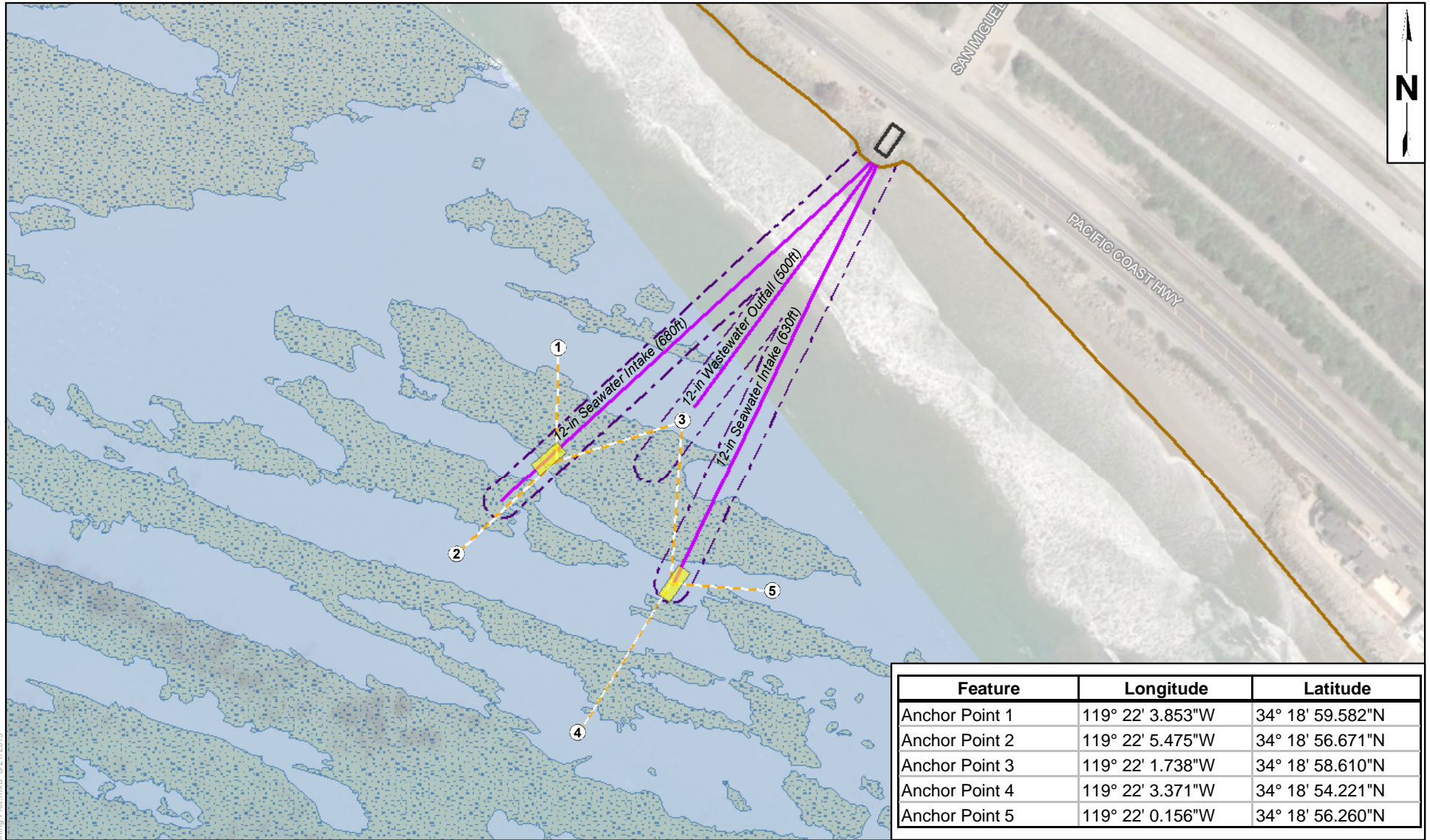
OIL SPILL RESPONSE PLAN

Plan in Progress

To Be Forwarded Once Completed

APPENDIX B

ANCHORING PLOT

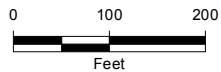


Feature	Longitude	Latitude
Anchor Point 1	119° 22' 3.853"W	34° 18' 59.582"N
Anchor Point 2	119° 22' 5.475"W	34° 18' 56.671"N
Anchor Point 3	119° 22' 1.738"W	34° 18' 58.610"N
Anchor Point 4	119° 22' 3.371"W	34° 18' 54.221"N
Anchor Point 5	119° 22' 0.156"W	34° 18' 56.260"N

LEGEND:

- # Proposed Anchor Point Location
- Proposed Anchor Line
- Dive Vessel
- Approximate Pipeline Location (to be fully removed)
- Approximate Disturbance Area
- 20ft x 40ft Concrete Vault
- Rocky Outcropping
- Sand
- Mean High Water Mark (MHW)

Source: Esri Online Imagery Basemap, NOAA, eTrac, Longitude 123
 Coordinate System: NAD 1983 UTM Zone 11N
 Notes: For the purposes of this map, the NOAA defined shoreline is assumed to be consistent with the MHW line. No field studies were done to establish the MHW line.
 ft = Feet
 This map was created for informational and display purposes only.



padre
 associates, inc.
 ENGINEERS, GEOLOGISTS &
 ENVIRONMENTAL SCIENTISTS

PROJECT NAME: CRC - DECOMMISSIONING OF
 GRUBB LEASE INTAKE/OUTFALL STRUCTURE
 VENTURA COUNTY, CA
 PROJECT NUMBER: 1802-2271
 DATE: June 2019

PROPOSED ANCHOR POSITIONING PLOT

APPENDIX C

U.S. Fish and Wildlife Service Species List



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ventura Fish And Wildlife Office
2493 Portola Road, Suite B
Ventura, CA 93003-7726
Phone: (805) 644-1766 Fax: (805) 644-3958



In Reply Refer To:

April 24, 2019

Consultation Code: 08EVEN00-2019-SLI-0474

Event Code: 08EVEN00-2019-E-01126

Project Name: CRC Decommissioning of Grubb Lease Intake/Outfall Structures

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed list identifies species listed as threatened and endangered, species proposed for listing as threatened or endangered, designated and proposed critical habitat, and species that are candidates for listing that may occur within the boundary of the area you have indicated using the U.S. Fish and Wildlife Service's (Service) Information Planning and Conservation System (IPaC). The species list fulfills the requirements under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the species list should be verified after 90 days. We recommend that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists following the same process you used to receive the enclosed list. Please include the Consultation Tracking Number in the header of this letter with any correspondence about the species list.

Due to staff shortages and excessive workload, we are unable to provide an official list more specific to your area. Numerous other sources of information are available for you to narrow the list to the habitats and conditions of the site in which you are interested. For example, we recommend conducting a biological site assessment or surveys for plants and animals that could help refine the list.

If a Federal agency is involved in the project, that agency has the responsibility to review its proposed activities and determine whether any listed species may be affected. If the project is a major construction project*, the Federal agency has the responsibility to prepare a biological assessment to make a determination of the effects of the action on the listed species or critical habitat. If the Federal agency determines that a listed species or critical habitat is likely to be adversely affected, it should request, in writing through our office, formal consultation pursuant to section 7 of the Act. Informal consultation may be used to exchange information and resolve conflicts with respect to threatened or endangered species or their critical habitat prior to a

written request for formal consultation. During this review process, the Federal agency may engage in planning efforts but may not make any irreversible commitment of resources. Such a commitment could constitute a violation of section 7(d) of the Act.

Federal agencies are required to confer with the Service, pursuant to section 7(a)(4) of the Act, when an agency action is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat (50 CFR 402.10(a)). A request for formal conference must be in writing and should include the same information that would be provided for a request for formal consultation. Conferences can also include discussions between the Service and the Federal agency to identify and resolve potential conflicts between an action and proposed species or proposed critical habitat early in the decision-making process. The Service recommends ways to minimize or avoid adverse effects of the action. These recommendations are advisory because the jeopardy prohibition of section 7(a)(2) of the Act does not apply until the species is listed or the proposed critical habitat is designated. The conference process fulfills the need to inform Federal agencies of possible steps that an agency might take at an early stage to adjust its actions to avoid jeopardizing a proposed species.

When a proposed species or proposed critical habitat may be affected by an action, the lead Federal agency may elect to enter into formal conference with the Service even if the action is not likely to jeopardize or result in the destruction or adverse modification of proposed critical habitat. If the proposed species is listed or the proposed critical habitat is designated after completion of the conference, the Federal agency may ask the Service, in writing, to confirm the conference as a formal consultation. If the Service reviews the proposed action and finds that no significant changes in the action as planned or in the information used during the conference have occurred, the Service will confirm the conference as a formal consultation on the project and no further section 7 consultation will be necessary. Use of the formal conference process in this manner can prevent delays in the event the proposed species is listed or the proposed critical habitat is designated during project development or implementation.

Candidate species are those species presently under review by the Service for consideration for Federal listing. Candidate species should be considered in the planning process because they may become listed or proposed for listing prior to project completion. Preparation of a biological assessment, as described in section 7(c) of the Act, is not required for candidate species. If early evaluation of your project indicates that it is likely to affect a candidate species, you may wish to request technical assistance from this office.

Only listed species receive protection under the Act. However, sensitive species should be considered in the planning process in the event they become listed or proposed for listing prior to project completion. We recommend that you review information in the California Department of Fish and Wildlife's Natural Diversity Data Base. You can contact the California Department of Fish and Wildlife at (916) 324-3812 for information on other sensitive species that may occur in this area.

[*A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.]

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Ventura Fish And Wildlife Office

2493 Portola Road, Suite B

Ventura, CA 93003-7726

(805) 644-1766

Project Summary

Consultation Code: 08EVEN00-2019-SLI-0474

Event Code: 08EVEN00-2019-E-01126

Project Name: CRC Decommissioning of Grubb Lease Intake/Outfall Structures

Project Type: OIL OR GAS

Project Description: The Project objective is the removal of the pipelines and appurtenant facilities to fulfill the existing lease requirements and quit claim the lease. The Project site is comprised of two main segments; Onshore Segment and Offshore Segment. The Onshore Segment is approximately 325 feet in length and includes the onshore vault and a buried 36-inch casing. The Onshore Segment removal will require conventional construction equipment including bulldozer, excavators, front end loader, and crane. The Offshore Segment is approximately 635 feet in length and extends from the beach vault to the offshore ends of the three pipelines. The Offshore Segment removal will require a team of commercial divers, a dive support vessel, and onshore winch to pull each pipeline along its existing alignment toward the shore. The excavators working on the beach will cut the pipe into truckable sections and move the cut sections up to the laydown area.

Project operations have been proposed to take place in Fall or Winter 2019/2020 to take advantage of low-tide conditions during that time of year. It is expected that Project activities will be conducted during daylight hours (approximately 12 hours/day) for approximately 39 days.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/34.31639736496837N119.36744231896171W>



Counties: Ventura, CA

Endangered Species Act Species

There is a total of 17 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.
-

Birds

NAME	STATUS
California Condor <i>Gymnogyps californianus</i> Population: U.S.A. only, except where listed as an experimental population There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8193	Endangered
California Least Tern <i>Sterna antillarum browni</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered
Least Bell's Vireo <i>Vireo bellii pusillus</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5945	Endangered
Light-footed Clapper Rail <i>Rallus longirostris levipes</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6035	Endangered
Marbled Murrelet <i>Brachyramphus marmoratus</i> Population: U.S.A. (CA, OR, WA) There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4467	Threatened
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered
Western Snowy Plover <i>Charadrius nivosus nivosus</i> Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8035	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog <i>Rana draytonii</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened

Fishes

NAME	STATUS
Tidewater Goby <i>Eucyclogobius newberryi</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/57	Endangered

Crustaceans

NAME	STATUS
Riverside Fairy Shrimp <i>Streptocephalus woottoni</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8148	Endangered
Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened

Flowering Plants

NAME	STATUS
California Orcutt Grass <i>Orcuttia californica</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4923	Endangered
Gambel's Watercress <i>Rorippa gambellii</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4201	Endangered
Marsh Sandwort <i>Arenaria paludicola</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2229	Endangered
Salt Marsh Bird's-beak <i>Cordylanthus maritimus</i> ssp. <i>maritimus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6447	Endangered
Spreading Navarretia <i>Navarretia fossalis</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1334	Threatened
Ventura Marsh Milk-vetch <i>Astragalus pycnostachyus</i> var. <i>lanosissimus</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1160	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

APPENDIX F

Marine Wildlife Contingency and Training Plan

MARINE WILDLIFE CONTINGENCY AND TRAINING PLAN

CALIFORNIA RESOURCES CORPORATION DECOMMISSIONING OF THE GRUBB LEASE INTAKE/OUTFALL STRUCTURE VENTURA COUNTY, CALIFORNIA

Project No. 1802-2271

Prepared for:

California Resources Corporation
2575 Vista del Mar, Suite 101
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Prepared by:

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San Luis Obispo, California 93401

DECEMBER 2019



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1.0 INTRODUCTION

This Marine Wildlife Contingency and Training Plan (MWCTP) has been prepared in support of the California Resources Corporation (CRC) Grubb Lease Intake and Outfall Decommissioning Project (Project). The purpose of the MWCTP is to list measures that are designed to reduce or eliminate potential impacts of the proposed decommissioning activities on marine mammals, reptiles, and birds (marine wildlife). Additional mitigation and contingency measures may be incorporated into this MWCTP after the issuance of applicable Project permits.

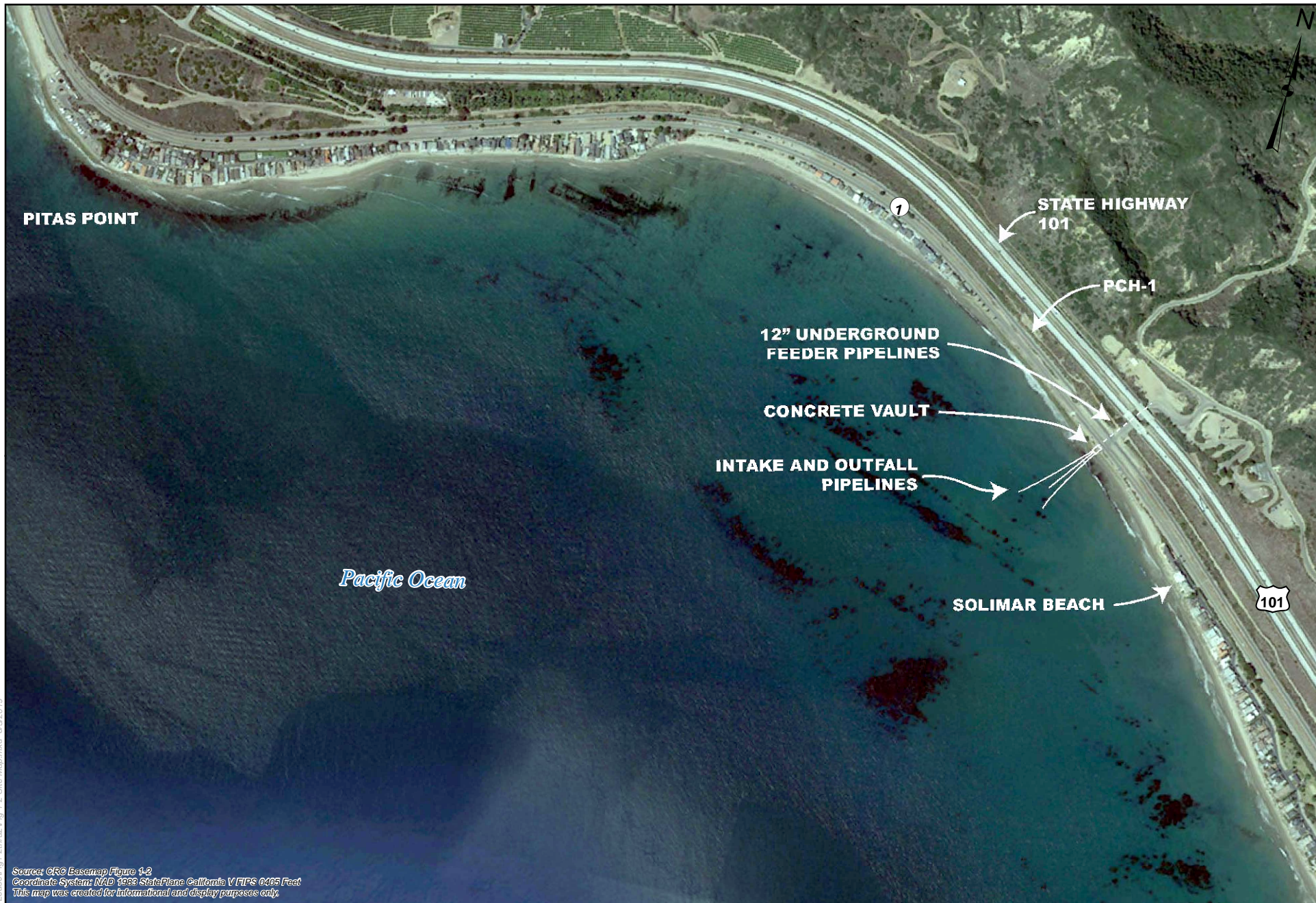
1.1 PROJECT DESCRIPTION AND LOCATION

The proposed Project is located adjacent to Old Rincon Highway (Pacific Coast Highway 1 [PCH], or State Highway 1) approximately 792 feet (241.4 meters) northwest of Solimar Beach at the foot of the “A” Lease Road underpass underneath U.S. Highway 101 (Figure 1-1).

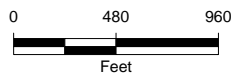
The Project objective is the removal of the pipelines and appurtenant facilities to fulfill the existing California State Lands Commission lease requirements and quit claim the lease. The Project site is comprised of two main segments; Onshore Segment and Offshore Segment. The Onshore Segment includes the onshore vault and a buried 36-inch (91.4-centimeter) casing. The Onshore Segment extends from the beach vault structure east along the casing right of way under PCH, Union Pacific Railroad and Highway 101 right-of-ways and terminates within the lower Grubb lease. The Offshore Segment extends from the beach vault to the offshore ends of the three pipelines. The pipelines terminate in water depths ranging between 12 to 14 feet (3.6 to 4.3 meters) of water.

1.2 POTENTIAL IMPACTS

Operations associated with the removal of the intake and outfall pipelines and vault components are not expected to result in injury or long-term disturbance of marine wildlife. Though unlikely, there is the potential for incidents with wildlife during the transiting of work vessels to the Project site from Ventura Harbor and subtidal decommissioning activities. It is anticipated that decommissioning activities will be short-term and will be completed in shallow water depths (less than 15 feet [4.6 meters]) using a limited amount of equipment, including a dive vessel and onshore equipment, and will thus only have a limited potential to impact wildlife.



Source: CRC Basemap Figure 1-2
 Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
 This map was created for informational and display purposes only.



padre
 associates, inc.
 ENGINEERS, GEOLOGISTS &
 ENVIRONMENTAL SCIENTISTS

PROJECT NAME: CRC - DECOMMISSIONING OF GRUBB LEASE INTAKE/OUTFALL STRUCTURE VENTURA COUNTY, CA	
PROJECT NUMBER: 1802-2271	DATE: June 2019

PROJECT LOCATION

FIGURE
1-1

2.0 MARINE WILDLIFE

Multiple species of marine turtles, cetaceans (whales, dolphins, and porpoises), and pinnipeds (seals and sea lions) have been recorded within southern California State waters. Most of the recorded species can occur within the Project region, although seasonal abundances of these taxa vary; pinnipeds and some dolphins are year-round residents. Other marine species are migratory, such as the gray whale (*Eschrichtius robustus*), or seasonal, such as the blue and humpback whales (*Balaenoptera musculus* and *Megaptera novaeangliae*, respectively) and are more abundant during specific months. Resident, seasonal, and migrant taxa are all expected to occur along the coastline of California.

Table 2-1 provides a list of marine mammal species that could be present in the Project area during the decommissioning activities. Larger whale and dolphin species may be encountered during dive vessel mobilization and transit; however, larger marine mammals are not expected to occur within the immediate Project area. Table 2-2 provides information on the seasonal distributions in the marine wildlife community within the Project region. It is important to note that where seasonal differences occur individuals may also be found within the area during the “off” season. Also, depending on the species, the numbers of abundant animals present in their “off” season may be greater than the numbers of less common animals in their “on” season.

Table 2-1. Population Status of Marine Mammals Expected to Occur in the Project Area

Common Name Scientific Name	Status ^{1,2}	Minimum Population Estimate	Current Population Trend	Source
MYSTICETI CETACEANS				
California gray whale <i>Eschrichtius robustus</i>		20,125 (Eastern North Pacific Stock)	Fluctuating annually	NMFS, 2015a
Humpback whale <i>Megaptera novaeangliae</i>	FE (Central America DPS) FT (Mexico DPS) ³	1,876 (California/Oregon/Washington Stock)	Increasing	NMFS, 2016a
Minke whale <i>Balaenoptera acutorostrata</i>		369 (California/Oregon/Washington Stock)	No long-term trends suggested	NMFS, 2016b
ODONTOCETI CETACEANS				
Long-beaked common dolphin <i>Delphinus capensis</i>		68,432 (California Stock)	Unable to determine	NMFS, 2017a
Short-beaked common dolphin <i>Delphinus delphis</i>		839,325 (California/Oregon/Washington Stock)	Unable to determine	NMFS, 2017b
Bottlenose dolphin <i>Tursiops truncatus</i>		1,255 (California/Oregon/Washington Offshore Stock)	No long-term trends suggested	NMFS, 2017c
		346 (California Coastal Stock)	No long-term trends suggested	NMFS, 2017d
OTARIID PINNIPEDS				
California sea lion <i>Zalophus californianus</i>		153,337 (U.S. Stock)	Increasing	NMFS, 2015b
PHOCID PINNIPEDS				
Pacific harbor seal <i>Phoca vitulina richardsi</i>		27,348 (California Stock)	Decreasing	NMFS, 2015c

Notes DPS = Distinct Population Segment

¹ **Status Codes:**

FE Federally listed Endangered Species

FT Federally listed Threatened Species

² All marine mammals are Federally protected under the Marine Mammal Protection Act (MMPA).

³ Individuals from both the Central America and Mexico DPS are known to feed along the California coast.

Table 2-2. Periods of Occurrence of Marine Mammals Expected to Occur in the Project Area

Family Common Name	Month of Occurrence ⁽¹⁾											
	J	F	M	A	M	J	J	A	S	O	N	D
Mysticeti												
California gray whale												
Humpback whale (E - Central America DPS) (T – Mexico DPS)												
Minke whale												
Odontoceti												
Short-beaked common dolphin												
Long-beaked common dolphin												
Bottlenose dolphin												
Pinnipedia												
California sea lion												
Pacific harbor seal												
<div> <div>Rare with uniform distribution</div> <div>Not expected to occur</div> <div>More likely to occur due to seasonal distribution</div> <div>Present Year Round</div> </div>												

Notes:

(E) Federally listed endangered species.

(T) Federally listed threatened species.

(1) Where seasonal differences occur, individuals may also be found in the “off” season. Also, depending on the species, the numbers of abundant animals present in their “off” season may be greater than the numbers of less common animals in their “on” season.

3.0 MITIGATIONS AND MONITORING

3.1 PRE-ACTIVITY ENVIRONMENTAL ORIENTATION

A biologist will present an environmental orientation for all Project personnel prior to conducting work. The purpose of the orientation is to educate Project personnel on identification of wildlife likely to be encountered in the Project area and to provide an overview of the wildlife mitigation measures that will be implemented during the Project. Specifically, the orientation will include, but not be limited to, the following:

- Identification of wildlife expected to occur in the Project area and periods of occurrence along the Santa Barbara Channel coast;
- Overview of the MMPA, FESA, CESA regulatory agencies responsible for enforcement of the regulations, and penalties associated with violations;
- Procedures to be followed during activities that are most likely to affect marine wildlife (i.e., mobilization/demobilization, transiting and anchoring of Project vessels); and
- Reporting requirements in the event of an inadvertent collision and/or injury to a marine mammal or sensitive habitats.

3.2 MONITORING AND MITIGATIONS

3.2.1 Marine Wildlife Monitor

Marine wildlife monitoring will be conducted by trained Marine Wildlife Monitor (MWM) who will be stationed on the Project dive support vessel during all offshore Project activities including vessel transit, anchoring, pre-Project surveys, and active pipeline recovery activities. The MWM will be experienced in marine wildlife identification and able to describe relevant behaviors that may occur in proximity to in-water construction activities. The MWM will be placed at the best vantage point practical to monitor for marine wildlife and will be in direct communication with lead Project manager and vessel captain in case shutdown/delay procedures need to be implemented. The MWM will have the appropriate safety and monitoring equipment to conduct their observations, including low-light reticulated binoculars and a spotting scope, as necessary. One MWM will be present during all nearshore in water Project operations; however, if conditions change that reduce the MWMs ability to monitor the entire offshore Project area then additional MWMs will be retained to provide complete coverage. The MWM(s) will be authorized to stop work, stop the vessel, or slowing of the vessel's speeds to avoid marine wildlife conflicts.

3.2.2 Vessel Transit and Mobilization

The area in and around the Santa Barbara Channel supports local populations of marine wildlife. The most common species likely to occur during Project activities, includes: short- and long-beaked common dolphin (*Delphis delphis* and *Delphis capensis*, respectively), Pacific white-

sided dolphin (*Lagenorhynchus obliquidens*), bottlenose dolphin (*Tursiops truncatus*), California sea lion (*Zalophus californicus*), harbor seal (*Phoca vitulina richardsi*), California gray whale (*Eschrichtius robustus*), humpback whale (*Megaptera novaeangliae*), and occasionally sea turtles (Cryptodira). The mobilization and demobilization will involve Project dive vessel(s) traveling to and from Ventura Harbor located approximately 6.8 nautical miles (12.7 km) south of the Project site. In general, vessels will remain at least 300 feet (91.4 meters) from marine mammals while in transit, which is the recommended distance set by NOAA Fisheries, to minimize the chance of collision or disturbance.

Dolphins are typically identified from a distance due to the surface disturbance created as they swim. Dolphins generally tolerate or even approach vessels, and reactions to boats often appear to be related to the dolphins' normal activity. Dolphins will often swim alongside a moving vessel, riding the bow or stern wake. If dolphins are observed swimming immediately adjacent to the vessel, the vessel would slow down and keep a steady course until the dolphins lose interest.

Pinnipeds' responses to vessels can vary; however, sea lions in the water often tolerate close and frequent approach vessels. California sea lions are the only pinniped within the Project area that regularly haul-out on man-made structures such as docks, buoys, oil and gas structures and even slow-moving vessels. Harbor seals who are hauled-out will often retreat into the water in response to approaching boats. In addition, less severe disturbances can cause alert reactions without departure from the haul-out area.

Cetaceans (whales) vary in their swimming patterns and duration of dives and therefore the onboard marine wildlife monitors and all shipboard personnel will be watchful as the vessel crosses the path of a whale or anytime whales are observed in the area.

Once arriving and anchoring on-site, the dive support vessel will be stationary; therefore, collisions with marine wildlife are very unlikely in the immediate Project area. However, the potential exists for such collisions when transiting to the Project site. The following measures and procedures will be implemented to minimize the possibility of such collisions.

Vessel operators and on-board personnel will be watchful for marine mammals and turtles during vessel transit and Project activities. Slower moving and surface-dwelling turtles and larger cetaceans could potentially be affected. More common marine mammals in the Project area, such as dolphins and pinnipeds, would be agile enough to avoid vessels. Regardless, all vessel operators shall observe the following guidelines:

- Make every effort to maintain the appropriate separation distance from sighted whales and other marine wildlife (e.g., sea turtles);
- Do not cross directly in front of (perpendicular to) migrating whales or any other marine mammal or turtle;
- When paralleling whales, vessels will operate at a constant speed that is not faster than that of the whales;

- Care will be taken to ensure that female whales are not to be separated from their calves; and
- If a whale engages in evasive or defensive action, vessels will reduce speed or stop until the animal calms or moves out of the area.

During vessel transit, the vessel operator and MWM will monitor the course of travel for fishing gear and will take steps to avoid any gear observed. Work activities will not occur within 100 feet of observed fishing gear and the Project crew will not remove or relocate any fishing gear; removal or relocation shall only be accomplished by the owner of the gear or a designated CDFW officer.

3.2.3 Anchoring

Offshore work will be initiated by the anchoring of the dive support vessel over the terminus of the intake and outfall structures as detailed in the Project Marine Safety and Anchoring Plan (Longitude 123, 2019). The anchoring of the dive vessel will include placement of three mooring anchors into pre-designated anchor spreads. The coordinates of all pre-designated anchor locations will be entered into a differential Global Positioning System (GPS) system onboard the dive support vessel to ensure anchors are placed at those locations only. The anchors will be lowered to the seafloor by the crown line at the pre-designated site, and the anchor will be raised vertically by the crown line for transport back to the support barge when the anchors are “weighed” (lifted off of the seafloor). Vertical deployment of anchors to and from location eliminates unnecessary anchor wire contact with the seafloor. It should be noted that at no time will the contractor be permitted to drag anchors across the sea floor.

Immediately prior to lowering the anchors into position, the MWM will scan the Project area for the presence of any marine wildlife. This measure is intended to avoid potential impacts associated with lowering of vessel anchors (i.e., anchors and chain lengths could potentially injure marine wildlife). In the event marine wildlife are identified within the Project area, anchoring procedures will be delayed until the animal(s) move a safe distance from the Project area, as determined by the marine wildlife monitor.

3.2.4 Offshore Construction Activities

During offshore construction, all marine operations will be conducted per the procedures outlined in the Marine Safety and Anchoring Plan incorporated into the Contractor Work Plan, and which emphasizes “good mariner practices.” Further, every effort to avoid approaching and disturbing marine mammals in the water or at rest should be conducted. However, in the unlikely event that a marine wildlife is observed proximal to decommissioning activities, the MWM will observe the animal and will alter or cease onboard operations if the animal may be directly or indirectly affected.

3.2.5 Monitoring Safety Zone Radius

During active pipeline recovery operations, the MWM shall establish avoidance Safety Zones around the primary work area for the protection of marine wildlife. A 500-foot (152-meter) radius avoidance Safety Zone will be implemented, and the Safety Zone will be based on the radial distance from either side of the pipeline corridor that is being actively removed and/or the divers' work area. If the MWM should observe marine wildlife within the Safety Zone, the behavior of marine animal will be monitored, and the CRC Field Supervisor or Project Manager will be alerted of the potential for an imminent shut down. If the marine animal within the Safety Zone displays abnormal behaviors or distress, the monitor will immediately report that observation to the CRC Field Supervisor who will shut-down operations, if deemed necessary by the MWM, unless those actions will jeopardize the safety of the vessel or crew. Distress can be defined as any abnormal behavior that appears to be related to Project operations such as sudden change in direction, rapid breathing, and sudden or erratic changes in behavior. The MWM will have the authority to stop any work that is perceived to be harming marine wildlife.

3.2.6 Pre- and Post-Decommissioning Debris Surveys

A pre-Project geophysical debris survey was conducted prior to Project planning and permitting to verify the alignment and existing conditions of the offshore pipelines. A post-Project debris survey will be conducted following removal of the pipelines utilizing low-energy geophysical equipment within the offshore facilities lease boundary. The purpose of the pre-Project debris survey is to provide a baseline image of the seafloor that can be used to check against the results of a post-Project debris survey to ensure that any decommissioning-related debris is identified and recovered. The post-decommissioning survey will aid in identifying any targeted debris items that were missed or created by the decommissioning operations. Surveys utilizing geophysical equipment, such as multi-beam echosounders, fall under the California State Lands Commission (CSLC) Low Energy Offshore Geophysical Permit Program (OGPP). Debris surveys will be conducted by a currently permitted operator, and prior to the initiation each survey, a separate, survey-specific MWCTP will be prepared in accordance with a CSLC issued Low-Energy Geophysical Permit.

3.3 PROJECT LIGHTING

Nighttime work is not anticipated during the Project; however, if lighting is required for work in low light conditions, specific impact avoidance measures will be implemented, as necessary. To minimize potential impacts on marine wildlife and resting shore birds, lighting will be low intensity and directed downward to conduct specific tasks. Direct illumination of wildlife will be avoided, and when possible, green lighting will be used to reduce attraction to the lights and equipment.

4.0 PROCEDURE FOR INJURED OR DECEASED WILDLIFE

4.1 COLLISION WITH MARINE WILDLIFE

In the event a collision with marine mammal or reptile occurs, the vessel captain must document the conditions under which the accident occurred, including the following:

- Location (latitude and longitude) of the vessel when the collision occurred;
- Date and time of collision;
- Speed and heading of the vessel at the time of collision;
- Observation conditions (e.g., wind speed and direction, swell height, visibility in miles or kilometers, and presence of rain or fog) at the time of collision;
- Species of marine wildlife contacted (if known);
- Whether an observer was monitoring marine wildlife at the time of collision; and
- Name of vessel, vessel owner/operator (the company), and captain or officer in charge of the vessel at time of collision.

In the event a collision occurs, the vessel will stop, if safe to do so. However, the vessel is not obligated to stand by and may proceed after confirming that it will not further damage the marine wildlife by doing so. The vessel operator will then communicate by radio or telephone all details to the vessel's base of operations.

From the vessel's base of operations, a telephone call will be placed immediately to the National Marine Fisheries Service (NMFS) West Coast (California) Stranding Coordinator in Long Beach (Table 4-1) to obtain instructions. Alternatively, the vessel captain may contact the NMFS Stranding Coordinator directly using the marine operator to place the call or directly from an onboard telephone, if available.

The MMPA requires that collisions with, or other project-related impacts to, marine wildlife will be reported promptly to the NMFS Stranding Coordinator. From the report, the NMFS Stranding Coordinator will coordinate subsequent action, including enlisting the aid of CDFW and/or marine mammal rescue organizations, if necessary.

It is unlikely that the vessel will be asked to stand by until NOAA Fisheries or CDFW personnel arrive; however, this will be determined by the NOAA Fisheries Stranding Coordinator. According to the MMPA, the vessel operator is not allowed to aid injured marine wildlife or recover the carcass unless requested to do so by the Stranding Coordinator.

Although NOAA Fisheries has primary responsibility for marine wildlife in both State and Federal waters, the CDFW will also be advised if an incident has occurred in State waters affecting a protected species. NOAA, CSLC, and CDFW will be notified within 24 hours upon any collision with marine wildlife. Reports will be communicated to the Federal and State agencies listed in Table 4-1.

Table 4-1. Collision Contact Information

Federal	State	
Justin Viezbicke Stranding Coordinator NOAA Fisheries Service Long Beach, California (562) 980-3230	Enforcement Dispatch Desk California Department of Fish and Wildlife Los Alamitos, California (562) 590-5132	California State Lands Commission Sacramento, California (916) 574-1900

5.0 OBSERVATION RECORDING AND MONITORING REPORT

The MWM will record observations on data forms and will photo-document observations whenever possible. Throughout the Project, observers will prepare a daily report summarizing the recent results of the monitoring program or at such other intervals as required by regulatory and resource agencies. The reports will summarize the species, number of marine wildlife sighted, and any required actions taken. A Project completion technical report will be prepared and provided to the appropriate agencies, if requested. The report will document Project activities, evaluate the effectiveness of monitoring protocols, report marine wildlife sightings (species and numbers), any wildlife behavioral changes, and any Project delays or cessation of operations due to the presence of marine wildlife in the Project area. The report will be submitted to CSLC and any other appropriate agencies no more than 90 days following completion of the Project.

6.0 REFERENCES

- Longitude, 123. Marine Safety and Anchoring Plan for CRC Decommissioning of Grubb Lease Intake/Outfall Structures. June 2019.
- National Marine Fisheries Service (NMFS). 2017a. Long-beaked common dolphin (*Delphinus capensis*) California Stock. Revised February 10, 2017.
- _____. 2017b. Marine Mammal Stock Assessment Report Short-beaked common dolphin (*Delphinus delphis*) California/Oregon/Washington Stock. Revised February 7, 2017.
- _____. 2017c. Marine Mammal Stock Assessment Report Common Bottlenose dolphin (*Tursiops truncatus truncatus*) California/Oregon/Washington Offshore Stock. February 7, 2017.
- _____. 2017d. Marine Mammal Stock Assessment Report Common Bottlenose dolphin (*Tursiops truncatus*) California Coastal Stock. February 9, 2017.
- _____. 2016a. Marine Mammal Stock Assessment Report Humpback whale (*Megaptera novaeangliae*) California/Oregon/Washington Stock. Revised September 21, 2016.
- _____. 2016b. Marine Mammal Stock Assessment Report Minke whale (*Balaenoptera acutorostrata scammoni*) California/Oregon/Washington Stock. Revised August 16, 2016.
- _____. 2015a. Marine Mammal Stock Assessment Report Gray Whale (*Eschrichtius robustus*) Eastern North Pacific Stock. Revised July 31, 2015.
- _____. 2015b. Marine Mammal Stock Assessment Report California sea lion (*Zalophus californianus*): U.S. Stock. Revised June 30, 2015.
- _____. 2015c. Marine Mammal Stock Assessment Report Harbor Seal (*Phoca vitulina richardii*) California Stock. Revised July 31, 2015.

APPENDIX G

Essential Fish Habitat Assessment

ESSENTIAL FISH HABITAT ASSESSMENT

CALIFORNIA RESOURCES CORPORATION DECOMMISSIONING OF THE GRUBB LEASE INTAKE/OUTFALL STRUCTURE VENTURA COUNTY, CALIFORNIA

Project No. 1802-2271

Prepared for:

California Resources Corporation
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Prepared by:

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JUNE 2019



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1.0 INTRODUCTION

In support of a permit application to the U.S. Army Corps of Engineers (ACOE), Los Angeles District, and to satisfy the requirements of Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act, the following assessment of potential impacts to Essential Fish Habitat (EFH) has been prepared. This EFH assessment is for the California Resources Corporation (CRC) Decommissioning of the Grubb Lease Intake/Outfall Structure Project (Project). This assessment is prepared in accordance with 50 Code of Federal Regulations (CFR) 600.920(g)(2) and addresses the managed fish and invertebrate taxa that could occur at the Project site.

EFH is defined as “...those waters and substrate necessary for fish spawning, breeding, feeding, or growth to maturity.” “Waters,” as used in this definition, are defined to include “aquatic areas and their associated physical, chemical, and biological properties that are used by fish.” These may include “...areas historically used by fish where appropriate; ‘substrate’ to include sediment, hard bottom, structures underlying the waters, and associated biological communities.” “Necessary” means, “the habitat required to support a sustainable fishery and the managed species’ contribution to a healthy ecosystem.” EFH is described as a subset of all habitats occupied by a species (NOAA, 1998).

1.1 PROPOSED ACTION

The proposed Project is located adjacent to Old Rincon Highway (Pacific Coast Highway 1 [PCH], or State Highway 1) approximately 792 feet northwest of Solimar Beach at the foot of the “A” Lease Road underpass underneath U.S. Highway 101 (Figure 1-1).

The Project objective is the removal of the pipelines and appurtenant facilities to fulfill the existing California State Lands Commission lease requirements and quit claim the lease. The Project site is comprised of two main segments; Onshore Segment and Offshore Segment. The Onshore Segment includes the onshore vault and a buried 36-inch casing. The Onshore Segment extends from the beach vault structure east along the casing right of way under PCH, Union Pacific Railroad and Highway 101 right-of-ways and terminates within the lower Grubb lease. The Offshore Segment extends from the beach vault to the offshore ends of the three pipelines. The pipelines terminate in water depths ranging between 12 to 14 feet of water.

1.2 SITE CHARACTERISTICS

The environmental setting for the Project includes nearshore, shallow water depths, and mixed substrates of sand and sedimentary rock (Figure 1-2). The nearshore marine habitats and biota are typical of those found in similar water depths along the Santa Barbara Channel coastline. The seafloor habitat inshore of the 16-foot (4.8 m) isobath includes mixed substrate types consisting of medium-sized cobble (four to eight-inch [10 to 20-centimeter] diameter) and small boulders (10 to 15-inch [25 to 38 centimeter] diameter), as well as low-relief sandstone bedrock and short expanses of sand in between bedrock. Sand waves of less than one inch were observed within sandy-bottom areas (Padre, 2018).

Marine biological dive surveys were conducted of the three exposed pipelines (wastewater outfall, southern intake, and northern intake pipes) and pipeline corridors in November 2018

(Appendix A – Pre-Construction Marine Biological Dive Survey Letter-Report). In general, substrate types were similar between all three pipelines. A bed of giant kelp (*Macrocystis pyrifera*) occurs offshore of the pipelines, but its density become sparse southwest of pipelines' termini and was not established within the survey corridors during the November survey. Kelp bed density fluctuates with the seasons, increasing during the summer months and decreasing after winter storms. Kelp is not present within the surf zone where wave action disturbs the seafloor.

Algal species along the wastewater outfall pipeline consists of low red and brown turf alga, encrusting and articulated coralline algae (*Corallina* sp., *Calliarthron* sp. and *Lithothamnium* sp.), and branching red algae (*Mastocarpus* [*Gigartina*] *papillate*, *Cryptosiphonia woodii* and *Mazzaella* [*Rhodoglossum*] *affinis*) covered with epibiotic bryozoans (*Bugula neritina*). During dive surveys a patch of surf grass (*Phyllospadix* sp.) was observed growing on the top of the wastewater outfall pipeline at a water depth of 12 ft (3.6 m). The surfgrass patch was minimal and covered a total area of approximately five square feet. Neither surfgrass nor eelgrass (*Zostera marina*) were observed anywhere else within the survey corridor. No invasive species were identified (i.e., *Culerpa taxifolia* or *Sargassum horneri*). Giant kelp was observed in one location off the pipeline approximately seven feet south of the pipeline in 13 ft (4 m) of water. The kelp was sparse and only two individual thalli were observed.

Epibiotia and macrofauna consisted of dense growth of bryozoans (*Hippodiplosia insculpta* and *Membranipora* sp.), stalked tunicates (*Styela montereyensis*), angular unicorn snails (*Acanthinucella spirata*), orange and yellow sponges (*Halichondria* sp.) and Spanish shawl nudibranchs (*Flabellinopsis iodinea*). An occasional solitary anemone (*Anthopleura* sp.) was observed underneath and between the pipeline and bedrock. In addition, California spiny lobster (*Panulirus interruptus*) were observed within gaps underneath the pipeline and inside of the end of the pipeline where it is open to the seawater. Evidence of gaper clams (*Tresus* sp.) was observed within the sand and cobble substrate. No abalone species were observed during dive surveys and the area appeared generally devoid of fish species although a few perch (*Embiotocidae*) and sculpin (*Cottidae*) species were present. Habitat along the northern and southern intake pipelines is similar to the wastewater outfall pipeline. There was no additional seagrass or kelp observed during dive surveys on the adjacent pipelines.

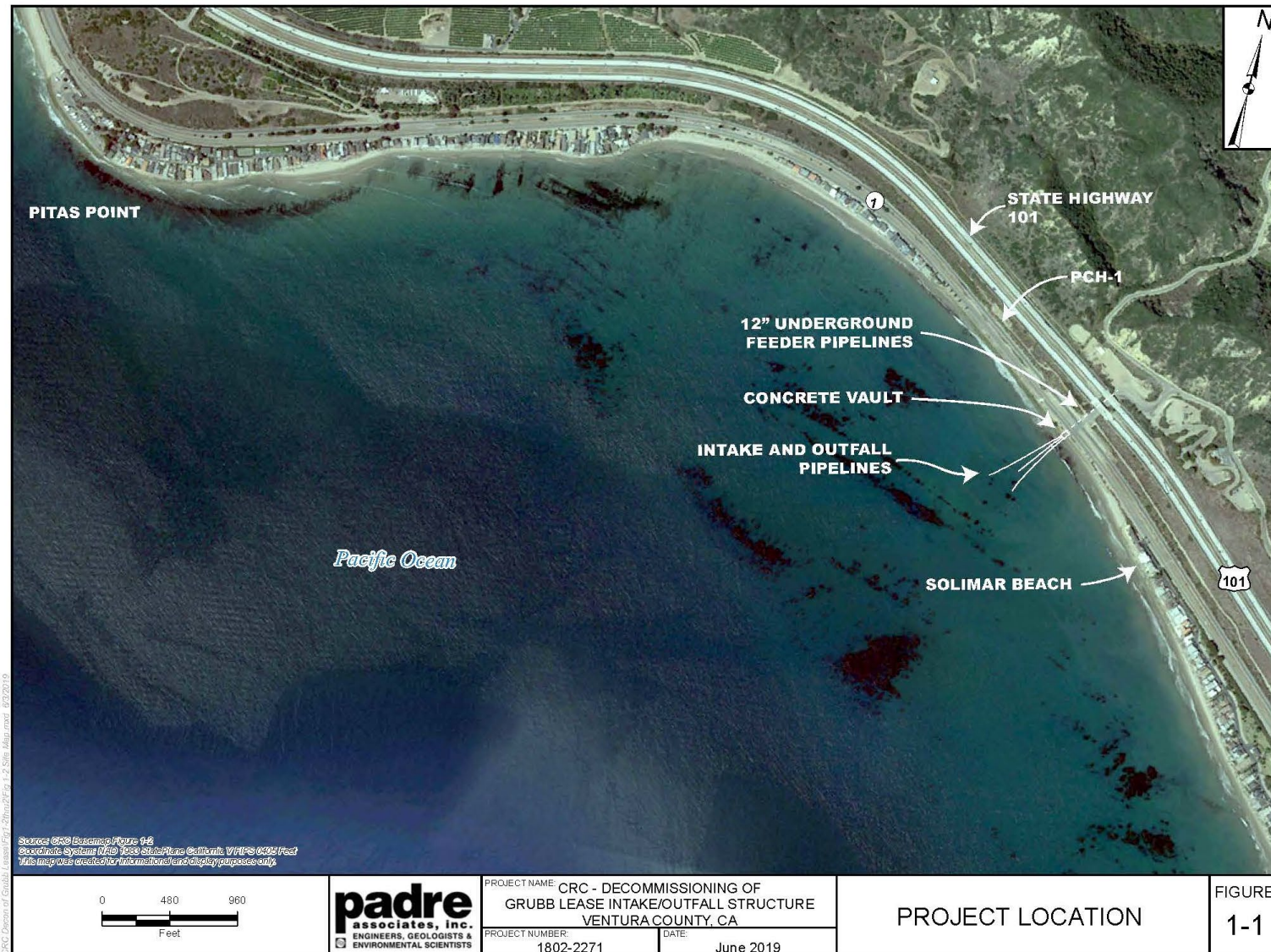


Figure 1-1. Project Location

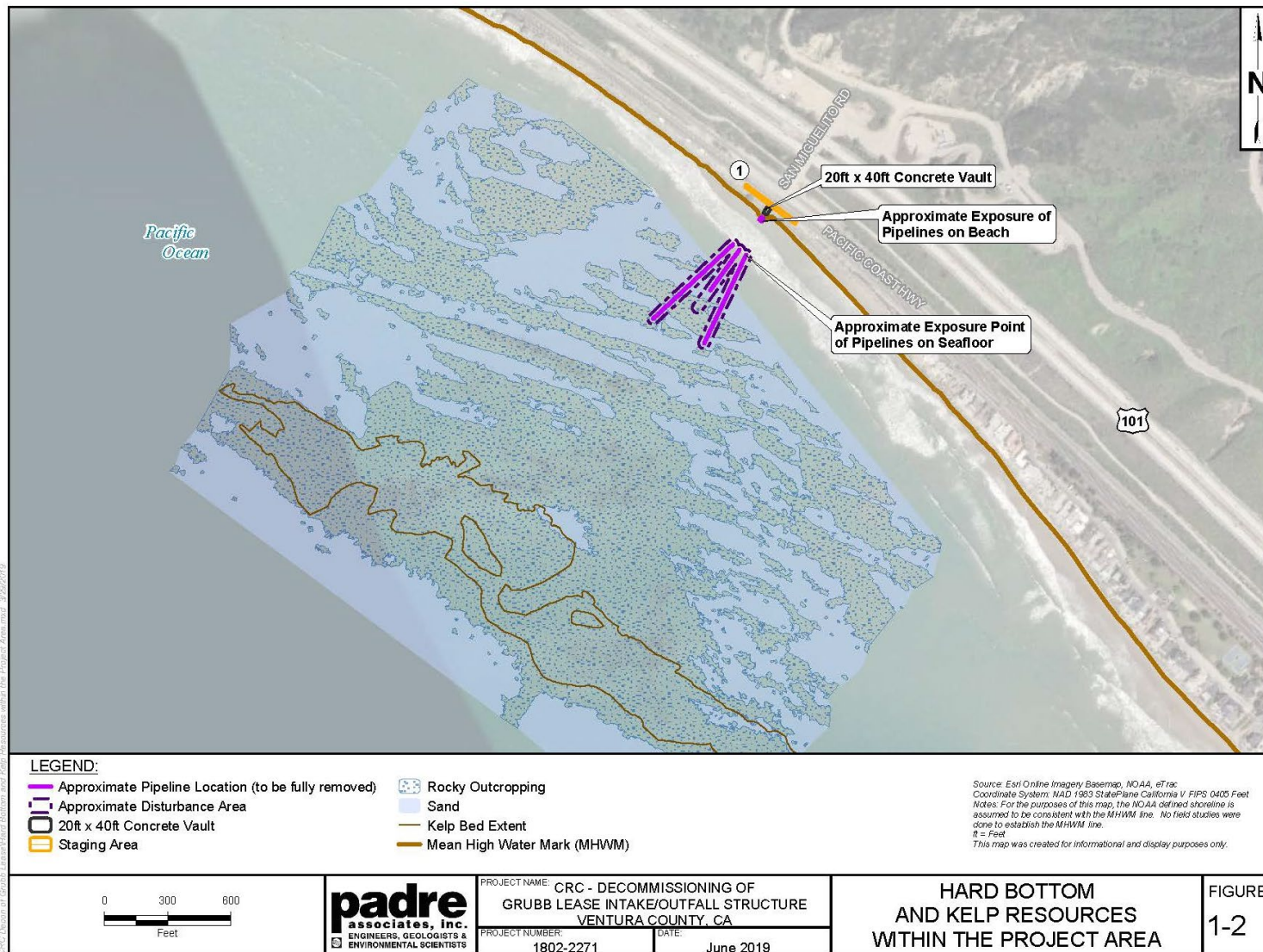


Figure 1-2. Hard-bottom and Kelp Resources in the Project Area

2.0 MANAGED SPECIES OF INTEREST

The National Marine Fisheries Service (NMFS) EFH online mapper was utilized to identify which management units are located within the offshore Project area (NMFS, 2019). Species distribution and habitat information was used to develop Table 2-1 which lists the managed species that could occur within the geographical region, water depth range, and habitat types found within the Project area (Miller and Lea, 1972; McCain, 2005).

The Pacific Fishery Management Council (PFMC) manages 90 species of fish under three Fishery Management Plans: 1) Coastal Pelagics Fishery Management Plan (CPFMP); 2) Pacific Salmon Fishery Management Plan; and 3) Pacific Groundfish Fishery Management Plan (PGFMP). A list of managed species that could be found during all or part of their life cycle within the Project area is provided in Table 2-1. At least 16 species listed under the PGFMP and five species listed under the CPFMP frequent kelp beds and reefs in less than 20 feet (6 meters) of water off the coast of Santa Barbara, California, and could be present during some life stages in the nearshore Project area. The pelagic species could be present for short-time periods as schooling adults whereas many of the groundfish species could be present for longer time periods as both juveniles and adults. The juveniles of many rockfish species use the shallow-water algae and kelp canopies during early development before settling over deeper water or to the bottom. Benthic rockfish juveniles could be found in Sargassum and algae beds. Cabezon, lingcod, and greenlings could be present as adults, in egg masses (nests) on substrate, and as settled juveniles in adjacent kelp beds (CDFW, 2001; Love, 1996).

Table 2-1. Fish Species Managed Under Pacific Fishery Management Plans

Management Plan	Common Name	Scientific Name
Managed under CPFMP	Northern anchovy	<i>Engraulis mordax</i>
	Pacific mackerel	<i>Scomber japonicus</i>
	Jack mackerel	<i>Trachurus symmetricus</i>
	Krill	<i>Thysanoessa spinifera</i>
		<i>Euphausia pacifica</i>
	Total	5
Managed under PGFMP	Kelp greenling	<i>Hexagrammos decagrammus</i>
	Lingcod	<i>Ophiodon elongates</i>
	California scorpionfish	<i>Scorpaena guttata</i>
	Cabezon	<i>Scorpaenichthys marmoratus</i>
	Copper rockfish	<i>Sebastes caurinus</i>
	Kelp rockfish	<i>Sebastes atrovirens</i>
	Black rockfish	<i>Sebastes melanops</i>
	Black-and-yellow rockfish	<i>Sebastes chrysomelas</i>
	Blue rockfish	<i>Sebastes mystinus</i>
	Chillipepper	<i>Sebastes goodei</i>
	Gopher rockfish	<i>Sebastes carnatus</i>
	Grass rockfish	<i>Sebastes rastrelliger</i>
	Olive rockfish	<i>Sebastes serranoides</i>
	Treefish rockfish	<i>Sebastes serriceps</i>

	Leopard shark	<i>Triakis semifasciata</i>
	Butter sole	<i>Isopsetta isolepis</i>
	Total	16

3.0 IMPACTS

The rocky substrate within the Project area appears to be routinely subjected to substantial sand scour and supports only a limited algal and invertebrate community. Damage to the rocky substrate from anchoring of Project vessels or from diver activities could result in longer-term impacts to EFH. Damage to that habitat could be considered significant to essential habitat for some of the nearshore rockfish listed in Table 2-1. As planned, anchoring of the work vessel will only be in sedimentary habitats and anchor lines will not impact kelp or algae-covered rocks.

Based on the proposed activities and the assessment of existing habitats, only the adjacent kelp beds outside of the immediate Project area represent essential habitat for managed species. By avoiding these features, the impacts of removal of the pipelines and associated structures is not considered significant to the EFH of any of the managed species that could occur within the area. Offshore decommissioning activities will be limited to a few isolated anchoring sites and a narrow corridor of sedimentary seafloor within which the pipelines will be removed. The sedimentary bottom will be disturbed only during removal activities and any Project vessels will not anchor in hard bottom habitat or within areas of sensitive resources.

Potential underwater activities associated with decommissioning of structures includes disconnecting intake pipeline from the box structures, underwater cutting and securing the pipelines to the lifting equipment and recovering pipelines toward the shore. Resuspended sandy sediments are expected to settle quickly to the seafloor after disturbance. Little, if any, long-term water column turbidity is expected. Kelp, eelgrass, and algae-covered rocky substrates are included in the group of Habitats of Particular Concern (HAPC) called “shallow water living substrates” and are considered important for some managed groundfish species (Dobrzynski and Johnson, 2001); however, no kelp or eelgrass has been reported within the Project area.

The sandy and sedimentary rock habitat that characterizes most of the seafloor within the area immediately adjacent to the pipelines and within the proposed anchor locations is not unique and is common throughout the region. Impacts to that habitat are expected to be short-term and insignificant to the EFH of managed species that may utilize it.

4.0 MITIGATION

An anchor pre-plot will be developed specific to the Project site and Project activities, which will be submitted with the Contractor Work Plan for review and approval by CSLC. The anchor pre-plot will identify designated anchoring locations that avoid hard-bottom habitat. In addition, all anchors will be lowered vertically to the seafloor in a controlled manner. Each anchor will be recovered using a crown line to pull it vertically through the water column. Those methods will reduce sediment resuspension, seafloor alteration, and potential damage to rocky substrate.

The depression in the sedimentary seafloor that is expected to result from the pulling of the pipelines toward the shore is expected to quickly fill with surrounding sediments driven by near-bottom currents and by wave-generated currents. The Project area is an exposed coastline and is subject to storm waves. As mitigated, only short-term effects (sediment resuspension) are expected. No long-term impacts to the essential fish habitat, which consists of sedimentary and rocky habitats and the water column, are expected to result from the proposed action as mitigated.

5.0 REFERENCES

- California Department of Fish and Game (CDFG). 2001. California's Living Marine Resources: A Status Report, eds. Leet, W., Dewees, C.M., Klingbeil, R., Larson, E.J. December 2001.
- McCain, B., Miller, S.D., and Wakefield II, W.W. 2005. Life History, Geographical Distribution, and Habitat Associations of 82 West Coast Groundfish species: *A Literature Review*. Pacific Coast Groundfish Fishery Management Plan for the California, Oregon, and Washington groundfish fishery, Appendix B, part 2. Pacific Fishery Management Council, November 2005.
- Dobrzynski, T. and Johnson, K. 2001. Regional Council Approaches to the Identification and Protection of Habitat Areas of Particular Concern. White Paper for NOAA/National Marine Fisheries Service, Office of Habitat Conservation, Silver Spring, Maryland. May 2001. 17 pp.
- Love, M. S. 1996. Probably more than you want to know about the fishes of the Pacific coast. Really Big Press, Santa Barbara, California. 215 p.
- Miller, D. J. and Lea, R. N. 1972. Guide to the Coastal Marine Fishes of California. California Department of Fish and Game Fish Bulletin No. 157.
- National Marine Fisheries Service (NMFS). 2019. Essential Fish Habitat Mapper v3.0. website: <http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html>. Accessed May 7, 2019.
- National Oceanic and Atmospheric Association (NOAA). 1998. A Primer for Federal Agencies. Essential Fish Habitat: New Marine Fish Habitat Conservation Mandate for Federal Agencies. EHF Federal Primer. November 1998.
- Padre Associates, Inc. (Padre). 2018. Pre-Construction Marine Biological Dive Survey Letter-Report for the California Resources Corporation Grubb Lease Decommissioning of Intake/Outfall Structure. November 2018. pp. 19

APPENDIX A

PRE-CONSTRUCTION MARINE BIOLOGICAL DIVE SURVEY LETTER-REPORT

November 13, 2018
Project No. 1802-2271

California Resources Petroleum Corporation
2575 Vista del Mar Drive, Suite 101
Ventura, California 93001

Attention: Mr. Bruce Carter

Subject: Pre-Construction Marine Biological Dive Survey Letter-Report

Dear Mr. Carter:

This marine biological dive survey report (Report) summarizes the results of pre-construction surveys conducted for California Resources Petroleum Corporation (CRC) at the Grubb Lease Intake/Outfall Structure located on California State Lands Commission (CSLC) Lease PRC 3913.1, offshore of Ventura, California (Project site). The Report describes the survey methods completed by Padre Associates, Inc. (Padre) and associated observations completed during the survey. The purpose of the marine biological survey was to document the type and location of marine plants, macro-epifauna, and fish associated with the habitats within the project areas. The resulting data will be used in the final Project planning effort, and as a baseline for comparison with post-Project marine biological conditions.

The survey consisted of a team of diver-biologists who recorded the physical condition of the offshore pipelines and completed an assessment of biological habitat types and epibiota along the existing intake and wastewater outfall pipelines. The marine portion of the intake and outfall facilities consists of two 12-inch diameter steel intake pipelines measuring a total of approximately 680 feet and 630 feet in length and an outfall pipeline measuring approximately 500 feet in overall length. All lengths are measured from the seaward side of the onshore concrete vault to the offshore terminations of each pipeline. On October 30, 2018 the intake and outfall pipelines were not visible exiting the concrete vault and were not exposed along the beach. It is estimated that the intake and outfall pipelines become exposed somewhere in the surf zone and as observed during the survey, remain exposed for their remaining length offshore.

Initially, a shore dive was attempted on October 30, 2018; however, due to unanticipated high surf it was determined by Padre that such conductions made it unsafe to conduct survey operations from the shore. CRC and Padre determined that vessel-based survey operations would be safer and more efficient in assessing the marine biological resources. The Project team returned on November 1, 2018 to conduct the dive survey from the survey vessel (S/V) *JAB*. This Report describes the equipment and methods that were used during the vessel-based dive survey operations and data recovery.

PERSONNEL AND EQUIPMENT

The Project dive team included divers Ms. Michaela Hoffman and Ms. Haleigh Damron (Padre Marine Biologists). Mr. Jeff Zane was the Padre Health and Safety Officer (HSO) and onboard licensed Emergency Medical Technician (EMT), and Padre Project Manager, Simon

Poulter, provided shore-side support of dive operations. Mr. Zachary Dransoff, CRC Environmental Project Manager observed all survey operations. All divers are certified through the Professional Association of Dive Instructors (PADI) and National Association of Underwater Instructors (NAUI), and Ms. Hoffman is an American Academy of Underwater Sciences (AAUS) certified diver.

The dive survey was conducted from S/V JAB, a 43-foot jet powered catamaran, owned and operated by Theory Marine Services, LLC. The vessel was mobilized in Ventura Harbor and transited to the dive site the morning of the survey.

Divers were equipped with open circuit scuba using steel 85 cubic-foot cylinders pressurized to approximately 3,000 pounds per square inch (psi) and equipped with a separate first and second stage regulators. Divers used transect tapes to verify survey distances and a Go Pro® camera and Olympus® Tough point-and-shoot camera to record underwater video and photographs. Divers were equipped with underwater lights and slates for data collection. A “diver down” flag was deployed from the mast of the survey vessel at the dive site.

METHODOLOGY

Prior to the dive, the survey vessel located the end of pipe using the onboard navigation system and deployed a surface buoy at the start of each transect. The divers entered the water from the survey vessel and descended the surface buoy line. Once on the bottom, the visibility was measured to determine the size of the survey corridor. The diver biologists swam three transects along the existing pipeline corridors observing and recording biological resources starting with the waste water outfall pipeline, followed by the southern and northern intake pipelines, respectively.

Transects were swam from the offshore end of each pipe and encroached as far into the surf zone as safely possible (Attachment 1 – Marine Biological Survey Area). Due to low visibility, and to reduce the chance of unsuccessful navigation underwater, each dive consisted of only one pipeline transect; all three pipelines were surveyed in a total of three dives. All observation data was recorded on pre-printed data sheets, in addition to GoPro® video cameras and still photographs on a waterproof Olympus® Tough camera (Attachment 2 – Survey Photographs). In addition, the length of the exposed pipeline and the general condition of any exposed pipeline or accessory features were noted to support future removal planning. All three pipelines were surveyed in three separate dives totaling in 124 minutes of bottom time.

RESULTS

The following section details the results of a dive survey conducted on November 1, 2018 within the Project site. Diver biologists identified habitat types and locations of marine plants, macro-epifauna, and fish associated with the wastewater outfall pipeline and the southern and northern intake pipelines, respectively.

Ocean conditions during the surveys consisted of clear skies, with calm winds in the morning (one to two miles per hour [mph]) increasing to 8 mph in the afternoon, and swell height of one to two feet. Tide was falling during the first dive from 4.3 feet at 06:10 to 2.7 feet at 11:32 and rising during the second and third dive to a 4.7-foot tide at 17:01. Underwater visibility was

3.5 feet during the first dive decreasing to 2.5 feet over the course of the survey day. Due to reduced visibility, the survey corridor was limited to approximately six feet (three feet on either side of each pipeline).

In general, substrate types were similar along all three pipelines and consisted of medium-sized cobble (four to eight-inch diameter) and small boulders (ten to 15-inch diameter), as well as low-relief sandstone bedrock and short expanses of sand in between bedrock. Sand waves of less than one inch were observed within sandy-bottom areas. A bed of giant kelp (*Macrocystis pyrifera*) was observed offshore of the Project site but appeared to end west of pipelines' termini and was not established within the survey corridors.

WASTEWATER OUTFALL PIPELINE

Approximately 237 feet of the wastewater outfall pipeline was surveyed from its offshore terminus in 15 feet of water, northeast toward shore to a depth of the nine feet where visibility and surge precluded survey operations. The pipeline was exposed and visible along its entire length. The pipeline appeared intact with no holes or visible corrosion. No diffuser was observed at the offshore terminus of the pipe; the pipeline was open to the sea water.

The habitat on the wastewater outfall pipeline consisted of low red and brown turf alga, encrusting and articulated coralline algae (*Corallina* sp., *Calliarthron* sp. and *Lithothamnium* sp.), branching red algae (*Mastocarpus [Gigartina] papillate*, *Cryptosiphonia woodii* and *Mazzaella [Rhodoglossum] affinis*) covered with epibiotic bryozoans (*Bugula neritina*).

A patch of surf grass (*Phyllospadix* sp.) was observed growing on the top of the pipeline at a water depth of 12 feet. The surfgrass patch covered a total area of approximately five square feet. Neither surfgrass or eelgrass (*Zostera marina*) were observed anywhere else within the survey corridor. No invasive species were identified (i.e., *Culerpa taxifolia* or *Sargassum horneri*). Giant kelp was observed in one location off the pipeline approximately seven feet south of the pipeline in 13 feet of water. The kelp was sparse and only two individual thalli were observed.

Epibiotia and macrofauna consisted of dense growth of bryozoans (*Hippodiplosia insculpta* and *Membranipora* sp.), stalked tunicates (*Styela montereyensis*), and Spanish shawl nudibranchs (*Flabellinopsis iodinea*). An occasional solitary anemone (*Anthopleura* sp.) was observed underneath and between the pipeline and bedrock. In addition, California spiny lobster (*Panulirus interruptus*) were observed within gaps underneath the pipeline and inside of the end of the pipeline where it is open to the seawater. Evidence of gaper clams (*Tresus* sp.) was observed within the sand and cobble substrate. No fish or abalone species were observed inside the survey corridor along the wastewater outfall pipeline.

SOUTHERN INTAKE PIPELINE

Approximately 464 feet of the southern intake pipeline was surveyed from its offshore intake structure (possible remnant filter) in 16 feet of water, northeast toward shore to a depth of ten feet where visibility and surge precluded survey operations. The southern intake pipeline was exposed and visible along its entire length. The pipeline and the offshore intake structure appeared intact with no holes or visible corrosion. Accessory pipe structures, approximately three to four inches in diameter, were identified running underneath and diagonal to the pipeline route. These accessory structures had no visible corrosion and appeared to run underneath the sand.

The general habitat and algal communities were similar to the wastewater outfall pipeline; however, no surfgrass or giant kelp were observed. Feather boa, a kelp-like brown algae (*Egregia menziesii*) was observed within the survey corridor along the southern intake pipeline. Epibiota and macrofauna were similar to the previous outfall pipeline. Fish activity inside the survey corridor was minimal, with none being identified to species due to low visibility. No abalone species were observed within the survey corridor along the southern intake pipeline.

NORTHERN INTAKE PIPELINE

Approximately 518 feet of the northern take pipeline was surveyed from the offshore intake structure in 15 feet of water, northeast toward shore to a depth of ten feet where visibility and surge precluded survey operations. The northern intake pipeline was exposed and visible along its entire length. An accessory pipeline structure, three to four inches in diameter, ran parallel approximately the entire length of the northern intake pipeline. Both the intake pipeline and accessory structures appeared to be intact with no visible corrosion. The accessory structure ran underneath and on top of the intake pipeline and was intermittently buried in the sand.

Dense beds of red alga, *Cryptosiphonia woodii* and *Mazzaella affinis*, and articulated coralline algae grew along the top of the northern intake pipeline. No kelp, surfgrass, or eelgrass species were observed within the survey corridor. Several California spiny lobster were observed underneath the pipeline and inside the offshore intake structure, as well as other invertebrate species including angular unicorn snails (*Acanthinucella spirata*), Spanish shawl nudibranch and solitary anemones. Portions of the northern intake pipeline also supported tunicates and orange and yellow sponges (*Halichondria* sp.). One sculpin (Cottidae) was identified sitting on the northern intake pipeline, but the survey corridor was generally devoid of fish activity. No abalone species were observed within the survey corridor along the northern intake pipeline.

SUMMARY AND RECOMMENDATIONS

A team of diver biologists completed a marine biological survey to identify the habitat types, macrofauna and fish present within the survey corridor along three pipelines at the Project site. Substrate consisted of mixed cobble, sandstone bedrock and sandy areas. Algal species and macrofauna observed were typical of southern California marine waters within similar depth ranges and with similar substrate types; however, the survey corridor was generally devoid of typical invertebrate and fish species associated with hard bottom habitats.

No invasive algae were observed along the pipeline corridors. No abalone, or other sensitive species were observed. Two individual kelp thalli were observed within the survey corridor; however, established kelp beds were not observed within the Project site. Dense epibiotic bryozoans and sponges were observed; however, macrofauna and fish were infrequent.

The wastewater outfall pipeline and southern and northern intake pipelines were intact with no holes or corrosion. Accessory pipeline structures were observed adjacent to the southern and northern intake pipelines, as well as the intake filter structure which appeared intact at the pipelines' termini.

Should you have any questions regarding this Report, please contact Michaela Hoffman at (805) 786-2650 ext. 47 or mhoffman@padreinc.com or Simon Poulter at (805) 683-1233 ext. 4 or spoulter@padreinc.com.

Sincerely,

Padre Associates, Inc.



Michaela Hoffman
Project Biologist

Attachments: Attachment 1 – Marine Biological Survey Area Figure
Attachment 2 – Dive Survey Photographs
Attachment 3 – Dive Survey Data Sheets

cc: Zachary Dransoff, CRC Environmental Project Manager

ATTACHMENT 1

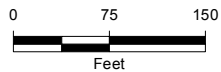
MARINE BIOLOGICAL SURVEY AREA FIGURE



LEGEND:

- Approximate Location of Giant Kelp (*Macrocystis pyrifera*)
- Approximate Pipeline Location (to be fully removed)
- Mean High Water Mark (MHW)
- ⋯ 6-ft Survey Corridor
- 20ft x 40ft Concrete Vault
- Staging Area

Source: Esri Online Imagery Basemap, NOAA
 Coordinate System: NAD 1983 State Plane California V FIPS 0405 Feet
 Notes: For the purposes of this map, the NOAA defined shoreline is assumed to be consistent with the MHW line. No field studies were done to establish the MHW line.
 ft = Feet; in = Inch
 This map was created for informational and display purposes only.



padre
 associates, inc.
 ENGINEERS, GEOLOGISTS &
 ENVIRONMENTAL SCIENTISTS

PROJECT NAME: CRC - DECOMMISSIONING OF
 GRUBB LEASE INTAKE/OUTFALL STRUCTURE
 VENTURA COUNTY, CA
 PROJECT NUMBER: 1802-2271
 DATE: November 2018

**MARINE BIOLOGICAL
 SURVEY AREA**

**FIGURE
 1**

ATTACHMENT 2

DIVE SURVEY PHOTOGRAPHS



Photo 1. Surfgrass (*Phyllospadix* sp.) and articulated coralline algae (*Corrallina* sp., *Calliarthron* sp.) growing on wastewater outfall pipeline; Date: 11/1/2018.

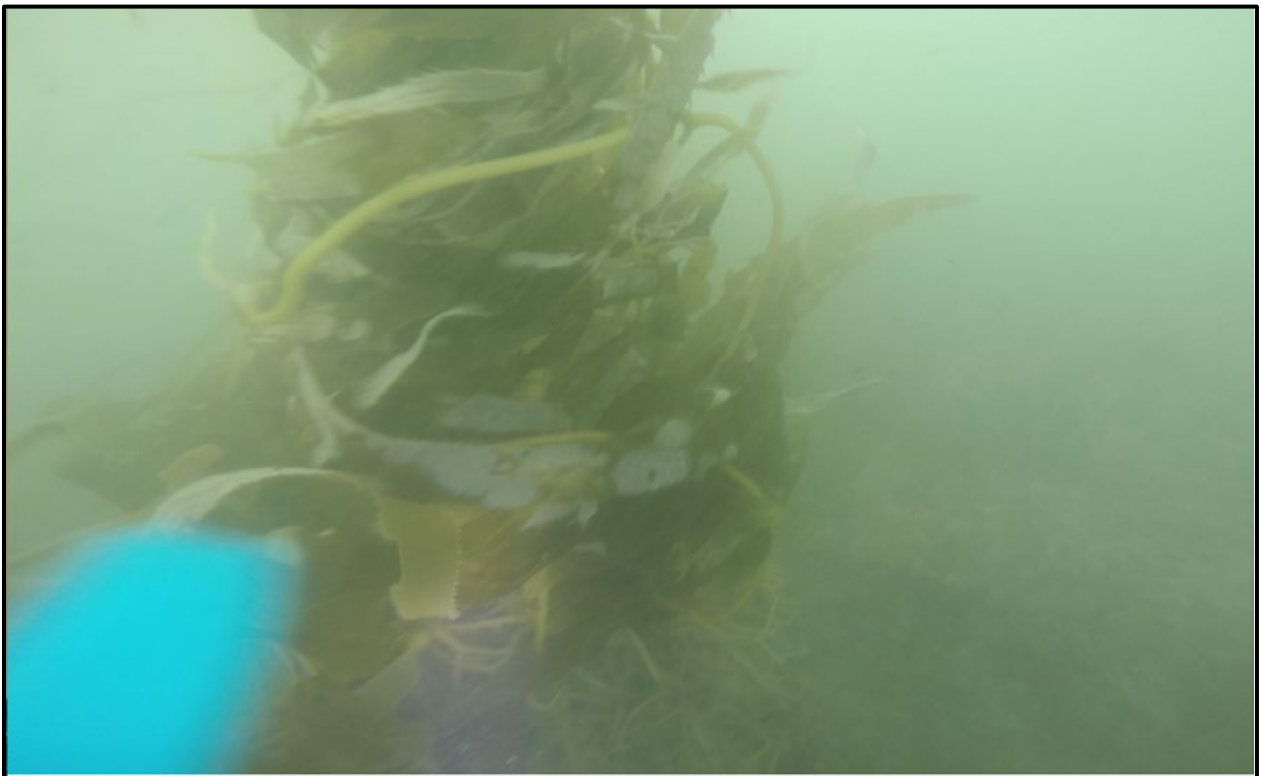


Photo 2. Giant kelp (*Macrocystis pyrifera*) adjacent to wastewater outfall pipeline; Date: 11/1/2018



Photo 3. California spiny lobster (*Panulirus interruptus*) underneath southern intake pipeline; Date: 11/1/2018



Photo 4. Accessory structure running underneath/diagonal to southern intake pipeline route; Date: 11/1/2018



Photo 5. Dense algal growth on southern intake pipeline; Date: 11/1/2018



Photo 6. Overview of habitat on northern intake pipeline; Date: 11/1/2018



Photo 7. California spiny lobster adjacent to northern intake pipeline; Date: 11/1/2018



Photo 8. Angular unicorn snail (*Acanthinucella spirata*) from northern intake pipeline; Date: 11/1/2018



**Photo 9. Spanish shawl nudibranch (*Flabellinopsis iodinea*) on northern intake pipeline;
Date: 11/1/2018**



**Photo 10. Solitary anemone (*Anthopleura* sp.) and Spanish shawl nudibranch on
northern intake pipeline; Date: 11/1/2018**



Photo 11. Sculpin (*Cottidae*); Date: 11/1/2018

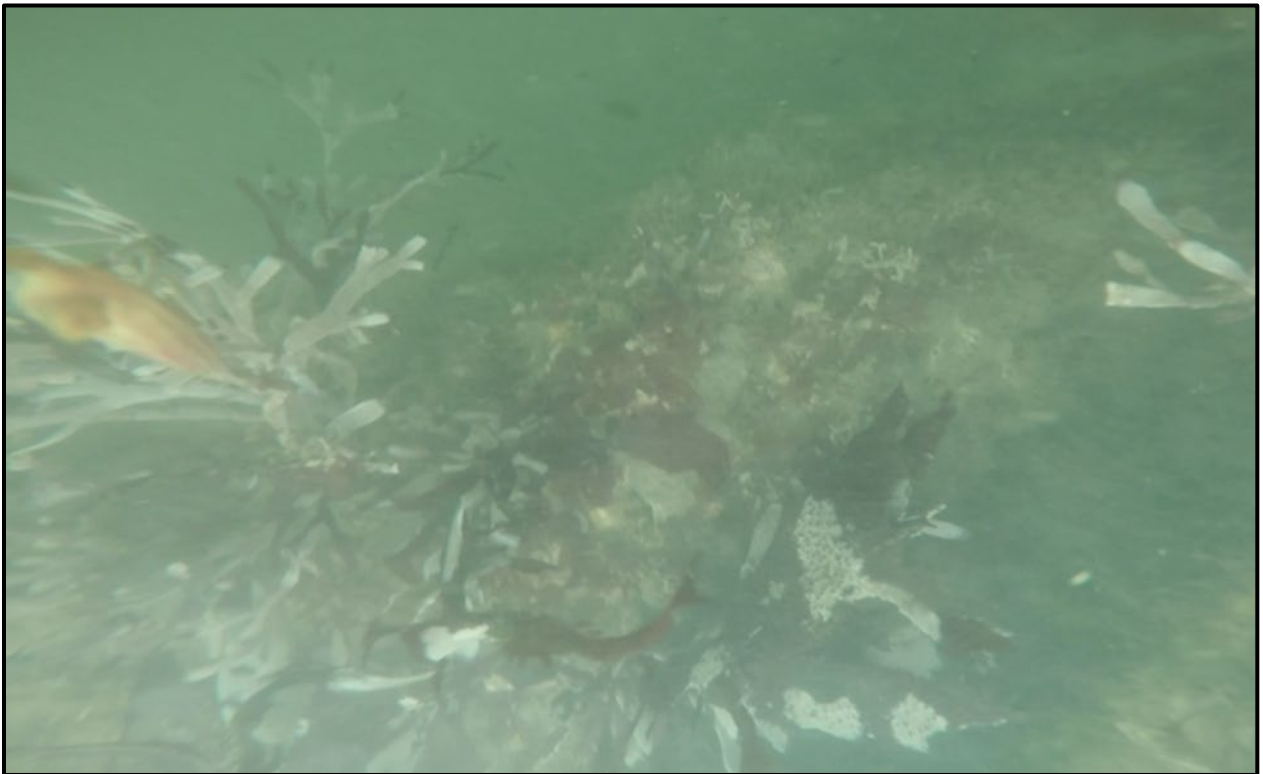


Photo 12. Low-relief hardbottom habitat adjacent to northern intake pipeline; Date: 11/1/2018



**Photo 13. Cobble substrate located under and adjacent to northern intake pipeline;
Date:11/01/18**

ATTACHMENT 3

DIVE SURVEY DATA SHEETS

270-300° shore parallel

Pre-Construction Marine Biological Data Sheet

Date: 11/1/2018	Divers: M. Hoffman H. Damron	Weather: sun, clear Swell: 1-2 ft wind: 0-2 mph
Dive Location: CRC Grubb Lease Pipes		

Transect No. Dive 1	Visibility (ft): 3.5 ft
Start: 09:16 / 10/18	Depth: 16
Stop: 10:06 / 10/24	Depth: 15 / 11
Pipe Surveyed: Waste Water Intake (202°, 22°) 12-in. outfall (North or South) (circle one) (213°, 33°) (192°, 12°)	
Estimated length of pipe exposed: 100%	

General pipe conditions: Intact, 50% max coverage w/ loose sand

Substrate: sand, low relief sand stone (0-2 ft)	Kelp: <input checked="" type="radio"/> Yes <input type="radio"/> No (circle one)
	Surfgrass: <input checked="" type="radio"/> Yes <input type="radio"/> No
	Eelgrass: <input checked="" type="radio"/> Yes <input type="radio"/> No
Invasives: Undaria <input type="radio"/> Yes <input checked="" type="radio"/> No	Sargassum muticum <input type="radio"/> Yes <input checked="" type="radio"/> No
Caulerpa <input type="radio"/> Yes <input checked="" type="radio"/> No	Sargassum horneri <input type="radio"/> Yes <input checked="" type="radio"/> No

General flora community: Low red turf, algae, Corallina, sparse kelp,
Anthothoe, Mastocarpus

General fauna community: Anthopleura, spiny lobster, Lingcod (5' in),
Acanthinucella spirata (Angular unicorn snail), Bryozoans

Black abalone (*Haliotis cracherodii*): Yes ☒ No
White abalone (*Haliotis sorenseni*): Yes ☒ No

Other Observations:

offshore / SW end of 12-in wastewater pipe open to
seawater. CA spiny lobster (*Panulirus interruptus*) inside
pipe.

Pre-Construction Marine Biological Data Sheet

Date: 11/1/2014	Divers: M. Hoffman H. Damron	Weather: Sun, clear. temp: 77 Swell: 1-2 ft, Wind: 0-1 mph
Dive Location: CRC Grubb lease pipes		

Transect No. DIVE 2-SOUTH		Visibility (ft): 2-3 ft
Start: 1150	Depth: 16 ft	Pipe Surveyed: Waste Water Intake, 12-in outfall (North or <u>South</u>) (circle one)
Stop: 1210	Depth: 14 ft	
General pipe conditions: Intact; 3-4' accessory pipe running under		Estimated length of pipe exposed: 100% pipe hooded exposed w/ growth
Substrate: Sand, cobble (3.4-8 in) low relief, sand stone under- neath pipeline		Kelp: Yes <input type="radio"/> No (circle one)
		Surfgrass: Yes <input type="radio"/> No <input checked="" type="radio"/>
		Eelgrass: Yes <input type="radio"/> No <input checked="" type="radio"/>
Invasives: Undaria Yes <input type="radio"/> No <input checked="" type="radio"/>		Sargassum muticum Yes <input type="radio"/> No <input checked="" type="radio"/>
Caulerpa Yes <input type="radio"/> No <input checked="" type="radio"/>		Sargassum horneri Yes <input type="radio"/> No <input checked="" type="radio"/>
General flora community: low red turf algae, encrusting coralline algae.		
General fauna community: Anthopleura, CA spiny lobster, br zoans		
Black abalone (<i>Haliotis cracherodii</i>): Yes <input type="radio"/> No <input checked="" type="radio"/>		
White abalone (<i>Haliotis sorenseni</i>): Yes <input type="radio"/> No <input checked="" type="radio"/>		

Other Observations:

Surveyed inshore to 10 ft isobath. Visibility disappeared.
 Very surgy. Discontinue transect.

Pre-Construction Marine Biological Data Sheet

Date: 11/1/18	Divers: M Hoffman H. Damron	Weather: Partly cloudy sun. swell: 1-2 ft wind: 5-8 mph
Dive Location: CRC Grubb Lease Pipelines		

Transect No. Dive 3 NORTH		Visibility (ft): 2-3 ft
Start: 1305	Depth: 15	Pipe Surveyed: Waste Water Intake, 12-in outfall (North or South) (circle one)
Stop: 1330 -23 1341	Depth: 10	
		Estimated length of pipe exposed: 100%
General pipe conditions: NO holes appears intact, dense growth cannot view pipe surface due to algal growth		
Substrate: sand stone low relief reef, cobble		Kelp: Yes <input type="radio"/> No (circle one)
		Surfgrass: Yes <input type="radio"/> No
		Eelgrass: Yes <input type="radio"/> No
Invasives: Undaria Yes <input type="radio"/> No		Sargassum muticum Yes <input type="radio"/> No
Caulerpa Yes <input type="radio"/> No		Sargassum horneri Yes <input type="radio"/> No
General flora community: low red turfs, articulated & encrusting coralline algae.		
General fauna community: spanish shawl nudibranch, Anthopleura CA spiny lobster, sculpin		
Black abalone (<i>Haliotis cracherodii</i>): Yes <input type="radio"/> No		
White abalone (<i>Haliotis sorenseni</i>): Yes <input type="radio"/> No		

Other Observations:

End transect @ 10 ft is bath; surge increase
 & vis decrease

APPENDIX H

Oil Spill Response and Contingency Plan



OIL SPILL RESPONSE AND CONTINGENCY PLAN

Introduction

The purpose of this Oil Spill Response and Contingency Plan (OSRCP) is to present an overview of the measures incorporated into the project workplan to minimize the potential for a hydrocarbon release and to outline the procedures and protocols that will be utilized to prevent or respond to an onshore or offshore oil spill resulting from project activities.

Potential Spill Sources and Prevention Measures

This project will involve an onshore worksite (between the shoreline and the California Resources Corporation (CRC) onshore facility) and an offshore worksite located from the shoreline to the offshore terminations of the three pipelines.

Onshore Spill Risks and Risk Mitigation Measures

Potential spill sources of hydrocarbons at the onshore worksite includes typical construction spill risks from motorized equipment and refueling of equipment.

a. Onshore Spill Risks and Mitigation Measures

1. **Equipment Leakage** - Inspect equipment daily and remove any equipment with leakage offsite immediately or quarantine over a containment skirt until removed. Perform no onsite repairs.
2. **Refueling Spills** - Fuel equipment at designated fueling station located a minimum of 300 feet away from the shoreline. Equip fueling station with spill response materials and spill skirts (secondary containment).

Offshore Spill Risks and Risk Mitigation Measures

Potential spill sources from the offshore worksite consist of leakage from motorized deck equipment and refueling of equipment.

a. Offshore Spill Risks and Mitigation Measures

1. **Equipment Leakage** - All portable deck equipment will be equipped with secondary containment of sufficient size to contain the volume of fluids contained in each piece of deck equipment. All mount equipment will be equipped with U.S. Coast Guard (USCG)-approved spill pans.
3. **Refueling Spills** - No cross vessel refueling will be allowed. Refueling of deck equipment will be limited to use of an onboard fueling system using a fuel-rated hose and commercial fuel nozzle, all inspected before each refueling event. The fuel hose and nozzle will be replaced when signs of excessive wear are observed.
4. **Shipwreck** - Publication of a U.S. Coast Guard (USCG) Local Notice to Mariners regarding the offshore phase of the project, the use of commercial navigational aids, the use of onboard differential global positioning system (GPS), the use of professional mariners, and the location of



the offshore worksite outside of local navigation routes are all measures that will mitigate the risk of shipwreck by the project's floating equipment. In the event of shipwreck of one project vessel, the other vessels will be able to provide first response using their onboard spill containment and clean up tools and materials.

Oil Spill Response

Oil Spill Response Team. Longitude 123, Inc. (L123) will maintain an onsite spill response team to respond to and clean up minor spills during the decommissioning activities. The onsite response team is responsible for reporting any spills as well as containment and cleanup of any small spills using onsite equipment and procedures. The onsite team will be supervised by the L123 Project Manager and will include all qualified L123 personnel working onsite at the time of the spill and additional spill response and cleanup resources as listed in this section.

CRC will utilize Marine Spill Response Corporation (MSRC) for secondary spill response and cleanup services. Although not anticipated, if a major offshore release occurs that is beyond the response capabilities of the onsite response team, MSRC will provide additional assistance in the mechanical containment and recovery of offshore oil spills. MSRC maintains a number of Fast Response Vessels on the California coast. The two Fast Response Vessels closest to the project site are stationed in Santa Barbara Harbor and Ventura Harbor. Additional resources are also available from MSRC's facility in Carpinteria. Table 1 lists the contact information for MSRC.

Table 1

Role	Contact Information
Emergency Spill Response	Marine Spill Response Corporation (MSRC) 971 S. Seaside Avenue Long Beach, CA 90802 (310) 521-0900

Offshore Response Crews, Equipment and Materials. The offshore spill response will involve the diving support vessels M/V Danny C, as well as the anchor handling vessel R/V JAB. This offshore response spread will be maintained and ready to immediately respond to a spill during the offshore decommissioning work.

1. Danny C
 - a. Crew
 - i. (1) Project Manager
 - ii. (1) Master
 - iii. (1) Mate
 - iv. (1) Engineer
 - b. Equipment
 - i. All Communications and Navigation Equipment
 - c. Materials
 - i. 400' Absorbent Boom
 - ii. (500) Absorbent Pads, 15" x 18"
 - iii. (5) Boxes Contractor Trash Bags
 - iv. (1) Pool Net (for recovering tar balls)
 - v. (4) 55-gallon DOT-rated Drums



2. JAB

- a. Crew
 - i. (1) Master
 - ii. (1) Mate
- b. Equipment
 - i. (1) Communications and Navigation Equipment
- c. Materials
 - i. (4) Boxes Tyvek suits
 - ii. (4) Boxes Gloves
 - iii. (4) Boxes Contractor Trash Bags
 - iv. (100) Absorbent Pads
 - v. (1) gal Simple Green
 - vi. (1) Pool Net (for recovering tar balls)

Notification

Emergency Agency Notification. An important step in the response procedure is notification to others of an incident. Notification is essential to activate the response organizations, alert CRC management, obtain assistance and cooperation of agencies, mobilize resources and comply with local, State, and Federal regulations. The order of notification is based on the premise that those parties who can render assistance in controlling or minimizing the impacts of an incident be notified before those that are remote from the incident. Refer to Table 2 for a list of agency notifications to be made in the event of an incident. The notification process encompasses the following categories:

- Emergency agency notification
- Company notification/onsite spill response team activation
- Cleanup contractors (if required)
- Notification of other interested parties
- Periodic progress updates and reports (if necessary)

Table 2 - Emergency Agency Notification Matrix

Type of Emergency	Agencies to be Notified	Telephone	Notification Criteria	Notification Time Frame	Information to Report
Oil Spill to Land or Marine Waters	California Office of Emergency Services	(916) 845-9494 (Public Safety Communications) (916) 845-8510 (Main Office) (800) 852-7550	Spills to land or water	Immediately	1. Location of release or threatened release
	National Response Center	(800) 424-8802			2. Qty released
	USCG Channel Islands	(805) 985-9822			3. Type of oil
	State Lands Commission	(562) 590-5201			4. Your name and phone number
	California Department of Fish and Wildlife/ OSPR	(888) 334-2258			
	California Coastal Commission	(831) 427-4863			



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Type of Emergency	Agencies to be Notified	Telephone	Notification Criteria	Notification Time Frame	Information to Report
	Regional Water Quality Control Board	(805) 549-3147			
	Oiled Wildlife Care Network 24-hour hotline	(530) 752-4167			
Medical Emergencies	Fire Department/ Ambulance	911	Medical assistance and/or transport required	ASAP	1. Type of injury 2. Location 3. Condition 4. Action taken 5. No. of victims
	Cal OSHA	(844) 522-6734		As required	

ASAP - As Soon as Possible Cal OSHA - California Occupational Safety and Health Administration
USCG - U.S. Coast Guard OSPR - Office of Oil Spill Prevention and Response

The Lampert-Keene Seastrand Oil Spill Prevention and Response Act (SB 2040) requires notification of the California Office of Emergency Services when oil spills occur or threaten to occur from facilities, vessels, or pipelines into California marine waters. It should be noted that the California Oil Spill Contingency Plan defines an oil spill as any amount of oil emitted by any means into California's waters (OSPR, 2001). The California Code of Regulations implementing SB 2040 requires that the specific information shown in Table 3, below, be given to the agencies when making notifications.

Table 3 – Initial Spill Report Information

Name of reporter Facility name and location Date and time of the spill
Cause (if known -- don't speculate) and location of the spill Estimate of the volume of oil spilled and the volume at immediate risk of spillage Material spilled (e.g., crude oil), and any inhalation hazards or explosive vapor hazards, if known Prevailing sea conditions: <ul style="list-style-type: none">• Wave height• Size and appearance of slick• Direction of slick movement• Speed of movement, if known Prevailing weather conditions: <ul style="list-style-type: none">• Wind speed• Wind direction• Air temperature Measures taken or planned by personnel on scene <ul style="list-style-type: none">• For containment• For cleanup Current condition of the facility Any casualties?

NOTE: When making reports, record the agency, name of person contacted, and the date and time of notification. Reporting of a spill shall NOT be delayed solely to gather all the information noted above.





All actions, including agency notification, should be recorded on the Event Log. A regulatory agency address directory is provided in Table 4.

Table 4 - Addresses of Regulatory Agencies

NATIONAL RESPONSE CENTER U.S. Coast Guard Headquarters 2100 Second Street SW Ste. 7102 Washington, D.C. 20593	CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE Office of Spill Prevention and Response (OSPR) 1700 K Street Ste. 250 Sacramento, CA 95811
U.S. COAST GUARD, Morro Bay Station 4201 Victoria Ave. Oxnard, CA 93035	CALIFORNIA EMERGENCY MANAGEMENT AGENCY 3650 Schriever Avenue Mather, CA 95655
U.S. DEPARTMENT OF TRANSPORTATION 111 Grand Avenue Oakland, CA 94612	CALIFORNIA DIVISION OF SAFETY AND HEALTH 7718 Meany Avenue Bakersfield, CA 93008
NATIONAL MARINE FISHERIES SERVICE 501 W. Ocean Blvd. Long Beach, CA 90802	CALIFORNIA STATE LANDS COMMISSION 100 Howe Avenue, Ste. 100-South Sacramento, CA 95825
CALIFORNIA COASTAL COMMISSION 725 Front Street, Suite #300 Santa Cruz, CA 95060	

Essential agency notifications are further assured by the California Office of Emergency Services and the National Response Center, since they will notify related State and Federal agencies.

If a spill impacts navigable waters, notification of the National Response Center is mandatory and normally results in simultaneous notification of the USCG. However, it is recommended that a call be made to the local USCG office in Channel Islands at (805) 985-9822.

Based on the spill trajectory analysis, if the spill is a threat to the shoreline, the appropriate fire department should also be contacted. This would not normally be an immediate notification.

Company Notification. CRC requires that all emergencies related to their respective scopes of work be brought to the attention of CRC management. The Onsite Project Manager (Qualified Individual) will notify by radio or telephone appropriate management with an initial assessment of the extent and nature of the spill, and will activate additional company resources, if necessary.



Table 5 - Company Notification Matrix

Company	Individual to be Notified	Telephone	Notes
CRC	Zack Dransoff CRC Project Manager	(661) 332-6294	

Marine Spill Scenarios and Response Procedures

Minor Spills. This scenario consists of minor spillage of oil or oily water (less than five barrels) from a marine support vessel or pipeline. In this case, response will consist of deployment of sorbent boom and sorbent pads that are stored on the support vessels. In addition, containment boom will be deployed if necessary. Table 6 below lists the response procedures for a minor marine spill.

Table 6 - Minor Marine Oil Spill Response Procedures

Responsible Person	Action
Marine Superintendent - Contractor	<ul style="list-style-type: none">• Assess the spill size and type of material spilled.• Take action to contain the spill and prevent further spillage.• Inform the Project Superintendent as soon as possible as to the source of the spill, type of material spilled and status of control operations.• Maintain surveillance of source and oil slick.• Assist the onsite response team in implementing clean up procedures including deployment of the absorbent and/or containment boom and sorbent pads and proper storage and disposal of oily debris and sorbent pads.• Account for all personnel and ensure their safety.• Determine if there is a threat of fire or explosion.• If a threat of fire or explosion exists, suspend all control and/or response operations until the threat is eliminated.• Assess the spill situation to determine the status of response operations, estimate spill volume, estimate speed and direction of oil slick movement and determine resource needs.• Notify the Project Manager.
Project Manager – CSD or Contractor	<ul style="list-style-type: none">• Mobilize the onsite oil spill response team.• Determine if oil spill response contractor or oil spill response organization should be notified.• Notify appropriate agencies from Table 2.• Supervise response and cleanup operations.• File written reports to appropriate agencies.

Major Spills. For the purposes of this OSRP, a major spill is defined as any spill greater than five barrels (bbls). The worst-case potential spill volume is based on the largest vessel's fuel tank capacity. For this project, the M/V Danny C has the largest fuel capacity of 4,500 gallons (107 bbls). All marine operations will be conducted per the procedures outlined in the Marine Safety and Anchoring Plan, which emphasizes "good mariner practices" and further reduces the potential for a large spill to occur as a result of project implementation. In the unlikely event of a major spill, the



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same procedures described in Table 6 for a minor spill will be followed for initial spill response, and additional resources from MSRC will be mobilized.

Onshore Spill Scenarios and Response Procedures

Minor Spills. This scenario consists of minor spillage of fuel, oil or hydraulic fluid from terrestrial equipment used to support the onshore decommissioning activities. Any fuel, motor oil, or hydraulic spills that occur will be contained with appropriate containers (i.e. drip pans or other impervious material) and sorbent pads. Sorbent pads will be maintained at each onshore location where work with petroleum-fueled equipment is being performed. Minor spill cleanup is the responsibility of L123.

None of the other onshore decommissioning activities are expected to involve any large volumes (greater than five barrels) of hydrocarbons.

APPENDIX I

Hazardous Materials Management and Contingency Plan

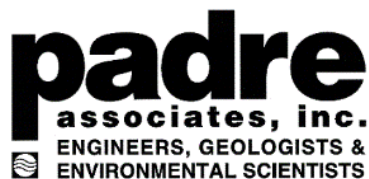
HAZARDOUS MATERIALS MANAGEMENT AND CONTINGENCY PLAN

CALIFORNIA RESOURCES CORPORATION (CRC) DECOMMISSIONING OF THE GRUBB LEASE (PRC 3913.1) INTAKE/OUTFALL STRUCTURE VENTURA COUNTY, CALIFORNIA

Prepared for:

California Resources Corporation
900 Old River Blvd.
Bakersfield, CA 93311

Prepared by:



DECEMBER 2019

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ATTACHMENTS

Attachment 1 – Project Execution Plan (PEP) Longitude 123, 2019

Attachment 2 – Oilfield Environmental and Compliance, Inc. Analytical Results (April 2019)

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1.0 INTRODUCTION

This Hazardous Materials Management and Contingency Plan (HMMCP) has been prepared for the proposed California Resources Corporation (CRC) Grubb Lease (PRC 3913.1) Intake/Outfall Structures Decommissioning Project in Ventura County, California (Project). The purpose of this HMMCP is to present an overview of the procedures and protocols that will be utilized during the Project to safely and appropriately recover, handle, characterize, store, transport and dispose of any contaminated materials identified during Project decommissioning activities.

1.1 PROJECT LOCATION AND OVERVIEW

The Project includes decommissioning of the Grubb Lease Outfall/Intake facilities located alongside Pacific Coast Highway approximately 792 feet northwest of Solimar Beach at the foot of the “A” Lease Canyon Road underpass (Figure 1-1 – Project Facilities Map). Project activities will occur within three primary areas as follows:

Table 1-1. Project Work Segments Summary

Segment	Description
Offshore Intake and Outfall Pipelines	The Offshore Intake and Outfall Pipelines Segment consists of three 12-inch-diameter steel submarine pipelines with two intake pipelines and one outfall pipeline. The two intake pipelines measure 680 and 630 feet in length. The outfall pipeline measures 500 feet in length. Each of the two intake pipelines has an approximately 6-foot by 6-foot by 1-foot reinforced concrete lattice box structure at the offshore end.
Shoreline Vault	The Shoreline Vault Segment consists of a shoreline vault that is a reinforced concrete and steel sheet pile structure set in the armor rock seawall between the Pacific Coast Highway (PCH) and the intertidal zone. The vault measures approximately 20 feet wide by 14 feet long and 27 feet deep. The entire 20-foot by 42-foot vault enclosure is surrounded by a chain link fence. The two intake pipelines and one outfall pipeline were originally connected to the seaward side of the vault. A 36-inch-diameter pipeline casing consisting of three pipelines exits the vault on the landward side of the vault. The vault contains water pumps, piping, two levels of grating, and other ancillary equipment.
Onshore Pipelines	The Onshore Pipelines Segment consists of a 36-inch-diameter steel casing containing one 14-inch-diameter steel pipeline, one 12-inch-diameter steel pipeline and one 8-inch-diameter polyvinyl chloride (PVC) pipe liner inside of a second 12-inch-diameter steel pipeline.

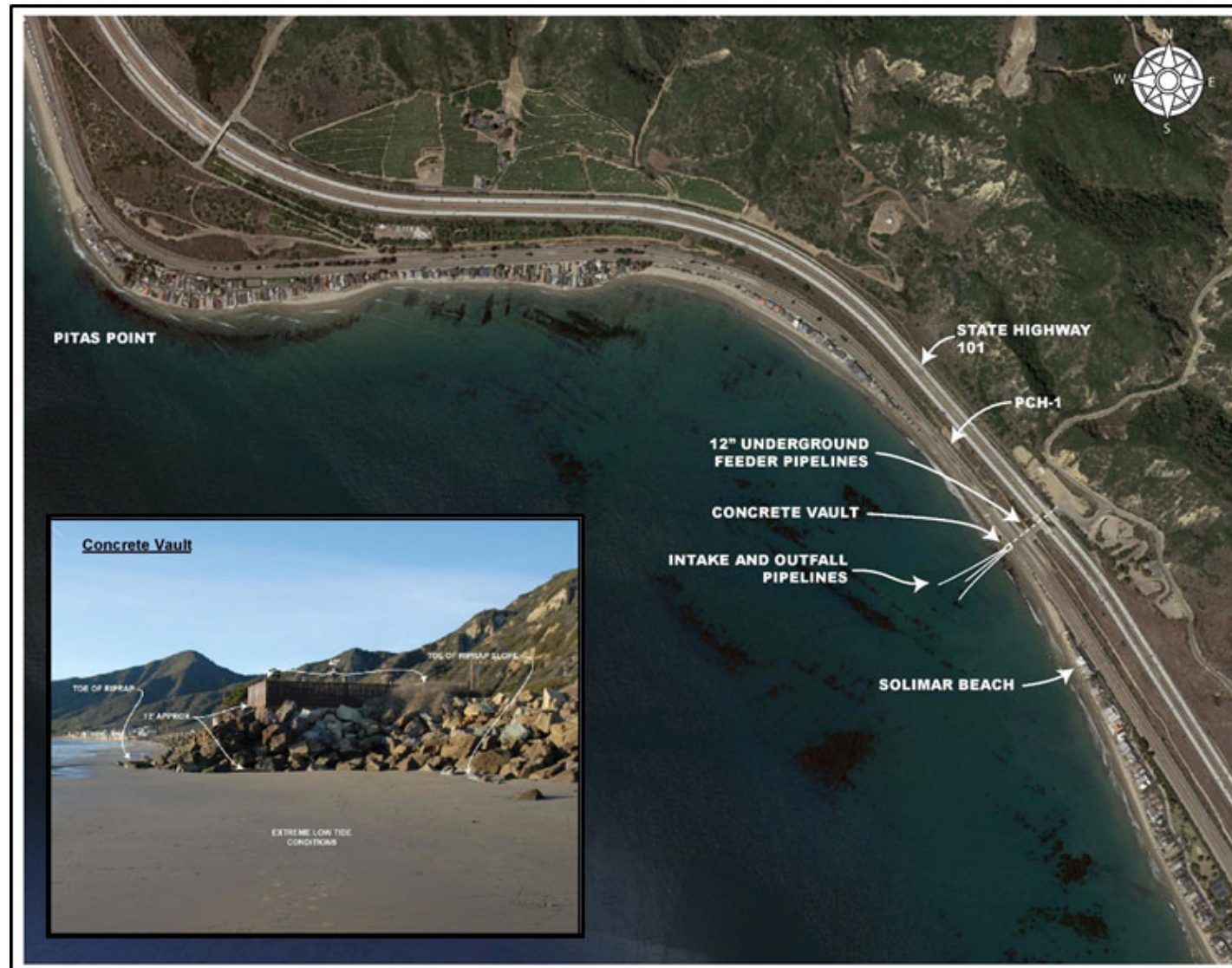


Figure 1-1. Project Facilities Map

The Project will require the following primary components:

- Pre-Project Preparation Activities and Surveys
 - Construction of a temporary equipment access ramp
- Removal of the Intake/Outfall facilities within PRC 3913.1 including:
 - Recovery of the 6-foot by 6-foot by 1-foot concrete lattice box structures at the offshore end of each of the intake pipelines
 - Recover of the two, 12-inch-diameter steel intake pipelines
 - Recovery of the 12-inch-diameter steel outfall pipeline
- Demolition and removal of existing concrete vault including:
 - Removal of outer sheet piles
 - Removal of all internal water pumps, piping, two levels of grating, and other ancillary equipment
- Abandon-in-place the 36-inch casing (and internal pipelines) on the onshore side of the beach vault, including:
 - Removal or grouting of internal pipeline segments
 - Fill the casing between the onshore side of the beach vault and valve box on CRC's lower Grubb lease property with slurry
- Ramp demolition and reconstruction of the armor rock seawall at the gap created by removal of the concrete vault
- Demobilization of equipment and disposal/recycling of recovered pipelines and appurtenant facility components (fencing, foundation piling, concrete)
- Post-Project survey to confirm removal of pipelines and any associated seafloor anomalies, as compared to the Pre-Project survey

1.2 PROJECT BACKGROUND

The Project facilities were originally constructed by Continental Oil in 1967. Occidental Petroleum (Oxy) acquired the Grubb lease in 2005 from Vintage Petroleum. On November 30, 2014, Oxy restructured its California operations, including the Grubb lease, into California Resources Corporation (CRC), an independent, publicly traded company.

The Grubb Lease intake/discharge facility was used to bring in seawater for oil-field related water flood operations and on occasion for discharge of the inlet seawater filter backwash to the ocean. According to operational records, the western (up coast pipeline) was the last of the three pipelines to be in use and was used as a seawater intake suction pipeline until Project facilities were idled in 2003 or 2005.

1.2.1 Offshore Intake and Outfall Pipelines

The offshore portion of the facility consists of three 12-inch-diameter steel submarine pipelines with two intake pipelines and one outfall pipeline. The Grubb lease intake/discharge facility was used to bring in seawater for oil-field related water flood operations and on occasion for discharge of the inlet seawater filter backwash to the ocean. Hydrocarbons were not present

in the backwash sent through the outfall. The two intake pipelines measure approximately 680 and 630 feet in length, and the outfall pipeline measures approximately 500 feet in length. All lengths are measured from the seaward side of the concrete vault to the offshore terminations of each pipeline, which are located in water depths ranging from 12 to 14 feet of water. The original materials specification and wall thickness of these pipelines are unknown. The pipelines appear to be coated with an external anti-corrosive coating or weight coating of unknown composition, but most likely a mastic filler/sealer. The external coatings would be sampled prior to removal and tested for the presence of any hazardous materials.

The shoreline consists of a narrow sand beach that is exposed during low tide events and inundated at high tide events. The beach is bordered on the northeast side by a steep armor rock covered slope. All three pipelines run southwest, spaced at approximately ten-degree increments from the vault structure on the beach. There are two reinforced concrete lattice box structures located on the seafloor at the offshore ends of the intake pipelines each measuring approximately 6 square feet and 1 foot in height. Both the pipelines and lattice box structures are gravity based and no anchoring system has been used to secure them to the seafloor.

All three pipelines are fully severed, as a result of corrosion, just south of the seaward side of the vault in the surf zone area. At the severance points all three pipelines appear to be double walled within an inner and outer wall of steel or plastic pipe and mastic filler between the walls. The seaward pipeline sections cross the shoreline just below the beach sand line and the remaining stubs north of the severance points enter the reinforced concrete vault above the sand line but below the high tide.

Offshore, the pipelines appear to be intact and buried through the surf zone. The length and depth of cover appears to vary with the season and associated annual sand migration. This approximately 200-foot long surf zone segment has not been surveyed due to the difficulties of working in the surf zone. Further offshore, the remaining 300 to 500 feet of pipe are exposed and laying on a bedrock and sand seafloor. The exposure of the pipelines was identified in a 2012 and 2019 geophysical survey and confirmed visually in a 2018 biological survey by divers (Fugro 2012, eTrac 2019, Padre 2018).

1.2.2 Shoreline Vault

The shoreline vault is a reinforced concrete and steel sheet pile structure set in the armor rock seawall between Pacific Coast Highway and the intertidal zone. The vault's seaward side is inaccessible during periods of high tide. The vault measures approximately 20 feet wide by 14 feet long and 27 feet deep. The two intake pipelines and one outfall pipeline were originally connected to the seaward side of this vault, and there are pipeline remnants within the armor rock seawall.

A 36-inch-diameter pipeline steel casing with three pipelines exits the vault on the north side (landward side). The vault interior is partially filled with water, at a depth of approximately 16 feet, and still contains water pumps, piping, two levels of grating, and other ancillary equipment, much of it submerged. The interior water level does not change with the tides and so appears to be isolated from the ocean. Due to the flooded condition, the vault interior has only been partially surveyed.

The vault is approximately 27 feet deep and terminates approximately 12 feet below the surrounding sand beach level. Large pumps and equipment appear to be fastened to the floor of the vault and the floor is assumed to be concrete. The interior vault walls and ceiling are concrete, and the exterior walls are sheathed with steel sheet pile. The northern wall of the vault is separated from Pacific Coast Highway by a 28-foot-wide section of compacted soil covered with asphalt layer and then a thin layer of dirt. Armor rock surrounds the vault on the other three sides.

The top of the extended vault area is approximately 20 feet wide by 42 feet long and includes three approximately three-foot by three-foot pump caisson openings on the southern end and an access hatch with ladder on the southwest side. The entire 20-foot by 42-foot vault enclosure is surrounded by chain link fencing with access through a locked gate on the north side.

1.2.3 Onshore Pipelines

The onshore facilities consist of a 36-inch-diameter steel casing that at least partially spans between the northern side of the vault (landward) and the valve pit located in the CRC onshore facilities north of the Ventura Freeway – U.S. Highway 101 (U.S. 101). Exiting the interior wall on the north side of the vault is a 36-inch-diameter steel casing containing one 14-inch-diameter steel pipeline, one 12-inch-diameter steel pipeline and one eight-inch-diameter polyvinyl chloride pipe (PVC pipe) liner inside of a second 12-inch-diameter steel pipeline. The annulus between the pipelines within the 36-inch steel casing are filled with a grout material where the pipelines enter the side of the vault. The extent of this grout fill is unknown and will have to be field verified during decommissioning.

Based on pipeline tracking data, the 36-inch-diameter steel casing appears to run underground approximately 220 feet to the northeast and terminate approximately 80 feet north of the Union Pacific Railroad (UPRR) easement. Pipe tracking data suggests that at least one pipeline exits the 36-inch-diameter casing and extends underground via the “A” Lease Canyon Road, underneath the U.S. 101 overpass for approximately 310 feet and terminates in a valve box on CRC onshore property. Depth of burial to the top of the 36-inch-diameter casing varies from approximately nine feet at the southern side of Pacific Coast Highway to over 11 feet while running under the UPRR easement and U.S 101 dirt frontage road.

2.0 PRE-PROJECT SITE INVESTIGATIONS

2.1 VAULT STANDING WATER

As previously indicated, Project facilities are only known to have been utilized in support of water intake/outfall. The facility was never used to handle, store, or discharge contaminated water, hydrocarbons, or hazardous materials.

Initial sampling of the standing water inside the shoreline vault was conducted in April 2019 (OEC, Attachment A). Representative grab samples were taken and tested in accordance with EPA Methods 8081A for the presence of pesticides, EPA Method 8082 for the presence of Polychlorinated biphenyls (PCBs), EPA Methods 8015M and 1664, for the presence of total petroleum hydrocarbons (TPH) and gasoline fuel components, EPA 8260 for Volatile Organic Compounds (VOCs). The sample was also tested for the presence of CAM 17 heavy metals and other parameters including pH, flashpoint, and reactives; as well as conducting a 96-hour bioassay to determine toxicity.

Lab results from samples indicate that a passing result was obtained from the 96-hour bioassay. Metals were not detected with exception of a low-level concentration of barium (0.19 mg/L or ppm) and zinc (0.70 mg/L or ppm) which were greater than the established reporting levels (RL) of 0.10 mg/L for barium and 0.050 mg/L for zinc, respectively, but well below Total Threshold Limit Concentration (TTLC) limits for Barium of 10,000 mg/kg and zinc of 5,000 mg/kg. TPH in the form of gasoline, diesel, or motor oil as well as VOCs, PCBs, or organochlorine pesticides were not detected (ND) in the grab samples. The pH level at 25°C was 7.48.

Prior to demolition, the water within the shoreline vault will be re-sampled, pumped out, and shipped offsite for appropriate disposal. Based on past use of the facility and the initial sampling results, no significant concentrations of contaminated materials are anticipated.

2.2 LEAD AND ASBESTOS

A mastic filler is present within the walls of the intake/outfall pipelines. Additionally, the vault still contains water pumps, piping, two levels of grating and other ancillary equipment. This material will be surveyed for the presence of asbestos containing materials (ACM) or lead based paint (LBP) just prior to the planned demolition activities. Once the vault has been dewatered, a visual inspection of these components will be conducted. Based on this inspection, representative bulk sample materials of the pipeline and any suspect components within the vault will be taken and sampled for the presence of ACMs or LBP (if painted surfaces are present). Samples will be sent to a State of California certified laboratory to be analyzed in accordance with US EPA standards.

3.0 PROJECT-RELATED WASTES/HAZARDOUS MATERIALS

The following list identifies potential Project-related wastes and/or hazardous materials to be addressed during Project activities as well as contingencies to be implemented during decommissioning activities to manage each waste stream.

- Onshore Vault Demolition: Potential for LBP or ACM
- Pipeline Removal: Potential for ACM in pipe wrap coating
- Construction Equipment and Refueling: Onshore – primary removal methodology and/or offshore – alternative removal methodology. Potential for petroleum hydrocarbons as fuels and/or lubricants in construction equipment utilized onsite.

3.1 ONSHORE VAULT DEMOLITION

The proposed final disposition of the shoreline vault is to remove all equipment and appurtenances from inside the vault, remove the entire vault structure down to 5 feet below the existing beach contours, and then abandon the remaining 7 feet in place. Prior to this activity, the standing water within the vault will be re-sampled, pumped out, and recycled in CRC's production facilities. The reinforced concrete vault ceiling will be saw cut and removed and all equipment, appurtenances and debris inside the vault will be removed and disposed or recycled at approved facilities. Once the water, equipment, appurtenances and debris have been removed from the interior of the vault, the vault walls will be cut into removable sections.

An inspection for ACM or LBPs will be conducted prior to demolition. If ACM or LBPs are present within the vault materials, a Licensed/Certified LBP Contractor certified by the California Department of Public Health will be contracted to accomplish LBP abatement prior to the commencement of vault demolition. If ACM is found in any vault contents or materials, a Certified Asbestos Abatement Contractor will aid in vault removal and disposal activities. Vault removal activities will be conducted in accordance with all applicable regulations pertaining to asbestos.

3.2 PIPELINE REMOVAL

The proposed primary submarine pipeline removal methodology consists of mounting a winch on top of the existing reinforced concrete vault and pulling the submarine pipeline segments to shore along their existing alignments. The onshore ends of each pipeline will be exposed by an excavator operating on the beach. Materials testing will be performed once the pipelines are uncovered to determine the presence of any hazardous materials.

The pipelines will be pulled along their existing alignments up onto the beach where they will be cut into sections, removed from the beach and trucked to an approved offsite recycler or disposal facility. Alternatively, should the onshore pipe recovery operation be unable to recover all of the submarine pipeline segments to shore, the anchored offshore marine work spread consisting of a dive support vessel and divers will be used to recover the remaining submarine pipeline segments. All remaining sections of pipeline will be recovered to the marine work spread for transport to the dock and recycling or disposal.

In ACM is found in the pipe mastic material, a Certified Asbestos Abatement Contractor will aid in pipeline removal and disposal activities. Pipeline removal activities will be conducted in accordance with all applicable regulations pertaining to asbestos.

3.3 CONSTRUCTION EQUIPMENT AND REFUELING

Decommissioning activities will require the use of a limited amount of equipment that utilizes petroleum hydrocarbons as fuels and/or lubricants; onshore using the primary removal methodology using excavators and a winch and/or offshore using the alternative removal methodology via vessel. This equipment presents the potential for spills or petroleum hydrocarbon releases to the ambient environment. Although a release is not expected due to the limited volume of petroleum hydrocarbons that will be present onsite and the short-term duration of work activities, the following best management practices (BMPs) will be implemented throughout decommissioning activities to further reduce the potential for a release:

- All petroleum hydrocarbons will be stored in double containment,
- All fuels and lubricants will be properly labeled,
- All petroleum hydrocarbons will be stored a safe distance away from potential ignition sources,
- Fueling shall be conducted in a manner best suitable to avoid a release,
- No vessel to vessel fuel transfers will be permitted,
- When feasible, equipment should be equipped with drip pans,
- All equipment will be inspected for leaks on a daily basis,
- If any equipment is observed to be leaking, the equipment will be shut off and the leak stopped, or the equipment replaced, and
- The oil spill response equipment identified in the Project's Oil Spill Response and Contingency Plan (provided as an appendix of the Contractor's Project Work and Safety Plan) will be maintained onsite throughout decommissioning activities.

4.0 WASTE MANAGEMENT

CRC proposes to handle wastes generated during the decommissioning activities in the following manner:

4.1 VAULT PURGE - WATER/EQUIPMENT

The standing water within the vault will be re-sampled and pumped out using a vacuum truck prior to demolition activities. As previously discussed within Section 2.1, the standing water was previously sampled and not found to contain any hazardous materials. Therefore, the vault water is anticipated to be pumped out and transported from the Project site for re-use in CRC's production facilities, or disposal as a non-hazardous material.

Equipment located within the vault includes water pumps, piping, two levels of grating and other ancillary equipment. If determined to be free of ACM, all equipment, appurtenances and debris inside the vault will be removed and recycled or disposed of at Ventura Regional Sanitation District Sanitary Landfill at Toland Road in Santa Paula.

If it is determined that any equipment contained within the onshore vault contains ACM, any asbestos debris generated during demolition activities will be placed in a lined 40-yard bin, labeled and lockable with asbestos signage to warn of the hazard, and disposed according to federal and state regulations. Materials would likely be taken to the Clean Harbors Hazardous Waste Facility in Buttonwillow, California.

4.2 PIPELINES

If it is determined that the pipeline coating material contains ACM, any asbestos debris generated during removal activities will be placed in a lined 40-yard bin, labeled and lockable with asbestos signage to warn of the hazard, and disposed according to federal and state regulations. The location for disposal of pipe with mastic coating would be the Clean Harbors Hazardous Waste Facility in Buttonwillow, California.

4.3 LEAD-BASED PAINT (LBP) MATERIALS (IF FOUND)

If LBP materials are detected within the vault during pre-construction inspections; LBP debris generated during demolition activities will be placed in a lined and labeled 55-gallon drum(s) and disposed according to federal and state regulations. The location for disposal of materials including LBP would be the Clean Harbors Hazardous Waste Facility in Buttonwillow, California.

5.0 REPORTING

In consultation with the applicable regulatory agencies, the procedures presented in this HMMCP will be implemented. CRC will notify the following agencies if unanticipated hazardous materials are encountered during decommissioning activities:

- California State Lands Commission
- Ventura County Environmental Health Division
- Regional Water Quality Control Board, Los Angeles District

6.0 REFERENCES

- Longitude 123, Inc. 2019. Project Execution Plan – Grubb Lease Intake and Outfall Decommissioning Project, Revision 6 October 2019.
- Oilfield Environmental & Compliance, Inc. 2019. Grubb Lease Analytical Report (Work Order 1901882)

**Attachment 1 –
Project Execution Plan (Longitude 123, October 2019)**

PROJECT EXECUTION PLAN

GRUBB LEASE INTAKE AND OUTFALL DECOMMISSIONING PROJECT

REVISION 6 - OCTOBER 2019



CALIFORNIA RESOURCES
CORPORATION
9600 MING AVENUE
BAKERSFIELD, CA. 93311
ZACHARY DRANSOFF
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DECOMMISSIONING CONTRACTOR

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2100 VALLEY MEADOW DRIVE
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MARK STEFFY, PRESIDENT
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DECOMMISSIONING ENVIRONMENTAL MANAGER

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jleighton@padreinc.com



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SECTION 1 – PROJECT OVERVIEW

1.1 INTRODUCTION

California Resources Corporation (CRC) intends to decommission the previously retired Vintage Petroleum Grubb Lease Water Treatment Plant Intake and Outfall Facility. The Grubb Lease Intake and Outfall Facility is located approximately 4.4 miles northwest of Ventura, California on the shoreline of the Pacific Ocean approximately 1.3 miles east southeast of Pitas Point (see Figure 1). The marine portions of the facilities are located within the California State Lands Commission (CSLC) Lease PRC 3913.1.

This “waterflood” support seawater intake and discharge facility was constructed in 1967/68. The date of the retirement of this facility is unknown. Some of the component details of this intake and discharge facility are known while others are currently inaccessible.

The facility was never used to handle, store or discharge contaminated water or hydrocarbons and the standing water inside the vault structure on the shoreline was tested in early 2019 and found to be contaminate free.

Generally, this retired waterflood support facility is comprised of three nominal 12-inch diameter steel pipe submarine pipelines (two seawater intake pipelines and one discharge pipeline) that extend from the seaward side of a reinforced concrete and steel sheet pile vault structure on the shoreline and terminate on the rocky seafloor approximately 500 to 700 feet offshore. Reinforced concrete intake structures rest on the seafloor at the offshore ends of the two intake pipelines. Onshore, a nominal 36-inch diameter steel pipe casing extends underground from the landward side of the vault, underneath Pacific Coast Highway and the adjoining Union Pacific Railroad (UPRR) line where it appears to terminate 80 feet north of the UPRR line approximately 10 feet underground. This 36-inch casing contains three pipelines at the vault end and one or more of these underground pipelines appear to extend underneath the Ventura Freeway “A” Lease Canyon Road overpass and may terminate in a valve box located inside CRC facilities on the north side of Ventura Freeway.

The decommissioning is scheduled to begin in late fall 2019 and to be completed in early 2020.

The intake structures at the offshore ends of the two intake pipelines will be recovered. All three submarine pipelines will be pulled ashore and cut into sections for transport to approved offsite disposal or recycling facilities. Alternatively, if the pipelines, or portions of the pipelines, cannot be pulled ashore, a dive support vessel and divers will be used to pull the pipelines segments offshore, cut and recover them, and then ship them to offsite disposal or recycling facilities.

After recovery of all three submarine pipelines, the vault on the beach will be demolished to a depth at least five feet below existing beach contours and the vault materials transported for offsite disposal or recycling.

All pipelines found inside the 36-inch casing will be removed from the casing, as feasible, and the 36-inch casing will be filled with cement slurry and abandoned in place. Alternatively, if the annulus between the pipelines and interior of the 36-inch casing is found to be already filled with cement, the pipelines inside the 36-inch casing will be filled with cement slurry and the 36-inch casing and pipelines will be abandoned in place.

Any pipelines between the landward termination of the 36-inch the casing and the valve box within the CRC facility will also be filled with cement slurry and abandoned in place.

Once all construction is complete, the existing rip rap rock that surrounded the vault on the beach will be used to create an armored rock shoreline matching the adjacent rip rap contours, and the surrounding areas returned to pre-construction contours and conditions. A post-construction bathymetric survey will confirm that all project-related debris has been removed from the offshore work area.

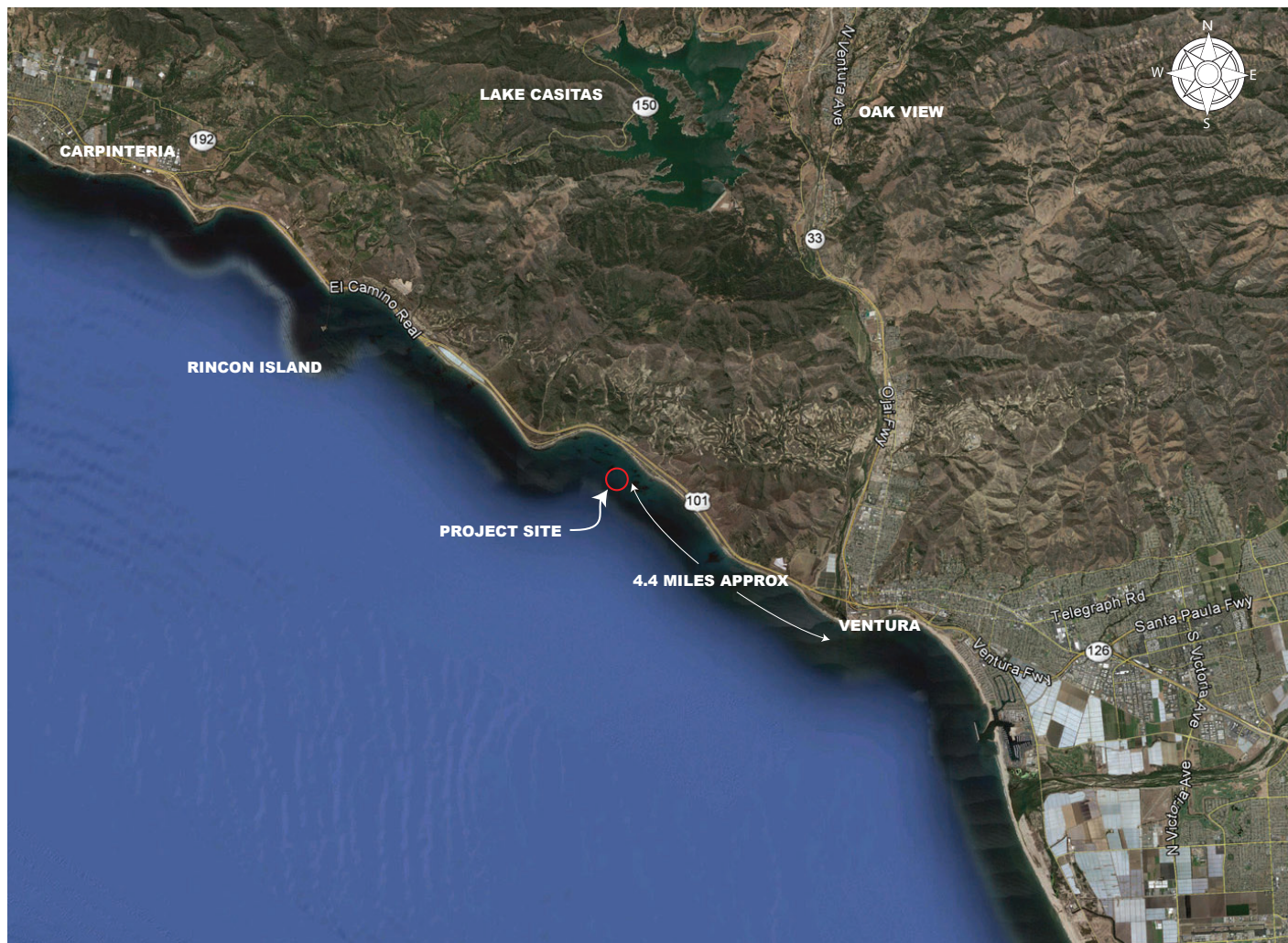


FIGURE 1
GEOGRAPHIC SITE LOCATION



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1.2 FACILITY HISTORY

Constructed in 1967, the purpose of this facility was to supply seawater to the onshore oil processing facility in support of groundwater flooding and to discharge treated clean water back into the ocean. None of the pipelines were ever used for the transmission of water with hydrocarbon content and the two submarine pipelines and outfall pipeline have been open to the ocean since their construction. These facilities are located alongside Pacific Coast Highway approximately 792 feet northwest of Solimar Beach at the foot of the “A” Lease Canyon Road underpass, underneath the Ventura Freeway (see Figure 2 and Figure 3).

1.3 FACILITY DESCRIPTION

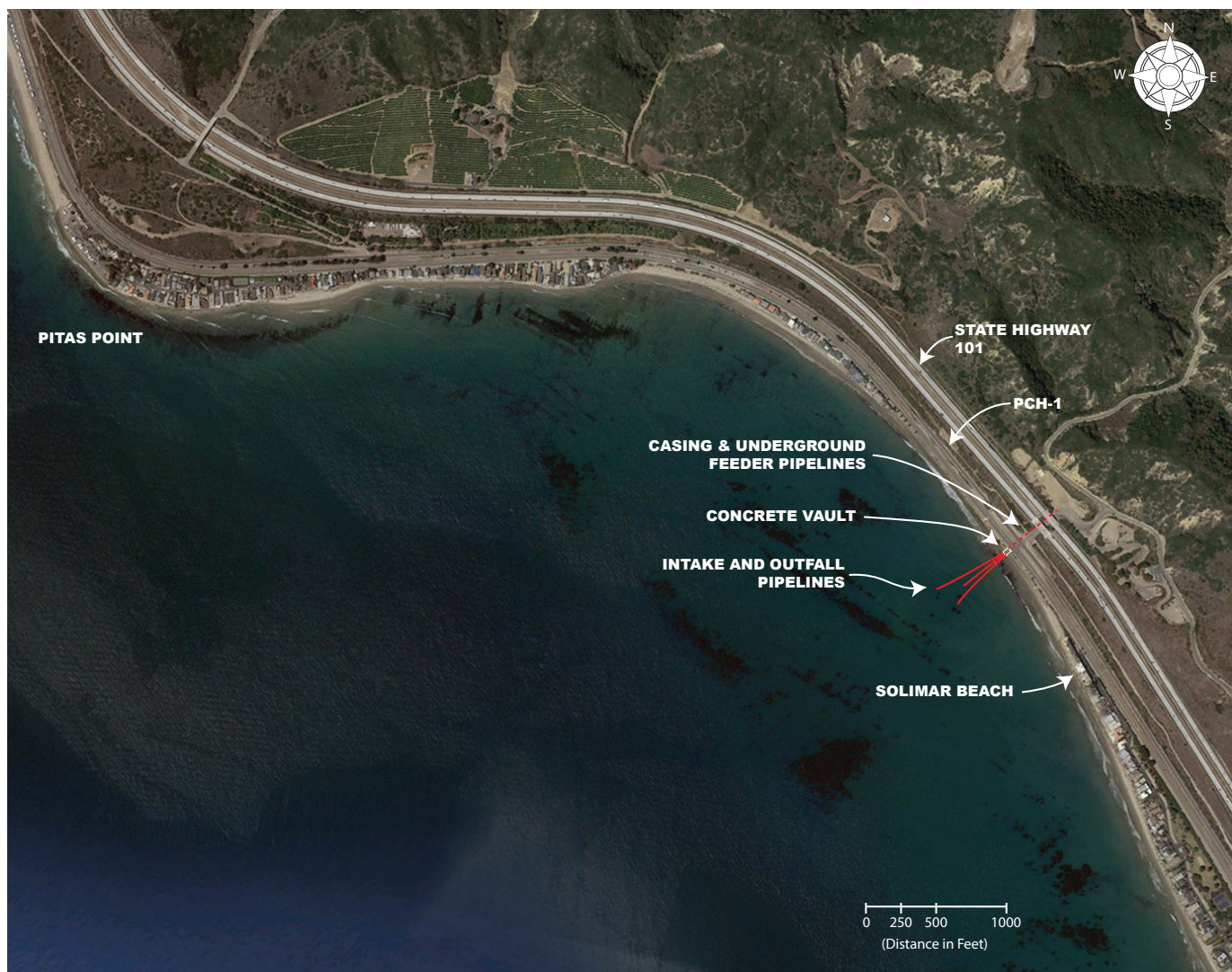
1.3.1 Offshore Intake and Outfall Pipelines

The offshore portion of the facility consists of three 12-inch steel submarine pipelines consisting of two intake pipelines and one outfall pipeline (see Appendix A). This segment is below the Mean High Water Mark (MHW). The Grubb lease intake/discharge facility was used to bring in seawater for oil-field related water flood operations and on occasion for discharge of the inlet seawater filter backwash to the ocean. Hydrocarbons were not present in the backwash sent through the outfall. The two intake pipelines measure approximately 680 feet in length and 630 feet in length and the outfall pipeline measures approximately 500 feet in length. All lengths are measured from the seaward side of the concrete vault to the offshore terminations of each pipeline, which are located in water depths ranging from 12 to 14 feet of water. The original materials specification and wall thickness of these pipelines are unknown. The pipelines appear to be coated with an anti-corrosive coating or weight coating of unknown composition, but most likely a mastic filler/sealer. The external coatings will be sampled prior to disposal and tested for the presence of any hazardous materials.

The shoreline consists of a narrow sand beach that is exposed during low tide events and inundated at high tide events. The beach is bordered on the northeast side by a steep armor rock covered slope. All three pipelines run southwest, spaced at approximately ten-degree increments from the vault structure on the beach. There are two reinforced concrete lattice box structures located on the seafloor at the offshore ends of the intake pipelines each measuring approximately 6 square feet and 6 feet in height. Both the pipelines and lattice box structures are gravity based and no anchoring system has been used to secure them to the seafloor.

All three pipelines are fully severed, as a result of corrosion, just south of the seaward side of the vault in the surf zone area (see Figure 5). At the severance points all three pipelines appear to be double walled with an inner and outer wall of steel or plastic pipe and a mastic filler between the walls. The seaward pipeline sections cross the shoreline just below the beach sand line and the remaining stubs north of the severance points enter the reinforced concrete vault above the sand line but below the high tide line.

Offshore, the pipelines appear to be intact and buried through the surf zone. The length and depth of cover appears to vary with the season and associated annual sand migration. This approximately 200-foot long surf zone segment has not been surveyed due to the difficulties of working in the surf zone. Further offshore, the remaining 300 to 500 feet of pipe are exposed and laying on a bedrock and sand seafloor. The exposure of the pipelines was identified in 2012 and 2019 geophysical subsea surveys and confirmed visually in a 2018 biological survey by divers.



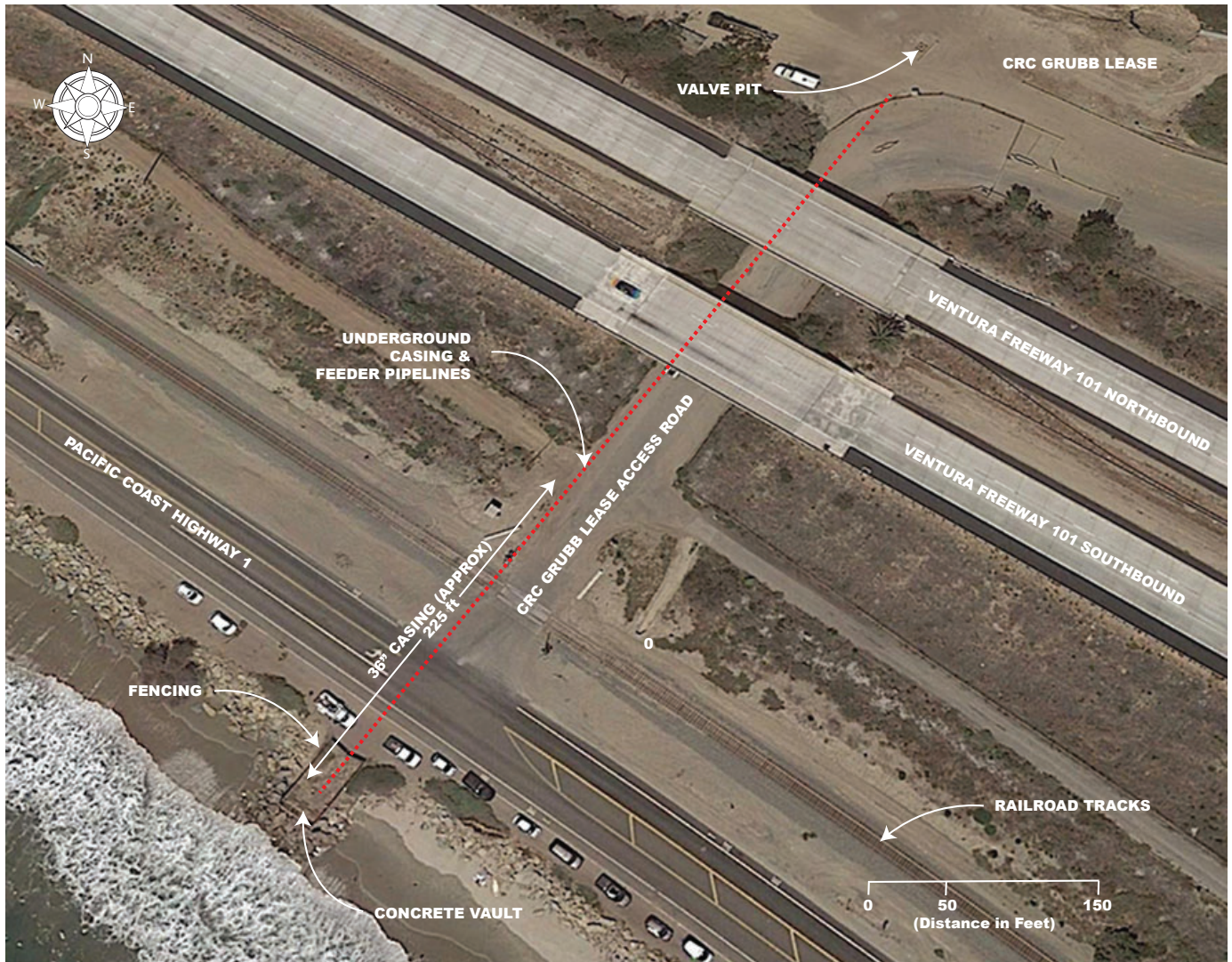


FIGURE 3
ONSHORE SITE MAP

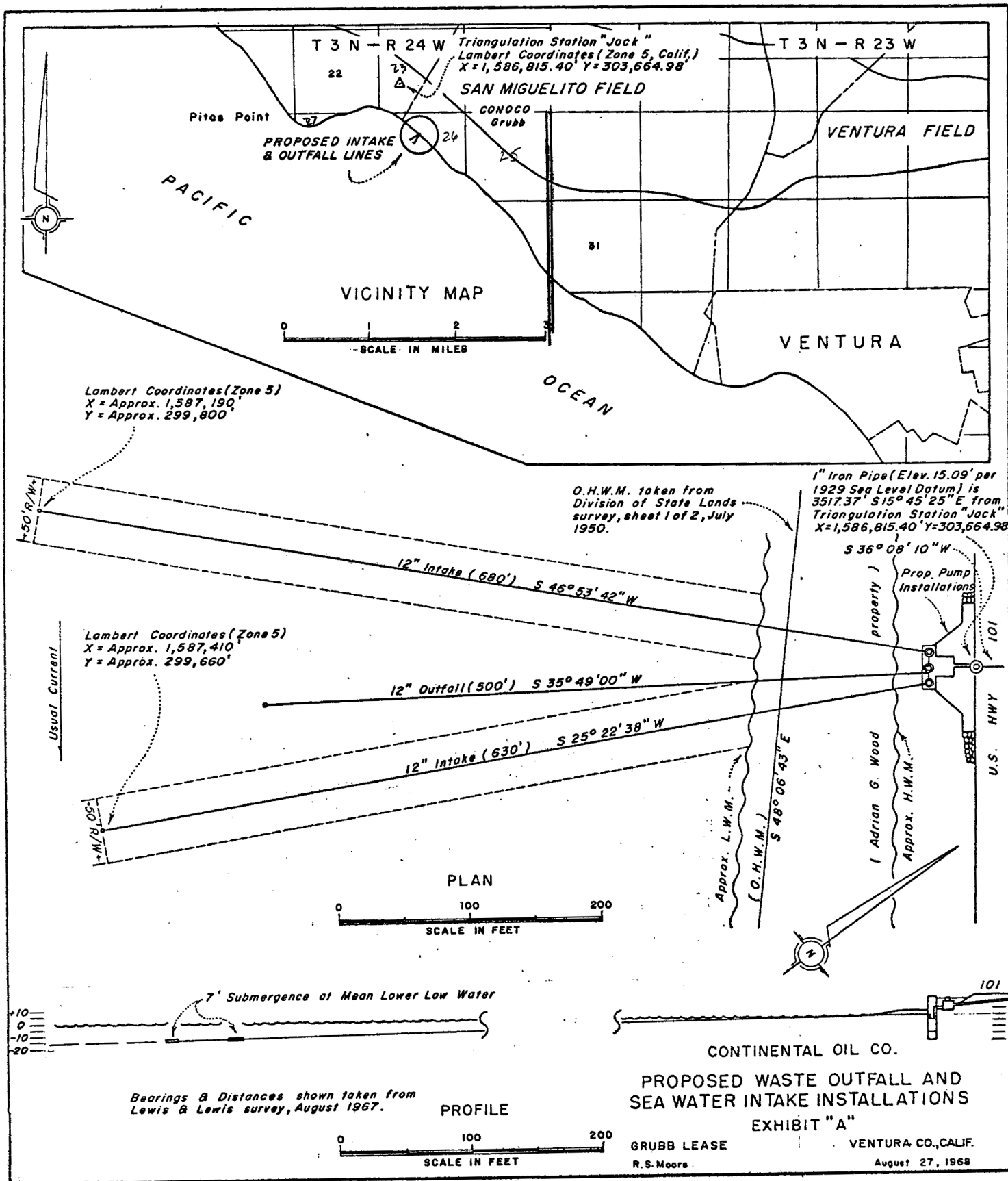


FIGURE 4 - CONTINENTAL OIL COMPANY PROPOSED WASTE OUTFALL AND SEA WATER INTAKE INSTALLATIONS - EXHIBIT "A"



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1.3.2 Shoreline Vault

The shoreline vault is a reinforced concrete and steel sheet pile structure set in the armor rock seawall between Pacific Coast Highway and the intertidal zone. This segment is above the MHW. The vault's seaward side is inaccessible during periods of high tide. The vault measures approximately 20 feet wide by 14 feet long and 27 feet deep. The two intake pipelines and one outfall pipeline were originally connected to the seaward side of this vault.

Three pipelines within a 36-inch casing exit the vault on the north side (landward side). The vault interior is partially filled with water to a depth of approximately 16 feet and still contains water pumps, piping, two levels of grating and other ancillary equipment, much of it submerged. The interior water level does not change with the tides and so appears to be isolated from the ocean. Due to the flooded condition, the vault interior has only been partially surveyed.

The vault is approximately 27 feet deep and terminates approximately 12 feet below the surrounding sand beach level. Large pumps and equipment appear to be fastened to the floor of the vault and the floor is assumed to be concrete. The interior vault walls and ceiling are concrete, and the exterior walls are sheathed with steel sheet pile.

The northern wall of the vault is separated from Pacific Coast Highway by a 28-foot wide section of compacted soil covered with an asphalt layer and then a thin layer of dirt. Armor rock surrounds the vault on the other three sides.

The top of the extended vault area is approximately 20 feet wide by 42 feet long and includes three approximately 3-foot by 3-foot pump caisson openings on the southern end and an access hatch with ladder on the southwest side. The entire 20-foot by 42-foot vault top is surrounded by chain link fencing with access through a locked gate on the north side.

1.3.3 Onshore Facilities

The onshore facilities consist of underground pipelines and support structure that span between the northern side of the vault (landward) and the valve pit located in the CRC facilities north of the Ventura Freeway. This segment is above the MHW. Exiting the interior wall on the north side of the vault is a 36-inch diameter steel casing containing one 14-inch diameter steel pipeline, one 12-inch diameter steel pipeline and one 8-inch diameter PVC pipe liner inside of a second 12-inch diameter steel pipeline. The annulus between the pipelines within the 36-inch steel casing is filled with a grout material where the pipelines enter the side of the vault. The extent of this grout fill is unknown and will have to be field verified during decommissioning.

Based on pipeline tracking data, the 36-inch casing appears to run underground approximately 220 feet to the northeast and terminates approximately 80 feet north of the UPRR easement. Pipe tracking data suggests that at least one pipeline exits the 36-inch casing and extends underground via the "A" Lease Canyon Road and underneath the Ventura Freeway overpass a distance of approximately 310 feet and terminates in a valve box on CRC property. Depth of burial to the top of the 36-inch casing varies from approximately 9 feet at the southern side of Pacific Coast Highway to over 11 feet while running under the UPRR easement and Ventura Freeway dirt frontage road.

1.4 DECOMMISSIONING PROJECT TEAM

The decommissioning team consists of the following members:

1.4.1 Decommissioning Manager – Longitude 123, Inc.





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Longitude 123, Inc. (L123) will serve as the project's decommissioning manager and is responsible for the preparation of all technical documents, plans, specifications and for performance of the decommissioning work. L123 is located in Oak View, California. Contact information for L123 is as follows:

Longitude 123, Inc.
2100 Valley Meadow Drive
Oak View, CA. 93022

Attention: Scot Anderson
Decommissioning Manager

Tel: 805.796.1235
Fax: 805.649.9864
Cell: 805.796.1235
Email: sanderson@longitude123.net

1.4.2 Engineering Consultant – YCE Incorporated

YCE Incorporated (YCE) will serve as the project's engineering consultant and is responsible for engineering analysis, calculations, and production of the project's plans and specifications.

YCE Incorporated
1587 Morse Avenue, Suite A
Ventura, CA. 93003

Attention: Marta Alvares, P.E., P.L.S.
President

Tel: (805) 650.6995
Fax: (805) 677.4721
Email: yce-mya@pacbell.net





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SECTION 2 – PROJECT DESCRIPTION

2.1 OVERVIEW

The proposed facility final dispositions and project methodologies are provided in the following sections.

2.2 PRE-PROJECT PLANS AND SURVEYS

Once all regulatory permits are received, but prior to the start of site work, the following technical plans and surveys will be completed:

- a. Produce a Project Work and Safety Plan (PSWP) that provides the following:
 - Project-specific Emergency Action Plans
 - Project Contacts
 - Final Scope of Work and final dispositions
 - Updated Project Schedule
 - Step-by-step Procedures with supporting engineering calcs
 - Quality Management Plan
 - Project Management and Communications Plan
 - Site Safety Plan
 - Diving Safety Plan
 - Critical Operations and Curtailments Plan
 - Survey Plan (onshore and offshore)
 - Confined Space Entry Plan
 - Oil Spill Contingency Plan
 - Marine Safety and Anchoring Plan with anchoring pre-plot
 - Excavation Plan
 - Certified Traffic Management Plan
 - Hazardous Materials Management Plan (if hazardous materials are found)

Other plans and information required to perform the work safely and in compliance with all regulatory permits and permissions, Cal OSHA safety regulations, U.S. Coast Guard safety regulations, and owner's safety requirements will also be developed as applicable. This PWSP will be submitted to all pertinent agencies for review and approval prior to the start of site work.

- b. Produce a pre-project multi-beam seafloor survey, with 400% coverage, of the offshore area around the pipelines, including the proposed anchor spreads. This will serve as the baseline seafloor debris survey that will be compared against a post-decommissioning seafloor debris survey of the same area to ensure that no project-related debris has been left underwater on the seafloor.
- c. Conduct a pre-project topographic survey of the armor rock sea wall on each side of the vault to determine the pre-construction contours and conditions of the sea wall. This will serve as the baseline for reconstructing the seawall after removal of the vault and the construction access ramp and restoration of the site to existing contours.
- d. Conduct an 811 utility location survey (DigAlert) from the northern wall of the vault to the valve pit on the CRC property to ensure that all utilities are identified and located on the survey maps.



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Prior to the start of offshore and onshore decommissioning activities, the work area will be staged in accordance with the pre-approved Traffic Plan. This will include setting up equipment and materials staging areas along the southern shoulder of Pacific Coast Highway; the closure of the eastbound bicycle and vehicle lane of Pacific Coast Highway; and the temporary rerouting of both eastbound and westbound traffic into the existing center divider and westbound lanes of Pacific Coast Highway. This traffic diversion will be maintained throughout the project to ensure there are public safety margins for equipment moving on and off the beach each day, loading pipe sections into trucks, excavating the vault, etc. While occasional traffic stops on Pacific Coast Highway may be needed during equipment ingress and egress, no long-term full closure of Pacific Coast Highway is anticipated. A preliminary work area and traffic impact layout is provided in Figure 6. Note that this plan is subject to change upon completion of the Traffic Plan.

A temporary equipment access ramp will be constructed across the existing armor rock seawall approximately 50 feet south of the concrete vault to provide equipment access to the project site. An excavator will remove and relocate the existing armor rock as needed to create the foundation for the equipment access ramp. All rock removed will be stored for replacement upon completion of construction activities. An excavator and loader will place smaller rock and cobble on top of the existing armor rock seawall to create a ramp of sufficient density and strength to allow tracked construction equipment to travel across it to the beach. The equipment access ramp will be approximately 30 feet wide and 60 feet long.

2.3 OFFSHORE FACILITIES DECOMMISSIONING

The proposed final disposition of the offshore facilities is to remove the two reinforced concrete lattice intake structures and all three 12-inch submarine pipelines in their entirety.

Offshore work will be initiated by anchoring the dive support vessel over the terminus of the intake structures (as detailed in the Anchoring Plan). Divers will be deployed to cut and remove the intake structures from each intake pipeline. A guillotine saw with a hydraulic power pack will be used to make the cut. Once cut the intake structures will be winched vertically to the surface and recovered onboard the vessel.

The proposed primary submarine pipeline removal methodology consists of mounting a winch on top of the existing reinforced concrete shoreline vault and pulling the submarine pipeline segments to shore along their existing alignments. Recovery operations have been scheduled when beach and surf zone sand cover is the lowest due to winter and early spring storm conditions. If the onshore ends of each pipeline are not already exposed, they will be exposed by an excavator operating on the beach. The ends of each pipeline will be cut and prepared for rigging of a pull wire or bridle. Tension will be slowly increased on the pipeline pulling wire allowing the pipelines to be pulled both vertically and horizontally until the pipeline is completely free of the surf zone sand cover. The pipelines will then be pulled along their existing alignments up onto the beach where they will be cut into lengths capable for trucking offsite (Figure 7). Once cut, the segments will be lifted from the beach, placed on a flatbed truck and trucked to an approved offsite recycler or disposal facility. This use of the vault and associated recovery of the offshore pipelines to shore will be performed prior to decommissioning the shoreline vault and armor rock.

Although engineering calculations have determined that pulling forces needed to free the pipeline segments from the surf zone do not exceed the tensile strength of the pipeline, there is a possibility a portion of pipelines cannot be recovered from shore. Should the onshore pipe recovery operation be unable to recover all of the offshore pipeline segments to shore, the existing anchored offshore dive support vessel and divers will be used to recover the remaining offshore pipeline segments. Work will be limited to the existing pipeline corridor and pipeline segments and will be cut into manageable segments and lifted vertically to the surface for recovery on the



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FIGURE 6
SITE WORK AREA PLAN

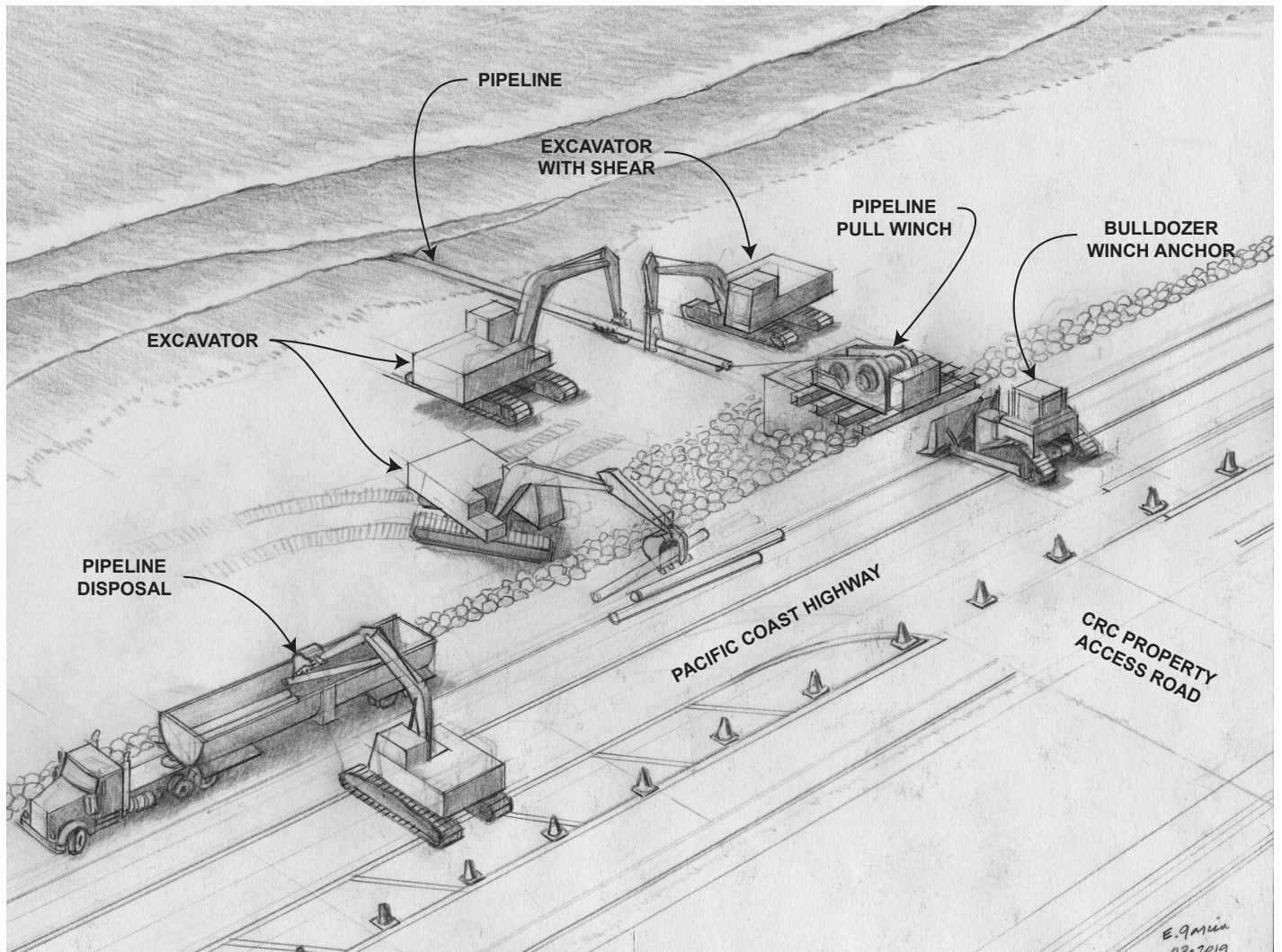


FIGURE 7
OFFSHORE PIPELINE PULL TO SHORE AND REMOVAL



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dive support vessel using an onboard winch or crane. The dive vessel will be positioned over the cut point using the existing three-point anchoring spread.

In the event the unrecovered pipeline is located within the surf zone, recovery efforts will have to be limited to periods of low wave action and/or extreme low tides. These recovery efforts will also be timed during the winter and early spring beach profile conditions when the least amount of sand will be over the pipelines. If the remaining section is on the ocean side of the surf zone, divers will be deployed from the dive support vessel to expose the pipeline using a jet pump and then rig the exposed section for pulling to the vessel. Alternatively, if the remaining section is on the landward side of the surf zone, an excavator will be used during a period of extreme low tide to expose the remaining segment and rig the section for recovery to the beach using the vault mounted winch.

2.4 SHORELINE VAULT DECOMMISSIONING

The proposed final disposition of the shoreline vault is to remove all equipment and appurtenances from inside the vault and then remove the entire vault structure down to 5 feet below the existing beach contours and abandon the remaining 7 feet in place.

The decommissioning of the vault will begin once the submarine pipelines have been removed. The reinforced concrete vault ceiling will be saw cut and removed to allow access to the interior of the vault. The water in the vault, which was sampled in early 2019 and found to be contaminate free, will be re-sampled, pumped out, and shipped offsite for appropriate disposal. Once the water has been removed the internal water pumps, piping, two levels of grating, and other ancillary equipment will be removed and trucked offsite for recycling or disposal.

To facilitate removal of the vault, all armor rock currently surrounding the vault will be removed to expose the vault walls down to the beach elevation (Figure 8). Sand may also be excavated from the vault exterior in order to facilitate vault removal. The perimeter around the open excavation will be fenced off. Lower portions of the existing riprap around the perimeter of the vault will be left in place to inhibit backfill from surrounding sand during high tide periods.

Once the armor rock has been relocated from the interior of the vault, the four vault walls will be cut into removable sections with the use of a hydraulically powered rotary demolition saw (cuts both concrete and steel) attached to an excavator boom (Figure 9). In use, the excavator will reach inside the interior and make a horizontal cut around the base of the walls at an elevation at least 5 feet below the existing sand grade or at a lower elevation if conditions permit. Horizontal cuts may also be made from the exterior as well. After the base cut has been completed, the saw will be used to cut the walls into vertical sections for removal. An excavator will be used to grasp the cut wall pieces and place them in trucks for offsite disposal or recycling at approved facilities.

The vault removal process will likely result in several days during which the vault will fill with water at high tide periods. During low tide work periods, the water will be pumped back out and sand that has migrated back into the vault will be removed, as needed.

The 36-inch diameter steel casing that connects into the shoreward side of the vault, and pipes contained in that casing, will be excavated and cut back approximately even with the existing earth slope of the armor rock seawalls that exist on either side of the vault. The casing and pipes contained in the casing will have been decommissioned in accordance with the description in Section 2.5 – Onshore Pipeline Decommissioning below.

Once all walls are cut at least 5 feet below the local sand level, the area will be backfilled. Depending on the amount of natural sand movement, it is estimated that approximately 75 cubic yards of sand will be used to fill voids within the seawall. The site will then be recontoured and the armor rock repositioned over the project site to match pre-decommissioning contours.

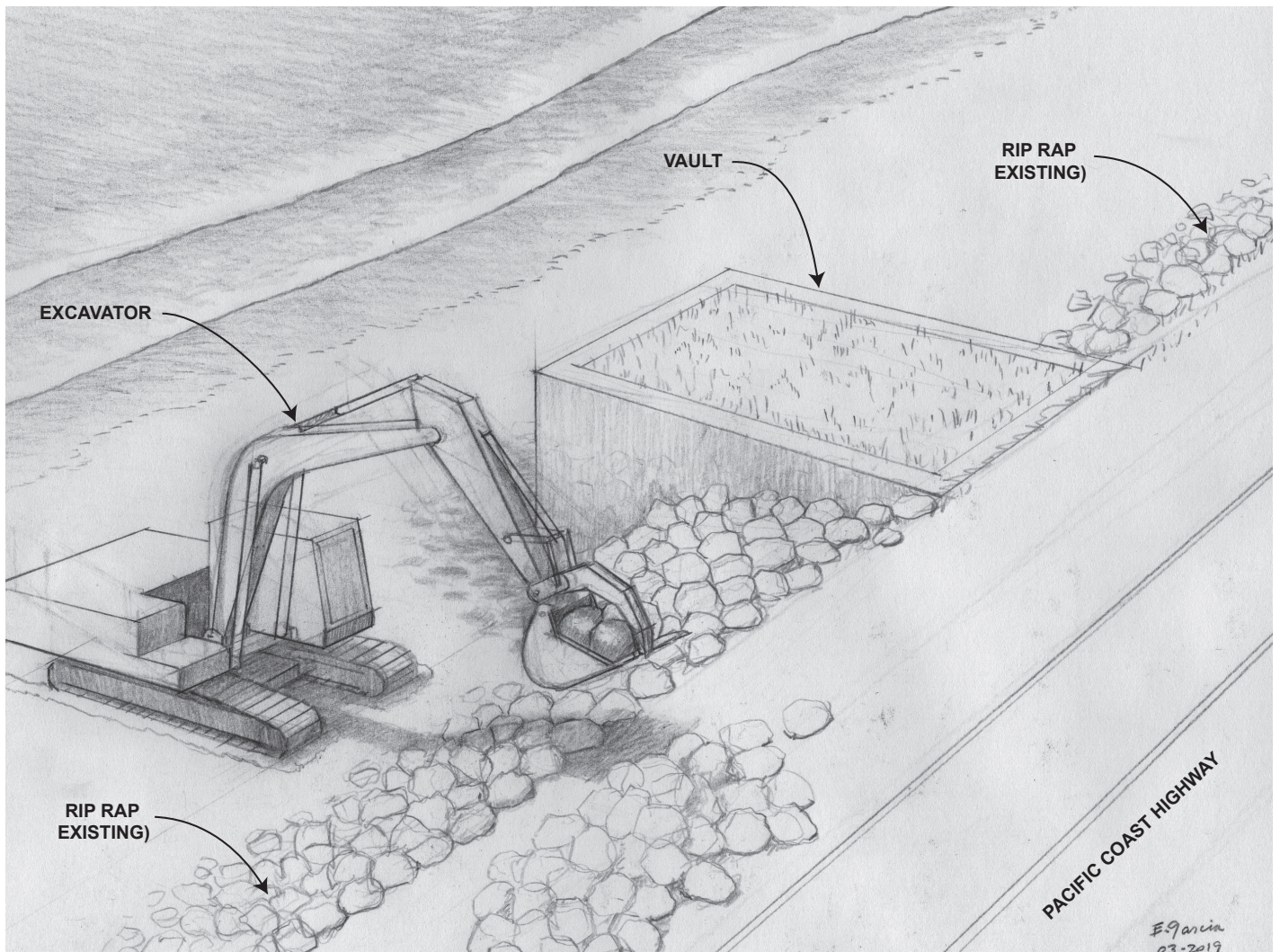
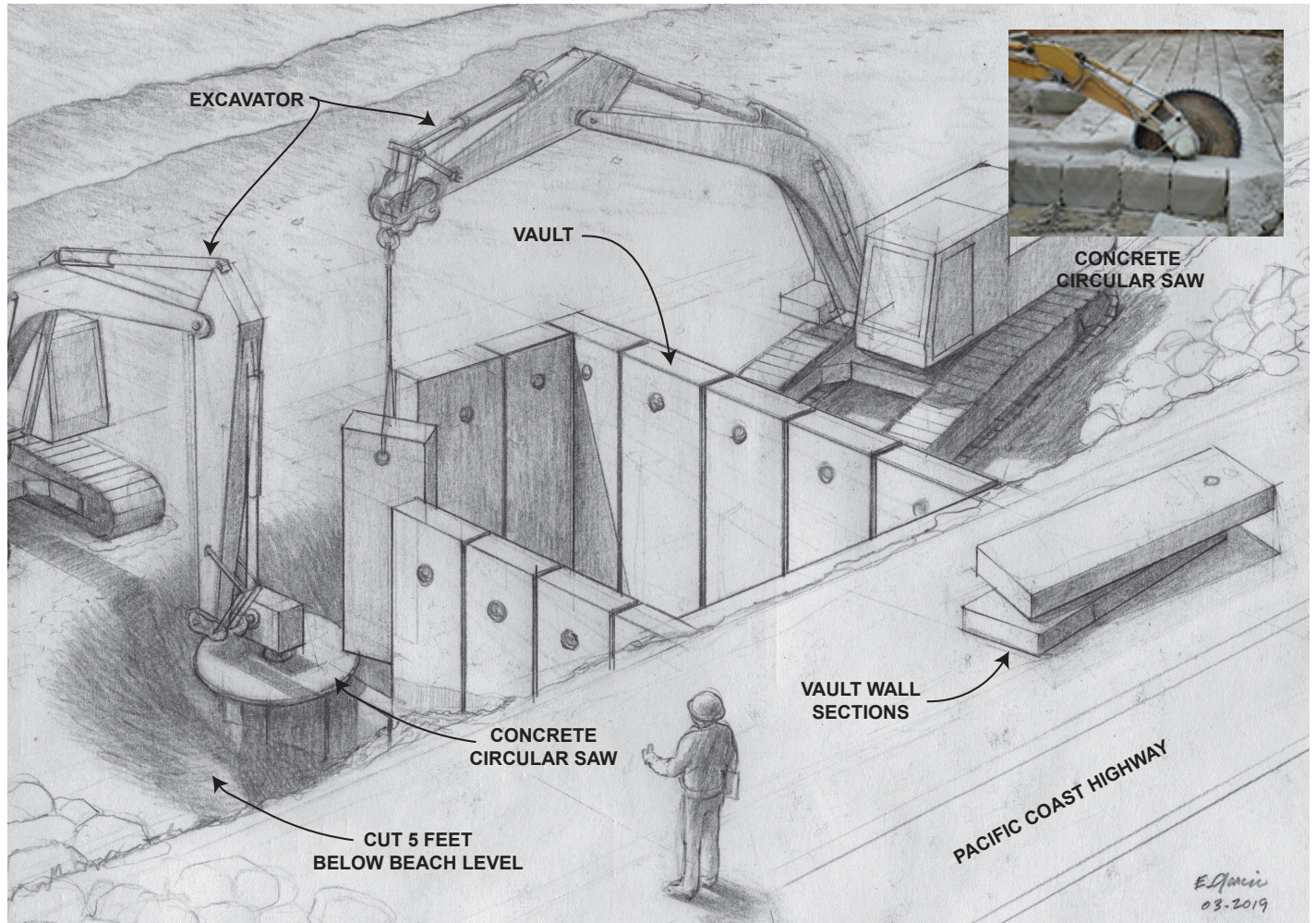


FIGURE 8
RIP RAP REMOVAL FROM AROUND VAULT





2.5 ONSHORE FACILITIES DECOMMISSIONING

The final disposition of the onshore facilities is to fill the 36-inch casing and associated internal pipelines with cement slurry and abandon it in place, except as detailed below. This work will be performed prior to the Shoreline Vault Decommissioning detailed in section 2.4.

In order to access the casing, two potholes will be excavated along the casing and/or pipeline route between the vault and the CRC facilities. These pothole locations are shown on Sheet 4 in Appendix A. The first pothole will be just north of the UPRR right-of-way, where based on the results of the pipeline tracking the casing appears to terminate. This will provide visual and quantifiable evidence on the casing, pipelines and level of cementing in the casing annulus between the southern end of the casing in the vault and the northern end of the casing at the pothole. The second pothole will be at the valve pit inside the CRC facilities on the north side of the Ventura Freeway. This will provide visual and quantifiable evidence on the pipelines between the two potholes. The excavations will use trench boxes to limit cut volumes and the disturbed areas surrounding the potholes. No traffic impacts to Pacific Coast Highway, the 101 Freeway or the access road to the CRC facilities are anticipated.

If the pipelines inside the casing between the vault and the first pothole are not cemented in place and can be removed, they will either be pulled to the vault structure or to the pothole where they can be saw cut into sections and recovered. The casing will then be filled with cement slurry and abandoned in place. If the pipelines carried inside the 36-inch casing are found to be already cemented into the 36-inch casing, the pipelines will be filled with cement slurry and abandoned in place inside the 36-inch casing between the vault and the first pothole. A cement pumping unit will be used to pump slurry from the pothole downslope to the vault.

If the internal pipelines inside the casing continue to extend between the northern end of the 36-inch casing (the first pothole) and their termination in the valve box located inside CRC facilities (the second pothole) they will be filled with cement slurry and abandoned in place. As before the cement slurry will be pumped from the upper pothole downslope to the first pothole location

Upon completion of the removal of the pipelines between the vault and the first pothole and the pumping of the slurry into the casing and/or pipelines between the vault and the second pothole, the trench boxes will be removed, and the potholes backfilled and compacted. The surrounding areas will be contoured to pre-construction conditions.

Upon completion of pipeline and vault removal activities, terrestrial construction equipment working from the shoulder of the road will deconstruct the equipment access ramp and construct the armor rock seawall at the removed vault location using original armor rock from the vault perimeter. The reconstructed armor rock seawall will match pre-decommissioning contours.

Upon completion of the offshore decommissioning work, a second offshore geophysical debris survey will be performed, and the results compared to the initial baseline seafloor debris survey. Any anomalous seafloor objects located in the survey will be positively identified by divers and any remaining objects related to the decommissioning will be removed. A Project close-out report with drawings and coordinates of all facilities abandoned in place will be submitted to the Commission within approximately 60 days of the completion of the work.



2.6 ESTIMATED AREAS AND VOLUMES

The estimated disturbed areas and volumes of project materials are provided in the following table.

Table 1. Estimated Areas and Volumes of Project Materials

Project Component/Description	Material	Length (ft)	Area of Disturbance (sq ft)	Volume (Excavation)	
				(cu ft)	(cu yd)
Below Mean High Water Mark					
Offshore Intake and Outfall Pipelines Segment					
Intake Pipeline (North)	Sand/Rock	680	680	400	15 ¹
Intake Pipeline (South)	Sand/Rock	630	630	400	15 ¹
Outfall Pipeline	Sand/Rock	500	500	400	15 ¹
Moorings (5 @ 50 ft diameter)	Beach Sand	--	9,813	--	--
Concrete Lattice Box Structures (2 @ 6 ft x 6 ft)	Concrete	--	36	--	--
Beach Sand Around Vault Exterior	Beach Sand	--	600	3,600	133 ²
Temporary Equipment Access Ramp	Armor Rock/ Rock and Cobble	42	675	5,062	188
Shoreline Vault Segment					
Vault Rip Rap Moved	Armor Rock	100	2,000	24,000	889
Above Mean High Water Mark					
Seawall Construction in Place of Vault	Armor Rock	60	900	13,500	500
Temporary Rip Rap Storage	Armor Rock	--	1,325	--	--
Onshore Pipelines Segment					
Pothole Excavation (under road)	Topsoil	--	800	10,000	370
Pothole Excavation (CRC valve pit)	Topsoil	--	800	400	15 ³
Concrete Slurry (casing)	Concrete	227	--	1,600	59
Concrete Slurry (pipelines)	Concrete	534	--	1,269	47
Staging/Access Areas [8,295 sq ft total minus temporary equipment access ramp (798 sq ft)]	N/A	--	7,497	--	--
Totals:					
Total (above MHW M)	--	821	11,322	26,769	991
Total (below MHW M)	--	1,952	14,934	33,862	1,255
Total – All Project Segments	--	2,773	26,256	60,631	2,246
Notes:					



Table 1. Estimated Areas and Volumes of Project Materials

Project Component/Description	Material	Length (ft)	Area of Disturbance (sq ft)	Volume (Excavation)	
				(cu ft)	(cu yd)
1 Volume for the offshore pipeline reflects a 1 ft cover from the distance of each pipeline from the surf zone (approximately 5 ft offshore contour) to the shoreline vault. Pipelines are exposed on the seafloor offshore of the surf zone.					
2 Beach sand around vault exterior was calculated based on a liner distance of 100 feet of vault wall on the three beach sides to a dept of 6 feet below local sand level, which will be at its lowest annual point during the winter work period when the sand cover migrates offshore.					
3 Pole excavation (CRC valve pit) was calculated based on a 12 feet by 24 feet excavation for the trench box to a depth of about 10 feet to provide full access around the pipeline.					

2.7 PROPOSED MANPOWER AND EQUIPMENT

The proposed manpower and equipment for the offshore and onshore portions of the project are provided in the following tables. These Manpower and Equipment tables are provided to assist with air quality calculations, if necessary.

Table 2. Project Equipment List

Equipment Type	Quantity	Horsepower	Hours/Day	# of Days
Onshore				
Onshore Casing and Pipeline Decommissioning				
Excavator	1	310	10	10
Crane	1	220	10	10
4x4 Truck	1	325	10	10
Cement Truck	5	300	10	1
Cement Pump	1	85	10	1
Onshore Pipeline Recovery and Removal				
Excavator	3	310	10	9
Winch	1	150	10	9
Bulldozer	1	435	2	9
4x4 Truck	1	325	5	9
Onshore Vault Removal and Armor Rock Reconstruction				
Excavator	3	310	10	10
Crane	1	220	10	10
4x4 Truck	1	325	5	10
Vacuum Truck	5	225	10	1
Offshore				
Offshore Intake Structure Removal				
Dive Support Vessel	1	1,000	24	4



Equipment Type	Quantity	Horsepower	Hours/Day	# of Days
Shallow Air Dive System	1	50	12	4
Offshore Pipeline Removal Option – Pull Offshore (Alternative)¹				
Dive Support Vessel	1	1,000	12	4
Shallow Air Dive System	1	50	12	4
Notes:				
1 The alternative scenario would not require additional construction days or equipment.				

Table 3. Personnel Requirements

Labor	Quantity	Hours/Day	# of Days
Traffic Control			
Flagman	6	10	73 ¹
Onshore			
Onshore Casing and Pipeline Decommissioning			
Project Manager	1	10	10
Site Supervisor	1	10	10
Heavy Equipment Operator	3	10	10
Rigger	2	10	10
Onshore Pipeline Recovery and Removal			
Project Manager	1	10	9
Site Supervisor	1	10	9
Heavy Equipment Operator	3	10	9
Rigger	2	10	9
Onshore Vault Removal and Armor Rock Reconstruction			
Project Manager	1	10	10
Site Supervisor	1	10	10
Heavy Equipment Operator	3	10	10
Rigger	2	10	10
Offshore			
Offshore Intake Structure Removal			
Project Manager	1	12	4
Dive Supervisor	1	12	4
Diver	3	12	4
Tender	1	12	4
Surveyor	1	12	4
Marine Wildlife Monitor	1	12	4
Offshore Pipeline Removal Option – Pull Offshore (Alternative)²			
Project Manager	1	12	4
Dive Supervisor	1	12	4



DOCUMENT TITLE: **Project Execution Plan**
PROJECT TITLE: **CRC Grubb Lease Intake and Outfall Decommissioning Project**
DOCUMENT DATE: **October 24, 2019** REVISION: **6**
DOCUMENT NO: **18-022-01-PEP** PAGE: **21**

Labor	Quantity	Hours/Day	# of Days
Traffic Control			
Flagman	6	10	73 ¹
Diver	3	12	4
Tender	2	12	4
Surveyor	1	12	4
Marine Wildlife Monitor	1	12	4
Notes: 1 Flagman (6) will be used throughout Project activities. 2 The alternative scenario would not require additional construction days.			



SECTION 3 – PRELIMINARY SCHEDULE SUMMARY

The preliminary schedule for the decommissioning and removal of the offshore and onshore facilities associated with this retired seawater intake and outfall installation is provided in the following table. Additional details are provided in Appendix B – Preliminary Schedule.

3.1 SCHEDULE ASSUMPTIONS AND CONDITIONS

This Preliminary Schedule incorporates the following conditions and assumptions:

- Assumes a winter work window in 2020 to take advantage of sand migration off of the pipelines in the surf zone.
- Assumes there are no restrictions on work windows for both offshore and onshore work.
- Assumes a 12-hour per day, 7-day per week schedule (daylight) for offshore operations.
- Assumes a 10-hour per day, 6-day per week schedule (daylight) for onshore operations. However, some night operations may be required to take advantage of low tide periods during pipeline recovery and removal.

3.2 CONSTRUCTION SCHEDULE SUMMARY

The following is a summary of the construction timing by task:

Table 4. Project Construction Duration

Project Activity	Estimated Duration (days)
Mobilization	
Perform Seafloor Debris Survey	2
Onshore Work	
Mobilization	15
Strip Concrete Vault – Piping/Fencing/Electric	1
Casing and Pipeline Decommissioning	15
Offshore Pipeline Recovery and Removal	15
Vault Removal and Seawall Construction	15
Demobilization	2
Offshore Work	
Mobilization	1
Recover Intake Structures	4
Demobilization	1
Final Surveys	
Perform Seafloor Debris Survey	2
Total Duration	73

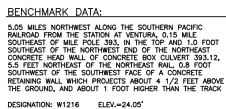


DOCUMENT TITLE:	Project Execution Plan		
PROJECT TITLE:	CRC Grubb Lease Intake and Outfall Decommissioning Project		
DOCUMENT DATE:	October 24, 2019	REVISION:	6
DOCUMENT NO:	18-022-01-PEP	PAGE:	23

APPENDIX A – PLANS AND SPECIFICATIONS

This appendix contains the 60% project plans and specifications consisting of the following drawings:

Sheet C1.0 – Cover
Sheet C1.1 – Plan and Profile – Existing Offshore
Sheet C1.2 – Plan and Profile – Existing Offshore
Sheet C1.3 – Right of Way
Sheet C2.1 – Construction Offshore
Sheet C2.2 – Construction Offshore

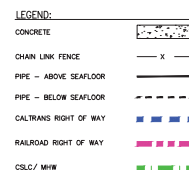


MEAN LOW LOWER WATER (MLLW) WAS CALCULATED BY INTERPOLATING BETWEEN SANTA BARBARA AND SANTA MONICA TIDE STATIONS.

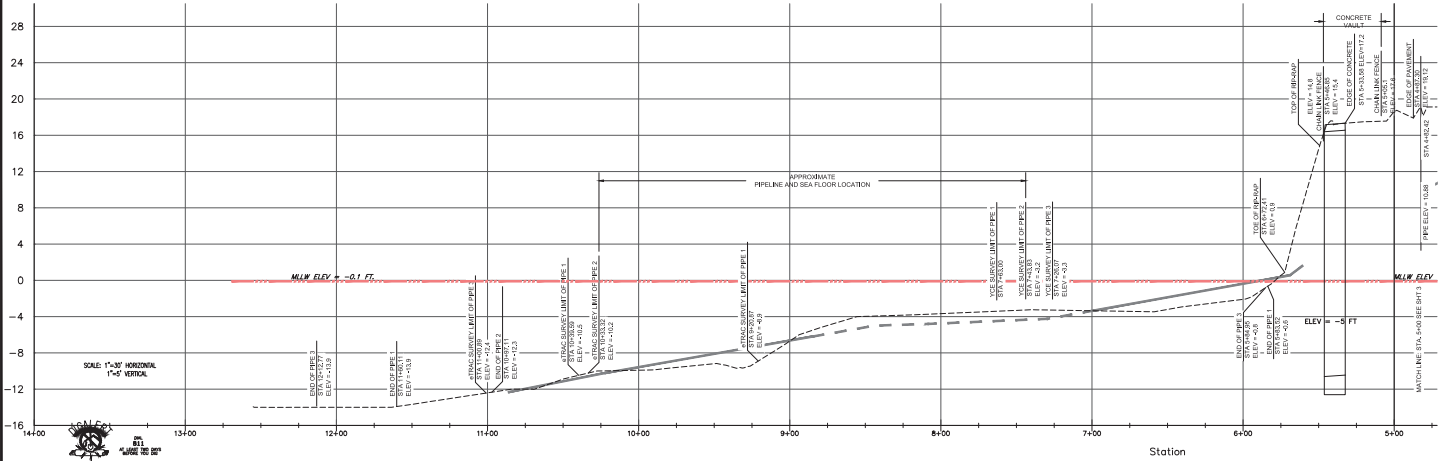
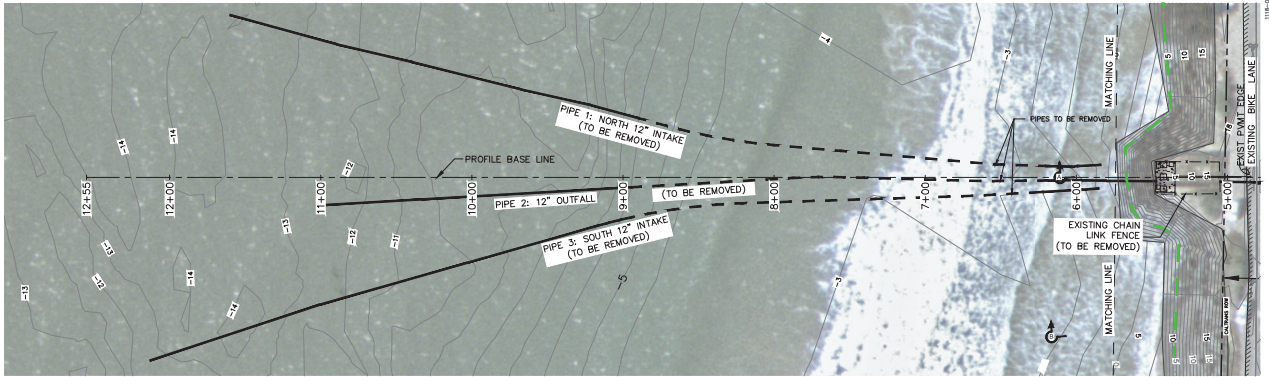
MLLW ELEVATION = -0.1 FT.

MEAN HIGH WATER (MHW) WAS CALCULATED BY INTERPOLATING BETWEEN SANTA BARBARA AND SANTA MONICA TIDE STATIONS.

MHW ELEVATION = 4.6 FT.



- LEGEND:
- CONCRETE
 - MEAN LOWER LOW WATER
 - CHAIN LINK FENCE
 - PIPE - ABOVE SEAFLOOR
 - PIPE - BELOW SEAFLOOR
 - CALTRANS RIGHT OF WAY
 - RAILROAD RIGHT OF WAY
 - CSL/C/ MHW



YCF INCORPORATED

LONGITUDE 123, INC.

DECOMMISSIONING PLAN

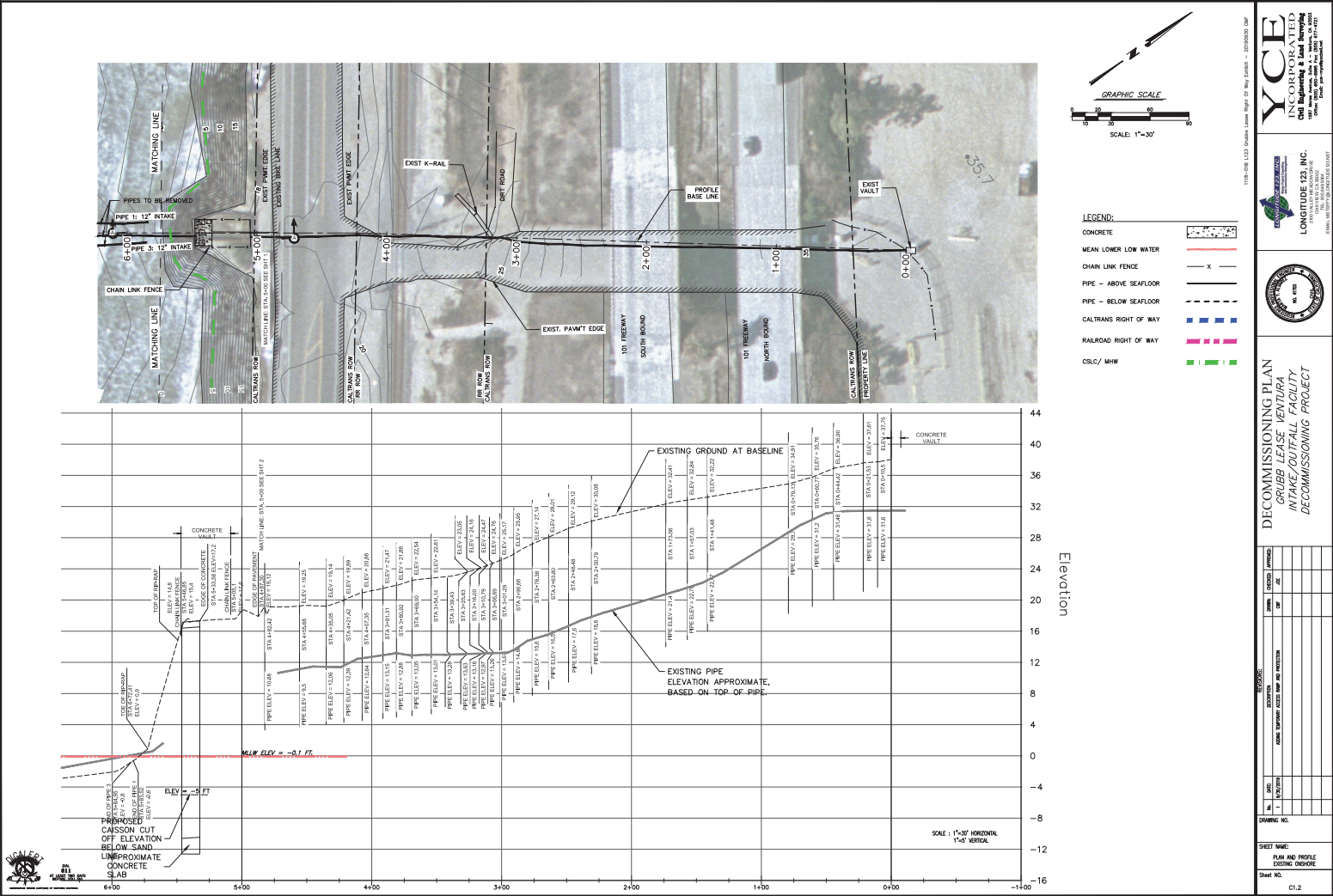
GRUBB LEASE VENTURA

INTAKE/OUTFALL FACILITY

DECOMMISSIONING PROJECT

NO.	DATE	DESCRIPTION	BY	CHKD	APPROVED
1	10/20/2010	AS BUILT			

Sheet No. 01.1



GRAPHIC SCALE
SCALE: 1"=30'

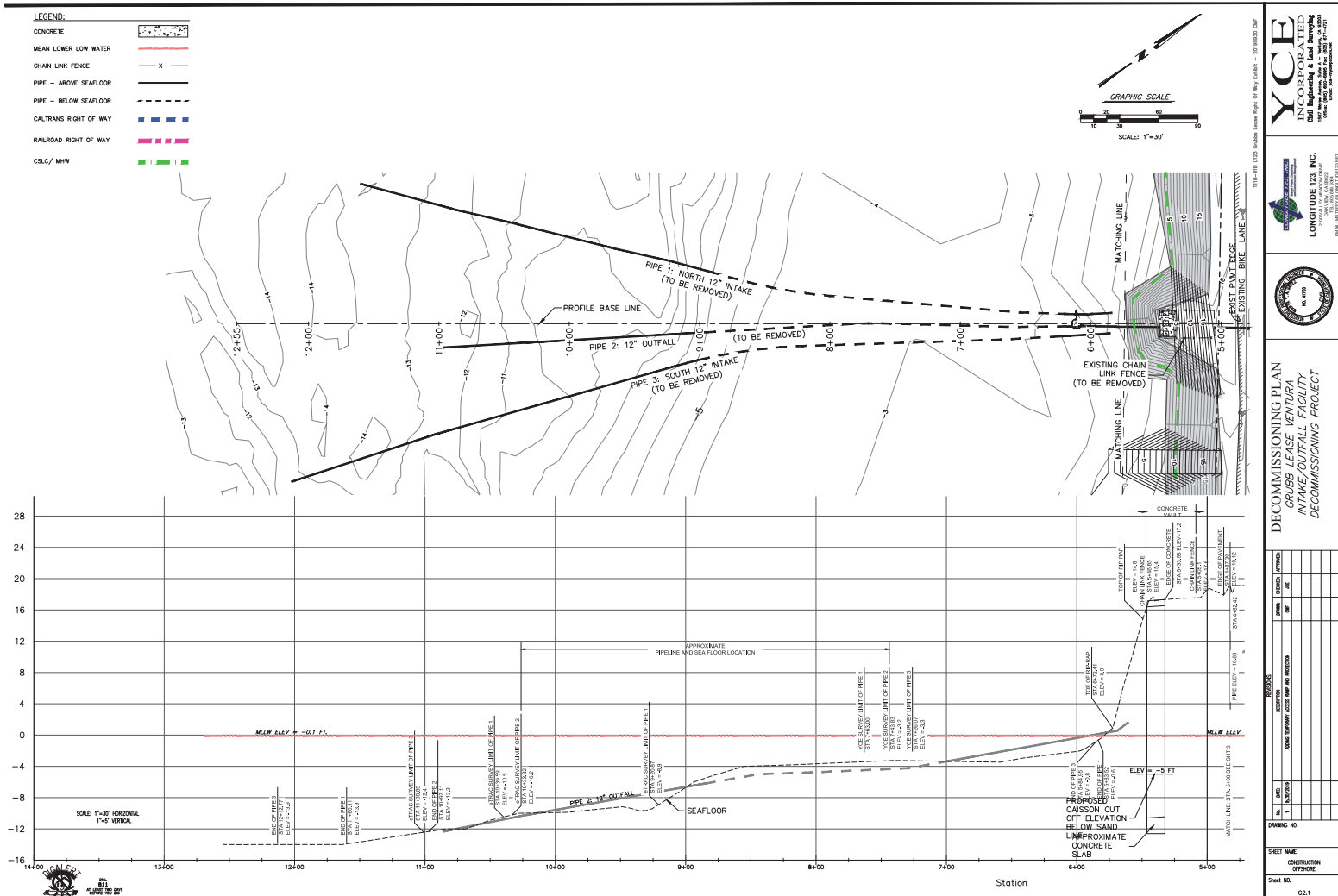
LEGEND:
CONCRETE
MEAN LOWER LOW WATER
CHAIN LINK FENCE
PIPE - ABOVE SEAFLOOR
PIPE - BELOW SEAFLOOR
CALTRANS RIGHT OF WAY
RAILROAD RIGHT OF WAY
CISC / MHW

YCF
INCORPORATED
LONGITUDE 123, INC.
1000 10th St, Suite 100
San Francisco, CA 94103
Phone: 415.774.1234
Fax: 415.774.1235
Email: info@ycf.com

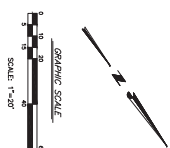
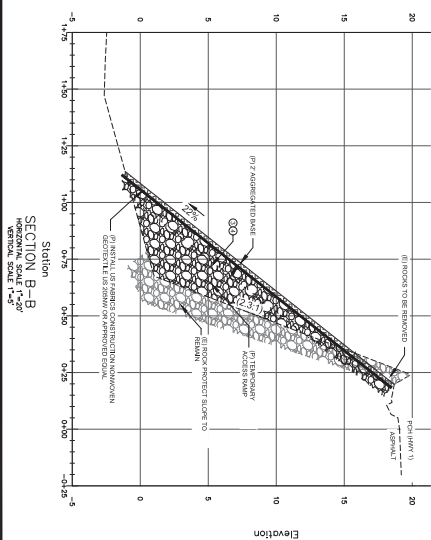
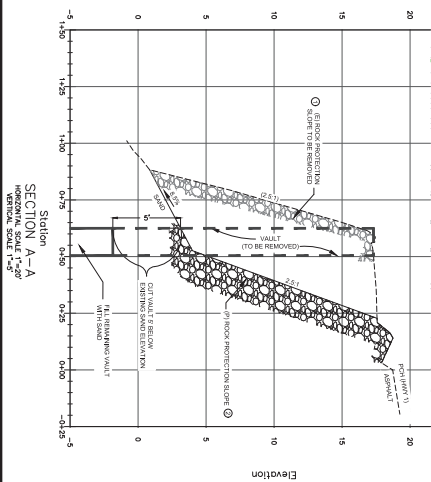
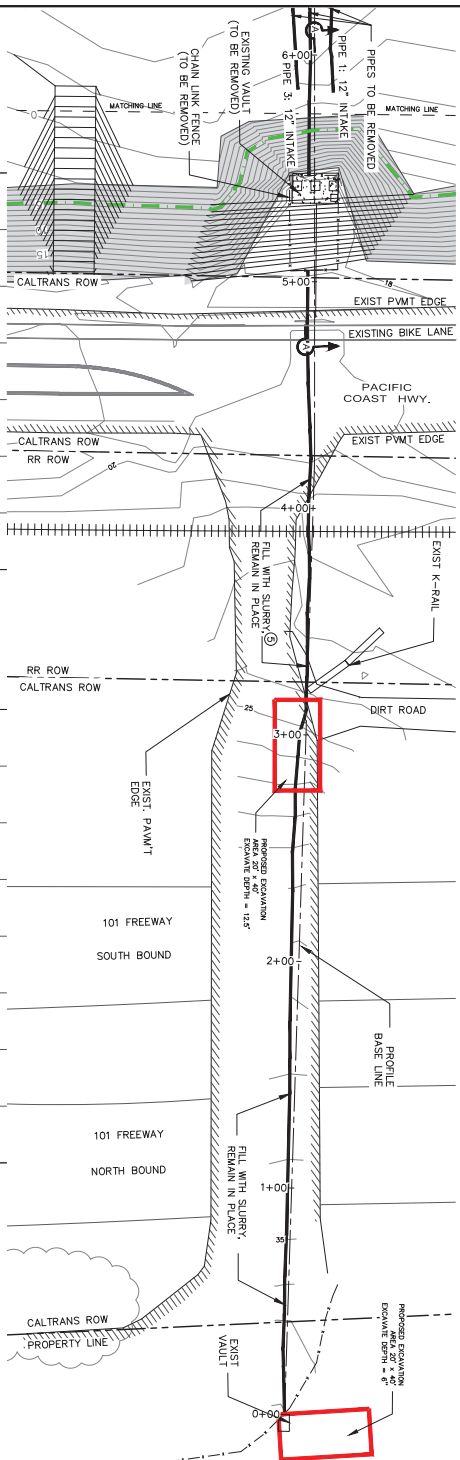
DECOMMISSIONING PLAN
GRUBB LEASE VENTURA
INTAKE/OUTFALL FACILITY
DECOMMISSIONING PROJECT

NO.	DATE	DESCRIPTION	DESIGNED	CHECKED	APPROVED
1	10/20/2018	ASB: TYPICAL ASB: MAP AND POSITION	ASB	ASB	ASB

Sheet No. C1.2



- ① CONSTRUCT ROCK PROTECTION SCOE USING ONE-PIECE ROCKS OR APPROVED EQUAL
- ② PROTECT AND STONE EXISTING ROCKS
- ③ CONSTRUCT TEMPORARY ACCESS RAMP USING ON-SITE ROCKS
- ④ AFTER DECOMMISSION, REMOVE ACCESS RAMP AND RESTORE ROCK PROTECT TO ORIGINAL CONDITION
- ⑤ THE SUBMANTIAL SHALL HAVE AN INCREASED COMPRESSIVE STRENGTH NECESSARY FOR THE MIXTURE SHALL CONSIST OF WATER PORTLAND CEMENT, FLY ASH, SAND, GRAVEL, AND CRUSHED ROCK.

[illegible]

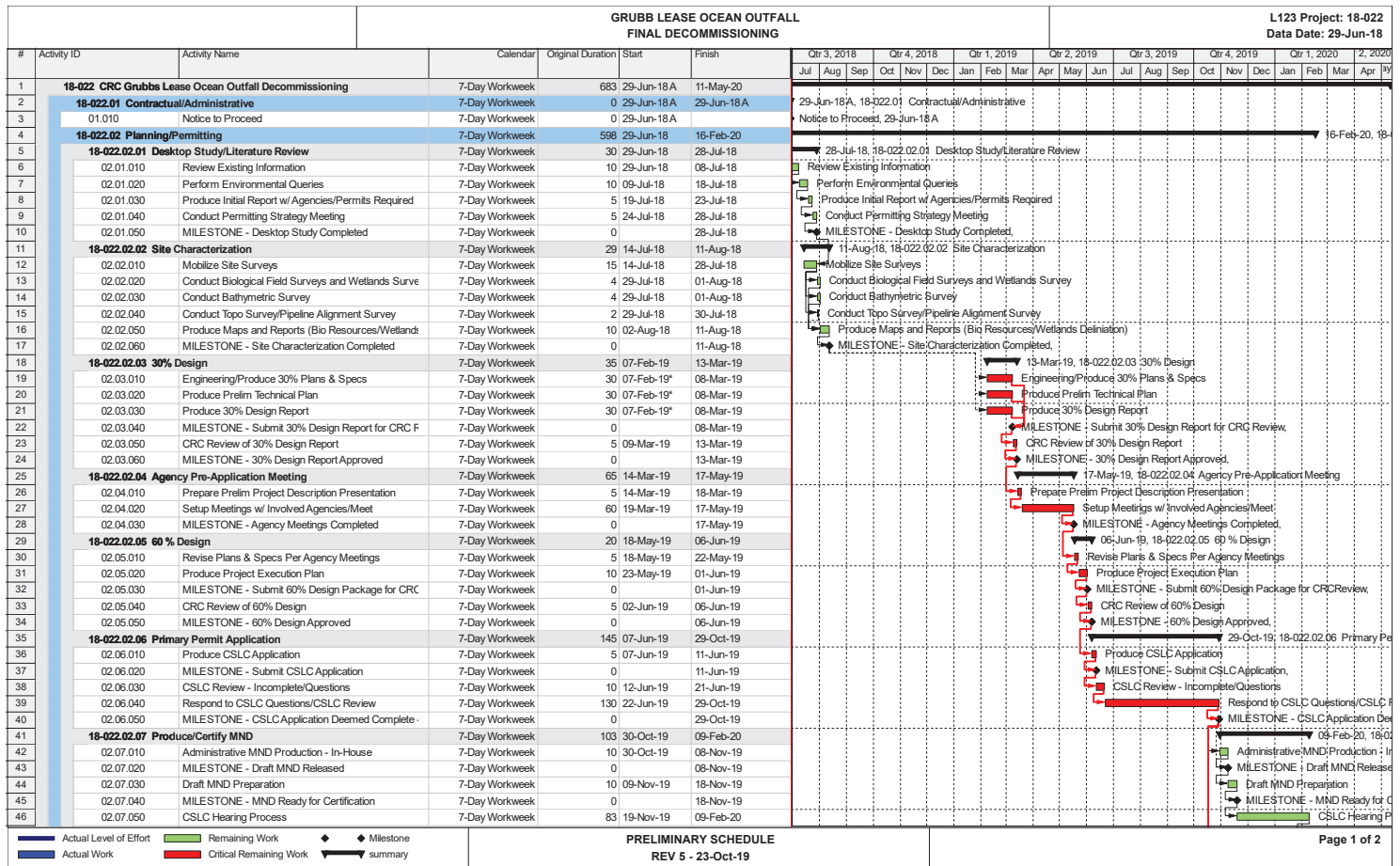
DECOMMISSIONING PLAN
GRUBB LEASE VENTURA
INTAKE/OUTFALL FACILITY
DECOMMISSIONING PROJECT

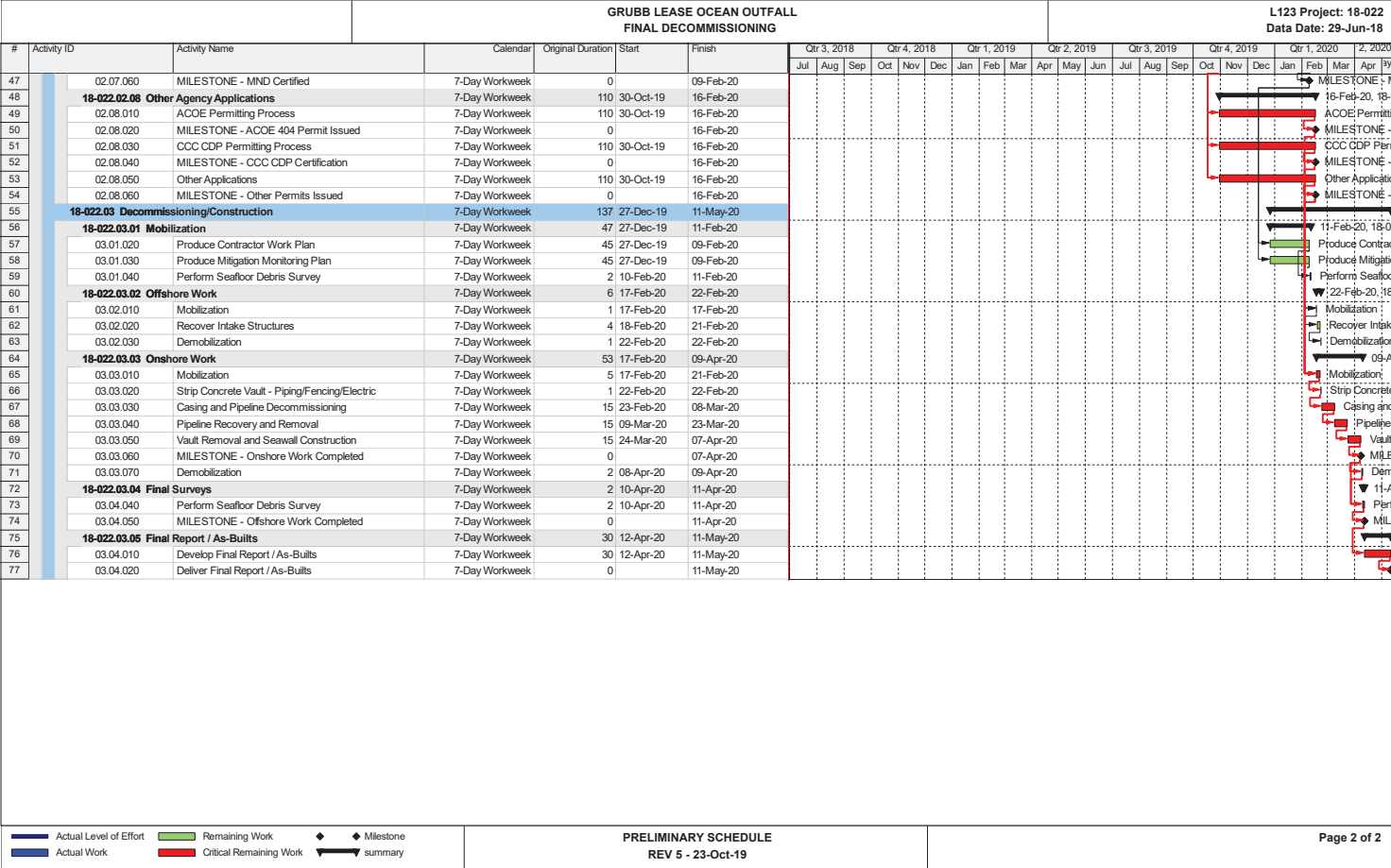




DOCUMENT TITLE:	Project Execution Plan		
PROJECT TITLE:	CRC Grubb Lease Intake and Outfall Decommissioning Project		
DOCUMENT DATE:	October 24, 2019	REVISION:	6
DOCUMENT NO:	18-022-01-PEP	PAGE:	30

APPENDIX B – PRELIMINARY SCHEDULE





**Attachment 2 –
Oilfield Environmental & Compliance, Inc. Analytical Results (April 2019)**



Oilfield Environmental & Compliance, Inc.

Jenn Leighton
Padre Associates-Ventura
1861 Knoll Dr.
Ventura, CA 93003

Report: April 20, 2019 19:01

Work Order: 1901882

Project: Grubb Lease
Number: Seawater Intake, Ventura

Dear Client:

Enclosed is an analytical report for the above referenced project. The samples included in this report were received on April 10, 2019 16:55 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Manual, applicable standard operating procedures, and other related documentation. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Meredith Sprister, Project Manager

msprister@oecusa.com



Oilfield Environmental & Compliance, Inc.

Padre Associates-Ventura
1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

SAMPLE SUMMARY

Sample ID	Laboratory ID	Client Matrix	Lab Matrix	Date Sampled	Date Received
GRUBB-SEA-041019	1901882-01	Water	Water	04/10/19 08:50	04/10/19 16:55

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Oilfield Environmental & Compliance, Inc.

Padre Associates-Ventura
1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

ANALYTICAL REPORT FOR SAMPLES 1901882-01 (Water) GRUBB-SEA-041019

Analyte	Result	RL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Microbiological Parameters by CA Dept. of Fish and Game

Bioassay 96 Hour Screen	Pass			1	B9D0381	04/12/19	04/12/19	Polisini & Miller (CDFG 1988)	LC50
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Total Metals by CVAA

Mercury	ND	0.00020	mg/L	1	B9D0398	04/15/19	04/15/19	EPA 7470A	
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Total Metals by ICP

Antimony	ND	0.050	mg/L	1	B9D0340	04/11/19	04/12/19	EPA 6010B	
Arsenic	ND	0.040	"	"	"	"	"	"	
Barium	0.19	0.010	"	"	"	"	"	"	
Beryllium	ND	0.010	"	"	"	"	"	"	
Cadmium	ND	0.0050	"	"	"	"	"	"	
Chromium	ND	0.010	"	"	"	"	"	"	
Cobalt	ND	0.010	"	"	"	"	"	"	
Copper	ND	0.010	"	"	"	"	"	"	
Lead	ND	0.010	"	"	"	"	"	"	
Molybdenum	ND	0.010	"	"	"	"	"	"	
Nickel	ND	0.010	"	"	"	"	"	"	
Selenium	ND	0.050	"	"	"	"	"	"	
Silver	ND	0.010	"	"	"	"	"	"	
Thallium	ND	0.020	"	"	"	"	"	"	
Vanadium	ND	0.050	"	"	"	"	"	"	
Zinc	0.70	0.050	"	"	"	"	"	"	

General Chemistry Parameters by EPA or APHA Standard Methods

pH @ 25 C	7.48	0.10	pH Units	1	B9D0403	04/15/19	04/15/19	EPA 9040B/SM4500 H+ B	HT-pH
pH Sample Temperature During Analysis	23	1.0	°C	"	"	"	"	EPA 170.1/SM 2550B	
Cyanide, reactive	ND	0.100	mg/L	"	B9D0328	04/11/19	04/11/19	SW846. 7.3	
Sulfide, reactive	ND	20.0	"	"	B9D0326	"	"	SW 846 7.3	
Flashpoint	>212	72	°F	"	B9D0482	04/17/19	04/17/19	EPA 1010	
Total Oil & Grease	ND	5.0	mg/L	"	B9D0442	04/16/19	04/16/19	EPA 1664	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Oilfield Environmental & Compliance, Inc.

Padre Associates-Ventura
1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

1901882-01 (Water) GRUBB-SEA-041019

Analyte	Result	RL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Volatile Organic TPH by GC/FID

TPH Gasoline (C4-C12)	ND	50	ug/L	1	B9D0374	04/12/19	04/13/19	EPA 8015M	
Surrogate: 4-Bromofluorobenzene		82.1 %	(47 - 155)		"	"	"	"	

Semi-Volatile Organic TPH by GC/FID

TPH Diesel (C13-C22)	ND	0.052	mg/L	1	B9D0339	04/11/19	04/12/19	EPA 8015M	
TPH Motor Oil (C23-C40)	ND	0.10	"	"	"	"	"	"	
Surrogate: o-Terphenyl		93.3 %	(42 - 153)		"	"	"	"	

Volatile Organic Compounds by GC/MS

R-07

Benzene	ND	200	ug/L	400	B9D0445	04/16/19	04/16/19	EPA 8260B	
Bromobenzene	ND	200	"	"	"	"	"	"	
Bromochloromethane	ND	200	"	"	"	"	"	"	
Bromodichloromethane	ND	200	"	"	"	"	"	"	
Bromoform	ND	200	"	"	"	"	"	"	
Bromomethane	ND	200	"	"	"	"	"	"	
n-Butylbenzene	ND	200	"	"	"	"	"	"	
sec-Butylbenzene	ND	200	"	"	"	"	"	"	
tert-Butylbenzene	ND	200	"	"	"	"	"	"	
Carbon tetrachloride	ND	200	"	"	"	"	"	"	
Chlorobenzene	ND	200	"	"	"	"	"	"	
Chloroethane	ND	200	"	"	"	"	"	"	
Chloroform	ND	200	"	"	"	"	"	"	
Chloromethane	ND	200	"	"	"	"	"	"	
2-Chlorotoluene	ND	200	"	"	"	"	"	"	
4-Chlorotoluene	ND	200	"	"	"	"	"	"	
Dibromochloromethane	ND	200	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	400	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	200	"	"	"	"	"	"	
Dibromomethane	ND	200	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	200	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	200	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	200	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	200	"	"	"	"	"	"	
1,1-Dichloroethane	ND	200	"	"	"	"	"	"	
1,2-Dichloroethane	ND	200	"	"	"	"	"	"	
1,1-Dichloroethene	ND	200	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	200	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	200	"	"	"	"	"	"	

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Oilfield Environmental & Compliance, Inc.

Padre Associates-Ventura
1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

1901882-01 (Water)
GRUBB-SEA-041019

Analyte	Result	RL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	----	-------	----------	-------	----------	----------	--------	-------

Volatile Organic Compounds by GC/MS (Continued)

R-07

1,2-Dichloropropane	ND	200	ug/L	400	B9D0445	04/16/19	04/16/19	EPA 8260B	
1,3-Dichloropropane	ND	200	"	"	"	"	"	"	
2,2-Dichloropropane	ND	200	"	"	"	"	"	"	
1,1-Dichloropropene	ND	200	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	200	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	200	"	"	"	"	"	"	
Ethylbenzene	ND	200	"	"	"	"	"	"	
Hexachlorobutadiene	ND	200	"	"	"	"	"	"	
4-Isopropyl Toluene	ND	200	"	"	"	"	"	"	
Isopropylbenzene	ND	200	"	"	"	"	"	"	
Methylene chloride	ND	200	"	"	"	"	"	"	
Naphthalene	ND	200	"	"	"	"	"	"	
n-Propylbenzene	ND	200	"	"	"	"	"	"	
Styrene	ND	200	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	200	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	200	"	"	"	"	"	"	
Tetrachloroethene (PCE)	ND	200	"	"	"	"	"	"	
Toluene	ND	200	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	200	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	200	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	200	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	200	"	"	"	"	"	"	
Trichloroethene (TCE)	ND	200	"	"	"	"	"	"	
Trichlorofluoromethane	ND	200	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	200	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	200	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	200	"	"	"	"	"	"	
Vinyl chloride	ND	200	"	"	"	"	"	"	
Xylenes (total)	ND	200	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		102 %	(83 - 119)		"	"	"	"	
Surrogate: Toluene-d8		99.0 %	(69 - 120)		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	(79 - 125)		"	"	"	"	

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Oilfield Environmental & Compliance, Inc.

Padre Associates-Ventura
1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

1901882-01 (Water) GRUBB-SEA-041019

Analyte	Result	RL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Organochlorine Pesticides by GC/ECD/ECD

alpha-BHC	ND	0.11	ug/L	1	B9D0441	04/16/19	04/16/19	EPA 8081A	
alpha-Chlordane	ND	0.11	"	"	"	"	"	"	
Aldrin	ND	0.11	"	"	"	"	"	"	
beta-BHC	ND	0.11	"	"	"	"	"	"	
delta-BHC	ND	0.11	"	"	"	"	"	"	
4,4'-DDD	ND	0.11	"	"	"	"	"	"	
4,4'-DDE	ND	0.11	"	"	"	"	"	"	
4,4'-DDT	ND	0.11	"	"	"	"	"	"	
Dieldrin	ND	0.11	"	"	"	"	"	"	
Endosulfan I	ND	0.11	"	"	"	"	"	"	
Endosulfan II	ND	0.11	"	"	"	"	"	"	
Endosulfan sulfate	ND	0.11	"	"	"	"	"	"	
Endrin	ND	0.11	"	"	"	"	"	"	
Endrin aldehyde	ND	0.11	"	"	"	"	"	"	
Endrin ketone	ND	0.11	"	"	"	"	"	"	
gamma-BHC	ND	0.11	"	"	"	"	"	"	
gamma-Chlordane	ND	0.11	"	"	"	"	"	"	
Heptachlor	ND	0.11	"	"	"	"	"	"	
Heptachlor epoxide	ND	0.11	"	"	"	"	"	"	
Methoxychlor	ND	0.11	"	"	"	"	"	"	
Chlordane (tech)	ND	0.57	"	"	"	"	"	"	
Toxaphene	ND	0.57	"	"	"	"	"	"	
Surrogate: Decachlorobiphenyl		104 %	(10 - 202)		"	"	"	"	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene		102 %	(10 - 145)		"	"	"	"	

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Oilfield Environmental & Compliance, Inc.

Padre Associates-Ventura
1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

1901882-01 (Water) GRUBB-SEA-041019

Analyte	Result	RL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Polychlorinated Biphenyls by GC/ECD

PCB-1016	ND	0.57	ug/L	1	B9D0441	04/16/19	04/16/19	EPA 8082	
PCB-1221	ND	0.57	"	"	"	"	"	"	
PCB-1232	ND	0.57	"	"	"	"	"	"	
PCB-1242	ND	0.57	"	"	"	"	"	"	
PCB-1248	ND	0.57	"	"	"	"	"	"	
PCB-1254	ND	0.57	"	"	"	"	"	"	
PCB-1260	ND	0.57	"	"	"	"	"	"	
Surrogate: Decachlorobiphenyl		91.3 %	(10 - 202)		"	"	"	"	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene		74.0 %	(10 - 145)		"	"	"	"	

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1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

Microbiological Parameters by CA Dept. of Fish and Game - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9D0381 - Polisini & Miller (CDFG 1988) Preparation: Bio/Micro Prep 04/12/19 11:03

Blank (B9D0381-BLK1)

Bioassay 96 Hour Screen

Pass

Analyzed: 04/12/19 11:03

LC50

Blank (B9D0381-BLK2)

Bioassay 96 Hour Screen

Pass

Analyzed: 04/12/19 11:03

LC50

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Oilfield Environmental & Compliance, Inc.

Padre Associates-Ventura
1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

Total Metals by CVAA - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B9D0398 - EPA 7470A Preparation: EPA 7470A Prep 04/15/19 08:11										
Blank (B9D0398-BLK1) Analyzed: 04/15/19 15:01										
Mercury	ND	0.00020	mg/L							
LCS (B9D0398-BS1) Analyzed: 04/15/19 14:57										
Mercury	0.00950	0.00020	mg/L	0.0100		95.0	85-115			
LCS Dup (B9D0398-BSD1) Analyzed: 04/15/19 14:59										
Mercury	0.00963	0.00020	mg/L	0.0100		96.3	85-115	1.32	20	
Duplicate (B9D0398-DUP1) Source: 1901882-01 Analyzed: 04/15/19 15:10										
Mercury	ND	0.00020	mg/L		ND				20	
Matrix Spike (B9D0398-MS1) Source: 1901890-03 Analyzed: 04/15/19 15:12										
Mercury	0.00795	0.00020	mg/L	0.0100	0.000208	77.4	75-125			
Matrix Spike Dup (B9D0398-MSD1) Source: 1901890-03 Analyzed: 04/15/19 15:14										
Mercury	0.00904	0.00020	mg/L	0.0100	0.000208	88.4	75-125	12.9	20	
Post Spike (B9D0398-PS1) Source: 1901914-01 Analyzed: 04/15/19 15:16										
Mercury	5.05		ug/L	5.00	0.0149	101	85-115			

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1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

Total Metals by ICP - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9D0340 - EPA 6010B Preparation: EPA 3010A 04/11/19 10:08

Blank (B9D0340-BLK1)

Analyzed: 04/12/19 17:37

Antimony	ND	0.050	mg/L							
Arsenic	ND	0.040	"							
Barium	ND	0.010	"							
Beryllium	ND	0.010	"							
Cadmium	ND	0.0050	"							
Chromium	ND	0.010	"							
Cobalt	ND	0.010	"							
Copper	ND	0.010	"							
Lead	ND	0.010	"							
Molybdenum	ND	0.010	"							
Nickel	ND	0.010	"							
Selenium	ND	0.050	"							
Silver	ND	0.010	"							
Thallium	ND	0.020	"							
Vanadium	ND	0.050	"							
Zinc	ND	0.050	"							

LCS (B9D0340-BS1)

Analyzed: 04/12/19 17:39

Antimony	1.98	0.050	mg/L	2.00	99.0	80-120
Arsenic	1.95	0.040	"	2.00	97.5	80-120
Barium	1.95	0.010	"	2.00	97.4	80-120
Beryllium	1.97	0.010	"	2.00	98.3	80-120
Cadmium	2.00	0.0050	"	2.00	100	80-120
Chromium	1.94	0.010	"	2.00	97.1	80-120
Cobalt	2.01	0.010	"	2.00	100	80-120
Copper	1.96	0.010	"	2.00	98.2	80-120
Lead	2.02	0.010	"	2.00	101	80-120
Molybdenum	1.98	0.010	"	2.00	98.8	80-120
Nickel	2.03	0.010	"	2.00	101	80-120
Selenium	1.92	0.050	"	2.00	96.2	80-120
Silver	0.0975	0.010	"	0.100	97.5	80-120
Thallium	1.95	0.020	"	2.00	97.4	80-120
Vanadium	1.88	0.050	"	2.00	94.0	80-120
Zinc	1.98	0.050	"	2.00	99.0	80-120

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Padre Associates-Ventura
1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

Total Metals by ICP - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9D0340 - EPA 6010B Preparation: EPA 3010A 04/11/19 10:08

LCS Dup (B9D0340-BSD1)

Analyzed: 04/12/19 17:42

Antimony	1.99	0.050	mg/L	2.00		99.4	80-120	0.302	20	
Arsenic	1.95	0.040	"	2.00		97.4	80-120	0.0513	20	
Barium	1.95	0.010	"	2.00		97.6	80-120	0.205	20	
Beryllium	1.96	0.010	"	2.00		98.2	80-120	0.102	20	
Cadmium	1.99	0.0050	"	2.00		99.7	80-120	0.300	20	
Chromium	1.96	0.010	"	2.00		98.2	80-120	1.08	20	
Cobalt	2.00	0.010	"	2.00		100	80-120	0.299	20	
Copper	1.99	0.010	"	2.00		99.4	80-120	1.16	20	
Lead	2.01	0.010	"	2.00		101	80-120	0.248	20	
Molybdenum	1.99	0.010	"	2.00		99.3	80-120	0.505	20	
Nickel	2.02	0.010	"	2.00		101	80-120	0.445	20	
Selenium	1.94	0.050	"	2.00		96.8	80-120	0.674	20	
Silver	0.0988	0.010	"	0.100		98.8	80-120	1.32	20	
Thallium	1.92	0.020	"	2.00		96.2	80-120	1.24	20	
Vanadium	1.91	0.050	"	2.00		95.6	80-120	1.74	20	
Zinc	1.97	0.050	"	2.00		98.7	80-120	0.253	20	

Duplicate (B9D0340-DUP1)

Source: 1901859-01

Analyzed: 04/12/19 17:57

Antimony	ND	0.050	mg/L		ND				20	
Arsenic	ND	0.040	"		ND				20	
Barium	0.0244	0.010	"		0.0255			4.41	20	
Beryllium	ND	0.010	"		ND				20	
Cadmium	ND	0.0050	"		ND				20	
Chromium	ND	0.010	"		ND				20	
Cobalt	ND	0.010	"		ND				20	
Copper	ND	0.010	"		ND				20	
Lead	0.00950	0.010	"		0.00710			28.9	20	QR-04
Molybdenum	ND	0.010	"		ND				20	
Nickel	0.00590	0.010	"		0.00570			3.45	20	
Selenium	ND	0.050	"		ND				20	
Silver	ND	0.010	"		ND				20	
Thallium	ND	0.020	"		ND				20	
Vanadium	ND	0.050	"		ND				20	
Zinc	0.0520	0.050	"		0.0491			5.74	20	

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Padre Associates-Ventura
1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

Total Metals by ICP - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9D0340 - EPA 6010B Preparation: EPA 3010A 04/11/19 10:08

Matrix Spike (B9D0340-MS1)

Source: 1901859-01

Analyzed: 04/12/19 17:44

Antimony	2.05	0.050	mg/L	2.00	ND	102	67-135			
Arsenic	2.05	0.040	"	2.00	ND	103	76-137			
Barium	1.99	0.010	"	2.00	0.0255	98.2	70-132			
Beryllium	2.01	0.010	"	2.00	ND	100	85-121			
Cadmium	1.98	0.0050	"	2.00	ND	99.0	84-121			
Chromium	1.96	0.010	"	2.00	ND	98.2	82-123			
Cobalt	1.98	0.010	"	2.00	ND	98.8	83-121			
Copper	2.02	0.010	"	2.00	ND	101	77-128			
Lead	1.96	0.010	"	2.00	0.00710	97.7	79-121			
Molybdenum	2.02	0.010	"	2.00	ND	101	59-142			
Nickel	1.99	0.010	"	2.00	0.00570	99.2	82-121			
Selenium	2.02	0.050	"	2.00	ND	101	51-154			
Silver	0.100	0.010	"	0.100	ND	100	78-132			
Thallium	1.85	0.020	"	2.00	ND	92.6	67-129			
Vanadium	1.96	0.050	"	2.00	ND	98.0	84-122			
Zinc	2.02	0.050	"	2.00	0.0491	98.7	72-140			

Matrix Spike Dup (B9D0340-MSD1)

Source: 1901859-01

Analyzed: 04/12/19 17:47

Antimony	2.05	0.050	mg/L	2.00	ND	103	67-135	0.293	20	
Arsenic	2.05	0.040	"	2.00	ND	103	76-137	0.0975	20	
Barium	2.00	0.010	"	2.00	0.0255	99.0	70-132	0.751	20	
Beryllium	2.02	0.010	"	2.00	ND	101	85-121	0.447	20	
Cadmium	1.99	0.0050	"	2.00	ND	99.3	84-121	0.252	20	
Chromium	1.96	0.010	"	2.00	ND	98.2	82-123	0.102	20	
Cobalt	1.98	0.010	"	2.00	ND	99.0	83-121	0.152	20	
Copper	2.01	0.010	"	2.00	ND	101	77-128	0.199	20	
Lead	1.97	0.010	"	2.00	0.00710	98.2	79-121	0.559	20	
Molybdenum	2.03	0.010	"	2.00	ND	101	59-142	0.346	20	
Nickel	1.99	0.010	"	2.00	0.00570	99.3	82-121	0.151	20	
Selenium	2.02	0.050	"	2.00	ND	101	51-154	0.0496	20	
Silver	0.100	0.010	"	0.100	ND	100	78-132	0.00	20	
Thallium	1.92	0.020	"	2.00	ND	96.1	67-129	3.76	20	
Vanadium	1.97	0.050	"	2.00	ND	98.5	84-122	0.509	20	
Zinc	2.03	0.050	"	2.00	0.0491	98.8	72-140	0.148	20	

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Oilfield Environmental & Compliance, Inc.

Padre Associates-Ventura
1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

Total Metals by ICP - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9D0340 - EPA 6010B Preparation: EPA 3010A 04/11/19 10:08

Post Spike (B9D0340-PS1)

Source: 1901859-01

Analyzed: 04/12/19 17:49

Antimony	2.08		mg/L	2.00	-0.00235	104	75-125			
Arsenic	2.08		"	2.00	0.00254	104	75-125			
Barium	2.04		"	2.00	0.0249	101	75-125			
Beryllium	2.05		"	2.00	-0.0000978	103	75-125			
Cadmium	2.02		"	2.00	-0.000196	101	75-125			
Chromium	2.01		"	2.00	0.00313	100	75-125			
Cobalt	2.01		"	2.00	0.000196	101	75-125			
Copper	2.06		"	2.00	0.00225	103	75-125			
Lead	2.01		"	2.00	0.00694	100	75-125			
Molybdenum	2.04		"	2.00	0.00450	102	75-125			
Nickel	2.02		"	2.00	0.00557	101	75-125			
Selenium	2.05		"	2.00	0.0107	102	75-125			
Silver	0.103		"	0.100	-0.000587	103	75-125			
Thallium	1.87		"	2.00	0.000489	93.4	75-125			
Vanadium	2.01		"	2.00	0.00196	100	75-125			
Zinc	2.06		"	2.00	0.0480	101	75-125			

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Padre Associates-Ventura
1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

General Chemistry Parameters by EPA or APHA Standard Methods - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9D0326 - SW 846.7.3 Preparation: EPA 9030 04/11/19 08:26

Blank (B9D0326-BLK1)

Sulfide, reactive ND 20.0 mg/L Analyzed: 04/11/19 08:26

LCS (B9D0326-BS1)

Sulfide, reactive 20.5 20.0 mg/L 32.0 64.1 32-103 Analyzed: 04/11/19 08:26

Duplicate (B9D0326-DUP1)

Source: 1901882-01

Sulfide, reactive ND 20.0 mg/L ND 20 Analyzed: 04/11/19 08:26

Batch B9D0328 - SW846.7.3 Preparation: EPA 9030 04/11/19 08:26

Blank (B9D0328-BLK1)

Cyanide, reactive ND 0.100 mg/L Analyzed: 04/11/19 08:26

LCS (B9D0328-BS1)

Cyanide, reactive 0.242 0.100 mg/L 1.60 15.1 5-42 Analyzed: 04/11/19 08:26

Duplicate (B9D0328-DUP1)

Source: 1901882-01

Cyanide, reactive ND 0.100 mg/L ND 20 Analyzed: 04/11/19 08:26

Batch B9D0403 - EPA 9040B/SM4500H+ B Preparation: EPA 9040B pH Prep 04/15/19 08:47

LCS (B9D0403-BS1)

pH @ 25 C 3.96 0.10 pH Units 4.00 99.0 90-110 Analyzed: 04/15/19 08:47

LCS (B9D0403-BS2)

pH @ 25 C 7.00 0.10 pH Units 7.00 100 90-110 Analyzed: 04/15/19 08:47

LCS (B9D0403-BS3)

pH @ 25 C 10.02 0.10 pH Units 10.0 100 90-110 Analyzed: 04/15/19 08:47

LCS (B9D0403-BS4)

pH @ 25 C 12.00 0.10 pH Units 12.0 100 90-110 Analyzed: 04/15/19 08:47

Duplicate (B9D0403-DUP1)

Source: 1901838-02

pH @ 25 C 7.70 0.10 pH Units 7.73 0.389 10 Analyzed: 04/15/19 08:47
pH Sample Temperature During Analysis 23.5 1.0 °C 23.9 1.69 10

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Padre Associates-Ventura
1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

General Chemistry Parameters by EPA or APHA Standard Methods - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9D0403 - EPA 9040B/SM4500H+ B Preparation: EPA 9040B pH Prep 04/15/19 08:47

Duplicate (B9D0403-DUP2)	Source: 1901862-01	Analyzed: 04/15/19 08:47								
pH @ 25 C	7.63	0.10	pH Units	7.70				0.913	10	
pH Sample Temperature During Analysis	23.4	1.0	°C	23.4				0.00	10	

Batch B9D0442 - EPA 1664 Preparation: EPA 1664 Oil and Grease Prep 04/16/19 09:30

Blank (B9D0442-BLK1)		Analyzed: 04/16/19 09:30								
Total Oil & Grease	ND	5.0	mg/L							
LCS (B9D0442-BS1)		Analyzed: 04/16/19 09:30								
Total Oil & Grease	38.8	5.0	mg/L	40.0		97.0	78-114			
LCS Dup (B9D0442-BSD1)		Analyzed: 04/16/19 09:30								
Total Oil & Grease	33.2	5.0	mg/L	40.0		83.0	78-114	15.6	18	

Batch B9D0482 - EPA 1010 Preparation: EPA 1010 Prep 04/17/19 08:55

Blank (B9D0482-BLK1)		Analyzed: 04/17/19 08:55								
Flashpoint	>212	72	°F							
LCS (B9D0482-BS1)		Analyzed: 04/17/19 08:55								
Flashpoint	83	72	°F	81.0		103	95-105			
Duplicate (B9D0482-DUP1)	Source: 1901882-01	Analyzed: 04/17/19 08:55								
Flashpoint	>212	72	°F	>212					10	

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Padre Associates-Ventura
1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

Volatile Organic TPH by GC/FID - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9D0374 - EPA 8015M Preparation: EPA 5030B VOCGC 04/12/19 10:34

Blank (B9D0374-BLK1)

Analyzed: 04/13/19 02:34

TPH Gasoline (C4-C12)	ND	50	ug/L							
Surrogate: 4-Bromofluorobenzene	102		"	125		81.8	47-155			

LCS (B9D0374-BS1)

Analyzed: 04/13/19 01:36

TPH Gasoline (C4-C12)	368	50	ug/L	500		73.5	67-151			
Surrogate: 4-Bromofluorobenzene	110		"	125		87.6	47-155			

LCS Dup (B9D0374-BSD1)

Analyzed: 04/13/19 02:05

TPH Gasoline (C4-C12)	424	50	ug/L	500		84.7	67-151	14.2	20	
Surrogate: 4-Bromofluorobenzene	114		"	125		91.1	47-155			

Duplicate (B9D0374-DUP1)

Source: 1901881-01RE1

Analyzed: 04/13/19 04:58

TPH Gasoline (C4-C12)	ND	50	ug/L		ND				20	
Surrogate: 4-Bromofluorobenzene	100		"	125		80.2	47-155			

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Oilfield Environmental & Compliance, Inc.

Padre Associates-Ventura
1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

Semi-Volatile Organic TPH by GC/FID - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9D0339 - EPA 8015M Preparation: EPA 3510C 04/11/19 10:07

Blank (B9D0339-BLK1)

Analyzed: 04/11/19 17:26

TPH Diesel (C13-C22)	ND	0.050	mg/L							
TPH Motor Oil (C23-C40)	ND	0.10	"							
Surrogate: o-Terphenyl	0.0828		"	0.100		82.8	42-153			

LCS (B9D0339-BS1)

Analyzed: 04/11/19 16:58

TPH Diesel (C13-C22)	0.776	0.050	mg/L	1.00		77.6	24-105			
TPH Motor Oil (C23-C40)	1.04	0.10	"	1.00		104	70-130			
Surrogate: o-Terphenyl	0.102		"	0.100		102	42-153			

LCS Dup (B9D0339-BSD1)

Analyzed: 04/11/19 17:12

TPH Diesel (C13-C22)	0.622	0.050	mg/L	1.00		62.2	24-105	22.0	20	QR-02
TPH Motor Oil (C23-C40)	1.08	0.10	"	1.00		108	70-130	3.95	20	
Surrogate: o-Terphenyl	0.0874		"	0.100		87.4	42-153			

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Oilfield Environmental & Compliance, Inc.

Padre Associates-Ventura
1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9D0445 - EPA 8260B Preparation: EPA 5030B VOCGCMS 04/16/19 09:25

Blank (B9D0445-BLK1)

Analyzed: 04/16/19 12:28

Benzene	ND	0.50	ug/L
Bromobenzene	ND	0.50	"
Bromochloromethane	ND	0.50	"
Bromodichloromethane	ND	0.50	"
Bromoform	ND	0.50	"
Bromomethane	ND	0.50	"
n-Butylbenzene	ND	0.50	"
sec-Butylbenzene	ND	0.50	"
tert-Butylbenzene	ND	0.50	"
Carbon tetrachloride	ND	0.50	"
Chlorobenzene	ND	0.50	"
Chloroethane	ND	0.50	"
Chloroform	ND	0.50	"
Chloromethane	ND	0.50	"
2-Chlorotoluene	ND	0.50	"
4-Chlorotoluene	ND	0.50	"
Dibromochloromethane	ND	0.50	"
1,2-Dibromo-3-chloropropane	ND	1.0	"
1,2-Dibromoethane (EDB)	ND	0.50	"
Dibromomethane	ND	0.50	"
1,2-Dichlorobenzene	ND	0.50	"
1,3-Dichlorobenzene	ND	0.50	"
1,4-Dichlorobenzene	ND	0.50	"
Dichlorodifluoromethane	ND	0.50	"
1,1-Dichloroethane	ND	0.50	"
1,2-Dichloroethane	ND	0.50	"
1,1-Dichloroethene	ND	0.50	"
cis-1,2-Dichloroethene	ND	0.50	"
trans-1,2-Dichloroethene	ND	0.50	"
1,2-Dichloropropane	ND	0.50	"
1,3-Dichloropropane	ND	0.50	"
2,2-Dichloropropane	ND	0.50	"
1,1-Dichloropropene	ND	0.50	"
cis-1,3-Dichloropropene	ND	0.50	"
trans-1,3-Dichloropropene	ND	0.50	"
Ethylbenzene	ND	0.50	"
Hexachlorobutadiene	ND	0.50	"
4-Isopropyl Toluene	ND	0.50	"
Isopropylbenzene	ND	0.50	"
Methylene chloride	ND	0.50	"
Naphthalene	ND	0.50	"
n-Propylbenzene	ND	0.50	"
Styrene	ND	0.50	"

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Oilfield Environmental & Compliance, Inc.

Padre Associates-Ventura
1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9D0445 - EPA 8260B Preparation: EPA 5030B VOCGCMS 04/16/19 09:25

Blank (B9D0445-BLK1)

Analyzed: 04/16/19 12:28

1,1,1,2-Tetrachloroethane	ND	0.50	ug/L							
1,1,2,2-Tetrachloroethane	ND	0.50	"							
Tetrachloroethene (PCE)	ND	0.50	"							
Toluene	ND	0.50	"							
1,2,3-Trichlorobenzene	ND	0.50	"							
1,2,4-Trichlorobenzene	ND	0.50	"							
1,1,1-Trichloroethane	ND	0.50	"							
1,1,2-Trichloroethane	ND	0.50	"							
Trichloroethene (TCE)	ND	0.50	"							
Trichlorofluoromethane	ND	0.50	"							
1,2,3-Trichloropropane	ND	0.50	"							
1,2,4-Trimethylbenzene	ND	0.50	"							
1,3,5-Trimethylbenzene	ND	0.50	"							
Vinyl chloride	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Surrogate: Dibromofluoromethane	12.6		"	12.5		101	83-119			
Surrogate: Toluene-d8	12.3		"	12.5		98.5	69-120			
Surrogate: 4-Bromofluorobenzene	13.5		"	12.5		108	79-125			

LCS (B9D0445-BS1)

Analyzed: 04/16/19 09:57

Benzene	8.74	0.50	ug/L	10.0		87.4	79-132			
Chlorobenzene	8.69	0.50	"	10.0		86.9	83-130			
1,1-Dichloroethene	9.03	0.50	"	10.0		90.3	62-147			
Toluene	8.69	0.50	"	10.0		86.9	71-133			
Trichloroethene (TCE)	9.24	0.50	"	10.0		92.4	79-140			
Surrogate: Dibromofluoromethane	12.9		"	12.5		103	83-119			
Surrogate: Toluene-d8	12.9		"	12.5		103	69-120			
Surrogate: 4-Bromofluorobenzene	13.9		"	12.5		111	79-125			

LCS Dup (B9D0445-BSD1)

Analyzed: 04/16/19 10:30

Benzene	9.41	0.50	ug/L	10.0		94.1	79-132	7.38	20	
Chlorobenzene	9.34	0.50	"	10.0		93.4	83-130	7.21	20	
1,1-Dichloroethene	9.99	0.50	"	10.0		99.9	62-147	10.1	20	
Toluene	8.77	0.50	"	10.0		87.7	71-133	0.916	20	
Trichloroethene (TCE)	9.94	0.50	"	10.0		99.4	79-140	7.30	20	
Surrogate: Dibromofluoromethane	12.9		"	12.5		103	83-119			
Surrogate: Toluene-d8	11.7		"	12.5		93.4	69-120			
Surrogate: 4-Bromofluorobenzene	13.5		"	12.5		108	79-125			

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Oilfield Environmental & Compliance, Inc.

Padre Associates-Ventura
1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9D0445 - EPA 8260B Preparation: EPA 5030B VOCGCMS 04/16/19 09:25

Duplicate (B9D0445-DUP1)

Source: 1901881-01

Analyzed: 04/16/19 15:10

Benzene	ND	0.50	ug/L		ND				20	
Bromobenzene	ND	0.50	"		ND				20	
Bromochloromethane	ND	0.50	"		ND				20	
Bromodichloromethane	ND	0.50	"		ND				20	
Bromoform	ND	0.50	"		ND				20	
Bromomethane	ND	0.50	"		ND				20	
n-Butylbenzene	ND	0.50	"		ND				20	
sec-Butylbenzene	ND	0.50	"		ND				20	
tert-Butylbenzene	ND	0.50	"		ND				20	
Carbon tetrachloride	ND	0.50	"		ND				20	
Chlorobenzene	ND	0.50	"		ND				20	
Chloroethane	ND	0.50	"		ND				20	
Chloroform	ND	0.50	"		ND				20	
Chloromethane	ND	0.50	"		ND				20	
2-Chlorotoluene	ND	0.50	"		ND				20	
4-Chlorotoluene	ND	0.50	"		ND				20	
Dibromochloromethane	ND	0.50	"		ND				20	
1,2-Dibromo-3-chloropropane	ND	1.0	"		ND				20	
1,2-Dibromoethane (EDB)	ND	0.50	"		ND				20	
Dibromomethane	ND	0.50	"		ND				20	
1,2-Dichlorobenzene	ND	0.50	"		ND				20	
1,3-Dichlorobenzene	ND	0.50	"		ND				20	
1,4-Dichlorobenzene	ND	0.50	"		ND				20	
Dichlorodifluoromethane	ND	0.50	"		ND				20	
1,1-Dichloroethane	ND	0.50	"		ND				20	
1,2-Dichloroethane	ND	0.50	"		ND				20	
1,1-Dichloroethene	ND	0.50	"		ND				20	
cis-1,2-Dichloroethene	ND	0.50	"		ND				20	
trans-1,2-Dichloroethene	ND	0.50	"		ND				20	
1,2-Dichloropropane	ND	0.50	"		ND				20	
1,3-Dichloropropane	ND	0.50	"		ND				20	
2,2-Dichloropropane	ND	0.50	"		ND				20	
1,1-Dichloropropene	ND	0.50	"		ND				20	
cis-1,3-Dichloropropene	ND	0.50	"		ND				20	
trans-1,3-Dichloropropene	ND	0.50	"		ND				20	
Ethylbenzene	ND	0.50	"		ND				20	
Hexachlorobutadiene	ND	0.50	"		ND				20	
4-Isopropyl Toluene	ND	0.50	"		ND				20	
Isopropylbenzene	ND	0.50	"		ND				20	
Methylene chloride	ND	0.50	"		ND				20	
Naphthalene	ND	0.50	"		ND				20	
n-Propylbenzene	ND	0.50	"		ND				20	
Styrene	ND	0.50	"		ND				20	

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Oilfield Environmental & Compliance, Inc.

Padre Associates-Ventura
1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9D0445 - EPA 8260B Preparation: EPA 5030B VOCGCMS 04/16/19 09:25

Duplicate (B9D0445-DUP1)

Source: 1901881-01

Analyzed: 04/16/19 15:10

1,1,1,2-Tetrachloroethane	ND	0.50	ug/L		ND				20	
1,1,2,2-Tetrachloroethane	ND	0.50	"		ND				20	
Tetrachloroethene (PCE)	ND	0.50	"		ND				20	
Toluene	ND	0.50	"		ND				20	
1,2,3-Trichlorobenzene	ND	0.50	"		ND				20	
1,2,4-Trichlorobenzene	ND	0.50	"		ND				20	
1,1,1-Trichloroethane	ND	0.50	"		ND				20	
1,1,2-Trichloroethane	ND	0.50	"		ND				20	
Trichloroethene (TCE)	ND	0.50	"		ND				20	
Trichlorofluoromethane	ND	0.50	"		ND				20	
1,2,3-Trichloropropane	ND	0.50	"		ND				20	
1,2,4-Trimethylbenzene	ND	0.50	"		ND				20	
1,3,5-Trimethylbenzene	ND	0.50	"		ND				20	
Vinyl chloride	ND	0.50	"		ND				20	
Xylenes (total)	ND	0.50	"		ND				20	
Surrogate: Dibromofluoromethane	12.3		"	12.5		98.0	83-119			
Surrogate: Toluene-d8	12.8		"	12.5		102	69-120			
Surrogate: 4-Bromofluorobenzene	13.9		"	12.5		111	79-125			

Matrix Spike (B9D0445-MS1)

Source: 1901881-02

Analyzed: 04/16/19 20:31

Benzene	8.39	0.50	ug/L	10.0	ND	83.9	70-141			
Chlorobenzene	8.52	0.50	"	10.0	ND	85.2	86-124			
1,1-Dichloroethene	8.57	0.50	"	10.0	ND	85.7	61-143			
Toluene	8.18	0.50	"	10.0	ND	81.8	66-135			
Trichloroethene (TCE)	9.03	0.50	"	10.0	ND	90.3	80-139			
Surrogate: Dibromofluoromethane	13.3		"	12.5		106	83-119			
Surrogate: Toluene-d8	12.4		"	12.5		99.4	69-120			
Surrogate: 4-Bromofluorobenzene	13.8		"	12.5		110	79-125			

QM-07

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Oilfield Environmental & Compliance, Inc.

Padre Associates-Ventura
1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

Organochlorine Pesticides by GC/ECD/ECD - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9D0441 - EPA 8081A Preparation: EPA 3510C 04/16/19 09:19

Blank (B9D0441-BLK1)

Analyzed: 04/16/19 16:58

alpha-BHC	ND	0.10	ug/L							
alpha-Chlordane	ND	0.10	"							
Aldrin	ND	0.10	"							
beta-BHC	ND	0.10	"							
delta-BHC	ND	0.10	"							
4,4'-DDD	ND	0.10	"							
4,4'-DDE	ND	0.10	"							
4,4'-DDT	ND	0.10	"							
Dieldrin	ND	0.10	"							
Endosulfan I	ND	0.10	"							
Endosulfan II	ND	0.10	"							
Endosulfan sulfate	ND	0.10	"							
Endrin	ND	0.10	"							
Endrin aldehyde	ND	0.10	"							
Endrin ketone	ND	0.10	"							
gamma-BHC	ND	0.10	"							
gamma-Chlordane	ND	0.10	"							
Heptachlor	ND	0.10	"							
Heptachlor epoxide	ND	0.10	"							
Methoxychlor	ND	0.10	"							
Chlordane (tech)	ND	0.50	"							
Toxaphene	ND	0.50	"							
Surrogate: Decachlorobiphenyl	0.220		"	0.250		88.0	10-202			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	0.0667		"	0.250		26.7	10-145			

LCS (B9D0441-BS1)

Analyzed: 04/16/19 15:58

alpha-BHC	0.130	0.10	ug/L	0.200		65.0	21-91			
alpha-Chlordane	0.149	0.10	"	0.200		74.6	37-99			
Aldrin	0.0893	0.10	"	0.200		44.6	16-87			
beta-BHC	0.155	0.10	"	0.200		77.4	40-98			
delta-BHC	0.155	0.10	"	0.200		77.6	45-104			
4,4'-DDD	0.166	0.10	"	0.200		83.0	54-117			
4,4'-DDE	0.160	0.10	"	0.200		80.1	46-112			
4,4'-DDT	0.224	0.10	"	0.200		112	57-124			
Dieldrin	0.165	0.10	"	0.200		82.7	46-100			
Endosulfan I	0.157	0.10	"	0.200		78.6	38-104			
Endosulfan II	0.174	0.10	"	0.200		87.0	54-110			
Endosulfan sulfate	0.205	0.10	"	0.200		103	64-112			
Endrin	0.175	0.10	"	0.200		87.5	54-105			
Endrin aldehyde	0.192	0.10	"	0.200		96.0	56-104			
Endrin ketone	0.191	0.10	"	0.200		95.5	61-106			
gamma-BHC	0.138	0.10	"	0.200		69.2	26-94			
gamma-Chlordane	0.145	0.10	"	0.200		72.7	39-100			

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Oilfield Environmental & Compliance, Inc.

Padre Associates-Ventura
1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

Organochlorine Pesticides by GC/ECD/ECD - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9D0441 - EPA 8081A Preparation: EPA 3510C 04/16/19 09:19

LCS (B9D0441-BS1)

Analyzed: 04/16/19 15:58

Heptachlor	0.116	0.10	ug/L	0.200		57.9	26-88			
Heptachlor epoxide	0.151	0.10	"	0.200		75.6	40-98			
Methoxychlor	0.247	0.10	"	0.200		124	62-129			
Surrogate: Decachlorobiphenyl	0.241		"	0.250		96.3	10-202			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	0.0832		"	0.250		33.3	10-145			

LCS Dup (B9D0441-BS1)

Analyzed: 04/16/19 16:18

alpha-BHC	0.127	0.10	ug/L	0.200		63.4	21-91	2.41	25	
alpha-Chlordane	0.150	0.10	"	0.200		75.1	37-99	0.644	25	
Aldrin	0.0893	0.10	"	0.200		44.6	16-87	0.0347	25	
beta-BHC	0.162	0.10	"	0.200		80.8	40-98	4.38	25	
delta-BHC	0.158	0.10	"	0.200		79.0	45-104	1.77	25	
4,4'-DDD	0.161	0.10	"	0.200		80.4	54-117	3.14	25	
4,4'-DDE	0.161	0.10	"	0.200		80.4	46-112	0.358	25	
4,4'-DDT	0.216	0.10	"	0.200		108	57-124	3.47	25	
Dieldrin	0.164	0.10	"	0.200		82.2	46-100	0.616	25	
Endosulfan I	0.155	0.10	"	0.200		77.4	38-104	1.51	25	
Endosulfan II	0.166	0.10	"	0.200		83.1	54-110	4.60	25	
Endosulfan sulfate	0.195	0.10	"	0.200		97.6	64-112	4.99	25	
Endrin	0.175	0.10	"	0.200		87.7	54-105	0.176	25	
Endrin aldehyde	0.183	0.10	"	0.200		91.6	56-104	4.72	25	
Endrin ketone	0.181	0.10	"	0.200		90.5	61-106	5.42	25	
gamma-BHC	0.136	0.10	"	0.200		67.9	26-94	1.77	25	
gamma-Chlordane	0.148	0.10	"	0.200		74.1	39-100	1.93	25	
Heptachlor	0.118	0.10	"	0.200		58.9	26-88	1.75	25	
Heptachlor epoxide	0.150	0.10	"	0.200		75.1	40-98	0.634	25	
Methoxychlor	0.239	0.10	"	0.200		119	62-129	3.41	25	
Surrogate: Decachlorobiphenyl	0.237		"	0.250		95.0	10-202			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	0.0909		"	0.250		36.4	10-145			

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Oilfield Environmental & Compliance, Inc.

Padre Associates-Ventura
1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

Polychlorinated Biphenyls by GC/ECD - Quality Control

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9D0441 - EPA 8082 Preparation: EPA 3510C 04/16/19 09:19

Blank (B9D0441-BLK2)

Analyzed: 04/16/19 23:19

PCB-1016	ND	0.50	ug/L							
PCB-1221	ND	0.50	"							
PCB-1232	ND	0.50	"							
PCB-1242	ND	0.50	"							
PCB-1248	ND	0.50	"							
PCB-1254	ND	0.50	"							
PCB-1260	ND	0.50	"							
Surrogate: Decachlorobiphenyl	0.198		"	0.250		79.0	10-202			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	0.0586		"	0.250		23.4	10-145			

LCS (B9D0441-BS2)

Analyzed: 04/16/19 22:19

PCB-1016	1.19	0.50	ug/L	2.00		59.3	44-125			
PCB-1260	1.66	0.50	"	2.00		82.8	49-131			
Surrogate: Decachlorobiphenyl	0.241		"	0.250		96.3	10-202			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	0.0823		"	0.250		32.9	10-145			

LCS Dup (B9D0441-BSD2)

Analyzed: 04/16/19 22:39

PCB-1016	1.26	0.50	ug/L	2.00		62.9	44-125	5.87	30	
PCB-1260	1.65	0.50	"	2.00		82.5	49-131	0.322	30	
Surrogate: Decachlorobiphenyl	0.231		"	0.250		92.5	10-202			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	0.0854		"	0.250		34.1	10-145			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Oilfield Environmental & Compliance, Inc.

Padre Associates-Ventura
1861 Knoll Dr.
Ventura CA, 93003

Project: Grubb Lease
Project Number: Seawater Intake, Ventura
Project Manager: Jenn Leighton

WO & Reported:
1901882
04/20/2019 19:01

Notes and Definitions

R-07	Reporting limits are at or below state/federal hazardous waste criteria limits.
QR-04	The RPD exceeded the QC control limits.
QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery and/or RPD values.
LC50	State of CA limit for Non-Hazardous Designation: LC50 > 500 mg/L Pass Screen: <40% dead in 750 mg/L (LC50 > 750 mg/L) Fail Screen: >40% dead in 750mg/L (Definitive Recommended) Fail Screen [CA Haz]: >60% dead in 400mg/L (LC50 < 400mg/L)
HT-pH	Water pH should be analyzed within 15 minutes of sampling. Soil pH should be analyzed as soon as possible.
>212	>212
_Pass	Pass
RL	Reporting Limit (Quantitation Limit)
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Rev. 11/06/2017

APPENDIX J

Traffic Control Plan

CALTRANS GENERAL NOTES-TRAFFIC CONTROL

All work within the State's right-of-way shall conform to the 2018 Caltrans' Standard Specifications and Standard Plans.

It is the responsibility of the contractor performing work to install and maintain the traffic control devices as shown herein, as well as any such additional traffic control devices as may be required to ensure the safe movement of vehicular and pedestrian traffic through or around the closure area and provide maximum protection and safety to workers.

All traffic control devices shall be kept in their proper position at all times and shall be repaired, replaced, or cleaned as necessary to preserve their appearance, continuity and capability.

All traffic control devices shall conform to the latest accepted edition of the California Manual on Uniform Traffic Control Devices (M.U.T.C.D.)

Any revisions to these drawings shall be approved in writing by Caltrans.

Caltrans reserves the right to observe the traffic control operations and to make any necessary changes. Any directed changes shall supersede these plans and shall be implemented at the sole expense of the contractor.

All flashing arrow signs shall be solar powered.

Contractor shall provide flagmen as necessary to give adequate warning to traffic or to the public of any dangerous conditions to be encountered.

Contractor shall remove temporary traffic delineation, signage, and other devices when no longer required, and shall restore areas to original conditions.

Contractor shall cover existing signs where they conflict with construction detours and signing.

All open excavation or construction work shall be a minimum of 5' from any operating traffic lanes.

Contractor shall post uneven pavement signs, and ramp vertical pavement offset of 1 inch or more with asphalt for smooth transition.

Contractor shall coordinate with Caltrans for any temporary traffic signal timing modifications.

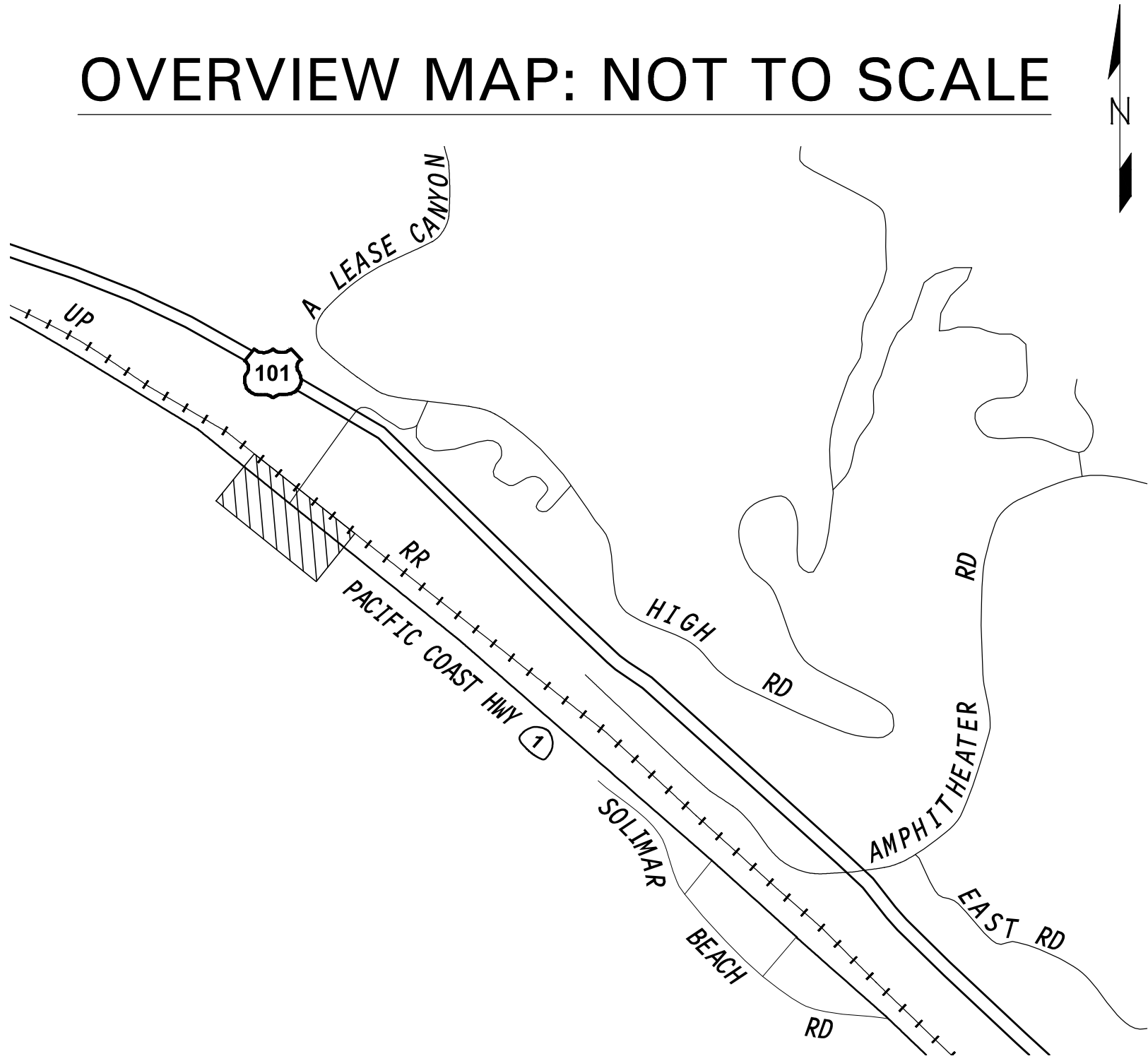
For signing, striping and pavement markings, the latest accepted edition of the California M.U.T.C.D., Caltrans Standard Plans and Caltrans Standard Specifications (Section 84) shall be used and referenced.

The contractor shall provide for access to all adjacent properties during work hours. Construction operations shall be conducted in such a manner as to cause as little inconvenience as possible to abutting property owners/operators.

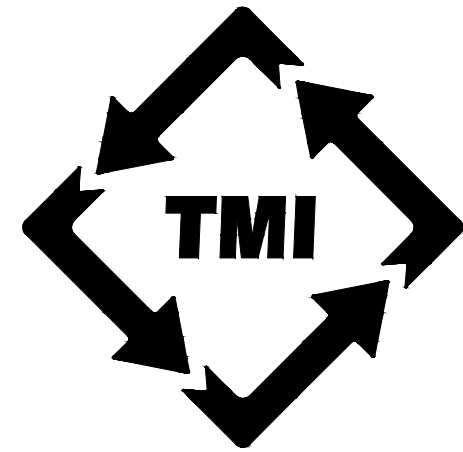
All signs shall be reflectorized and standard size.

The contractor shall provide for safe pedestrian access at all times.

OVERVIEW MAP: NOT TO SCALE



W21-5b(R)	W21-5	W20-1	W16-1P	W11-1	W6-4	W14(R/L)	
SC11(MOD)	R3-5(R)	R4-7a	R3-2	G20-2	C30A(CA)	C30(CA)	C20(MOD)(BIKE)



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MANAGEMENT, INC.

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Permits & Consulting
Engineering
Training

LICENSE # 785804 · Class 31

STATE OF
CALIFORNIA

LONGITUDE 123 INC

3055 PACIFIC
COAST HWY



NOT APPROVED FOR
CONSTRUCTION UNLESS SIGNED

TMI PROJECT MANAGER:
GREG B.

SUBMITTAL DATE: 8/29/19 - MB

REVISION DATES: 10/10/19 - SM

ACCEPTED BY: DATE:

DATE:

THE DRAWINGS, DESIGNS, IDEAS, ARRANGEMENTS AND PLANS INDICATED OR REPRESENTED ARE THE SOLE PROPERTY OF TRAFFIC MANAGEMENT, INC. (TMI), AND ARE SUBJECT TO THE COPYRIGHT OF TMI OR ITS ASSIGNS. THEY WERE CREATED, EVOLVED AND DEVELOPED EXCLUSIVELY FOR USE ON, AND IN CONJUNCTION WITH, THE SPECIFIED PROJECT. ANY USE OF THE DRAWINGS, DESIGNS, MATERIALS OR INFORMATION CONTAINED HEREIN, INCLUDING COPYING, WHICH IS NOT EXPRESSLY AUTHORIZED BY TMI, IS STRICTLY PROHIBITED AS AN INFRINGEMENT OF ITS COPYRIGHT AND MAY RESULT IN LIABILITY.

Plan Order #: 49821

0' 20' 40' 80'

SCALE: 1" = 40'

ORIGINAL PLAN SIZE: 24" x 36"

SHEET

1 OF 2

LEGEND:

- WORK AREA
- FLASHING ARROW SIGN (FAS)
- FLAGGER
- ADA COMPLIANT PEDESTRIAN BARRICADE W/ SIGN
- TYPE-III BARRICADE W/ SIGN
- TYPE-I OR II BARRICADE W/ SIGN
- CHANNELIZATION DEVICE
- SIGN
- EXISTING SIGN

PHASE: 1

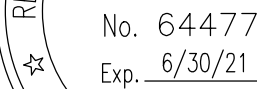


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LONGITUDE 123 INC



GREG B.

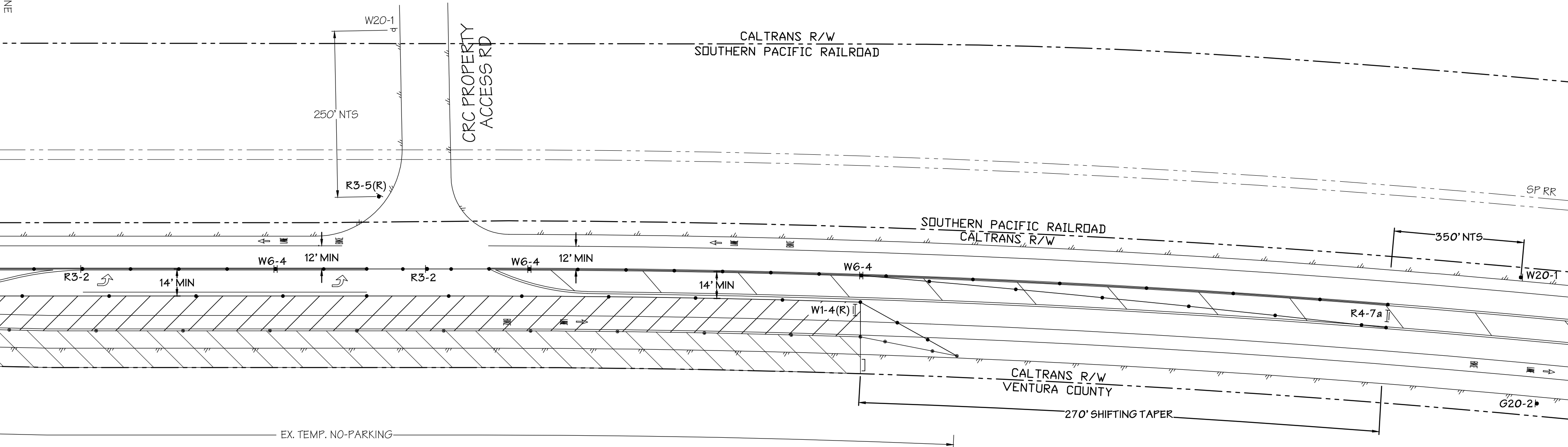
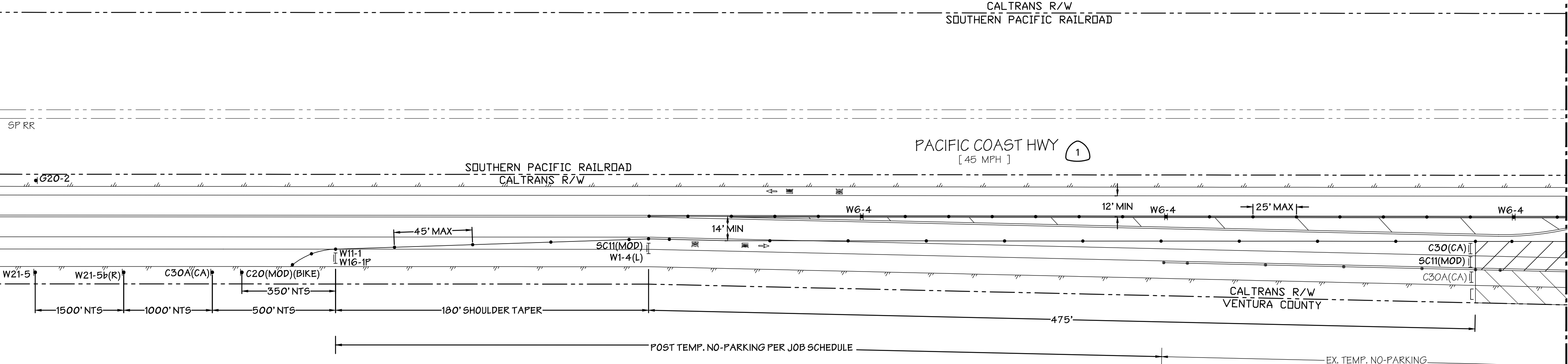
REVISION DATES: 10/10/19 - SM

DATE: _____

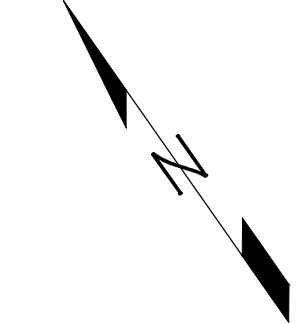
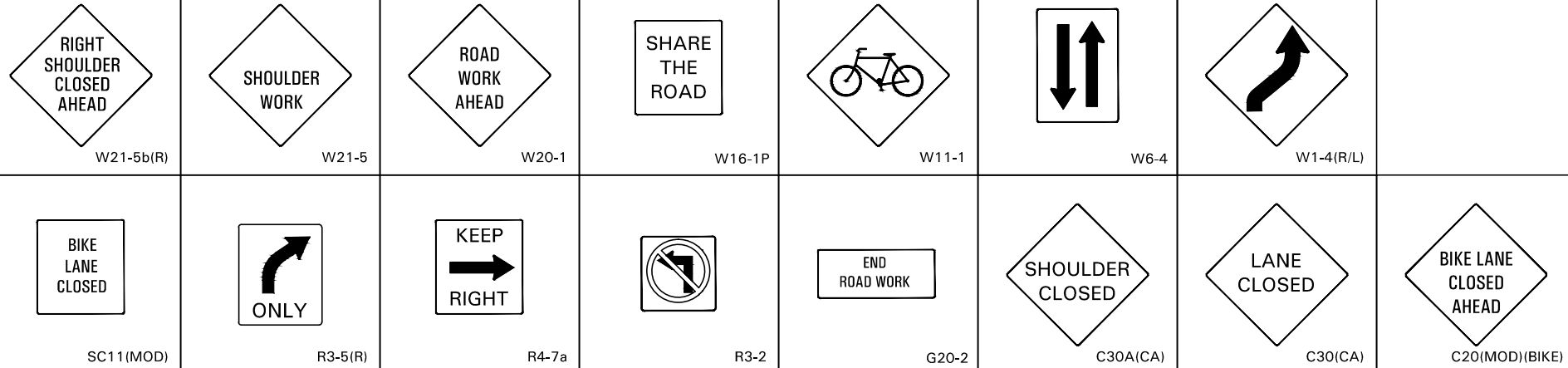
A horizontal line representing a 100-foot track. Below the line, there are four tick marks labeled 0', 20', 40', and 80'. The segment from 0' to 20' is filled with black. The segment from 20' to 40' is white. The segment from 40' to 80' is filled with black.

SHEET

2 OF 2



-  - WORK AREA
-  - FLASHING ARROW SIGN (FAS)
-  - FLAGGER
-  - ADA COMPLIANT PEDESTRIAN BARRICADE W/ SIGN
-  - TYPE-III BARRICADE W/ SIGN
-  - TYPE-I OR II BARRICADE W/ SIGN
-  - CHANNELIZATION DEVICE
-  - SIGN
-  - EXISTING SIGN



PHASE: 2

APPENDIX K

Subsea Survey Information



**OXY/Vintage Petroleum Intake and Discharge
Facility at Taylor Ranch**

**Bathymetric and Geophysical Survey
Field Operations Report**

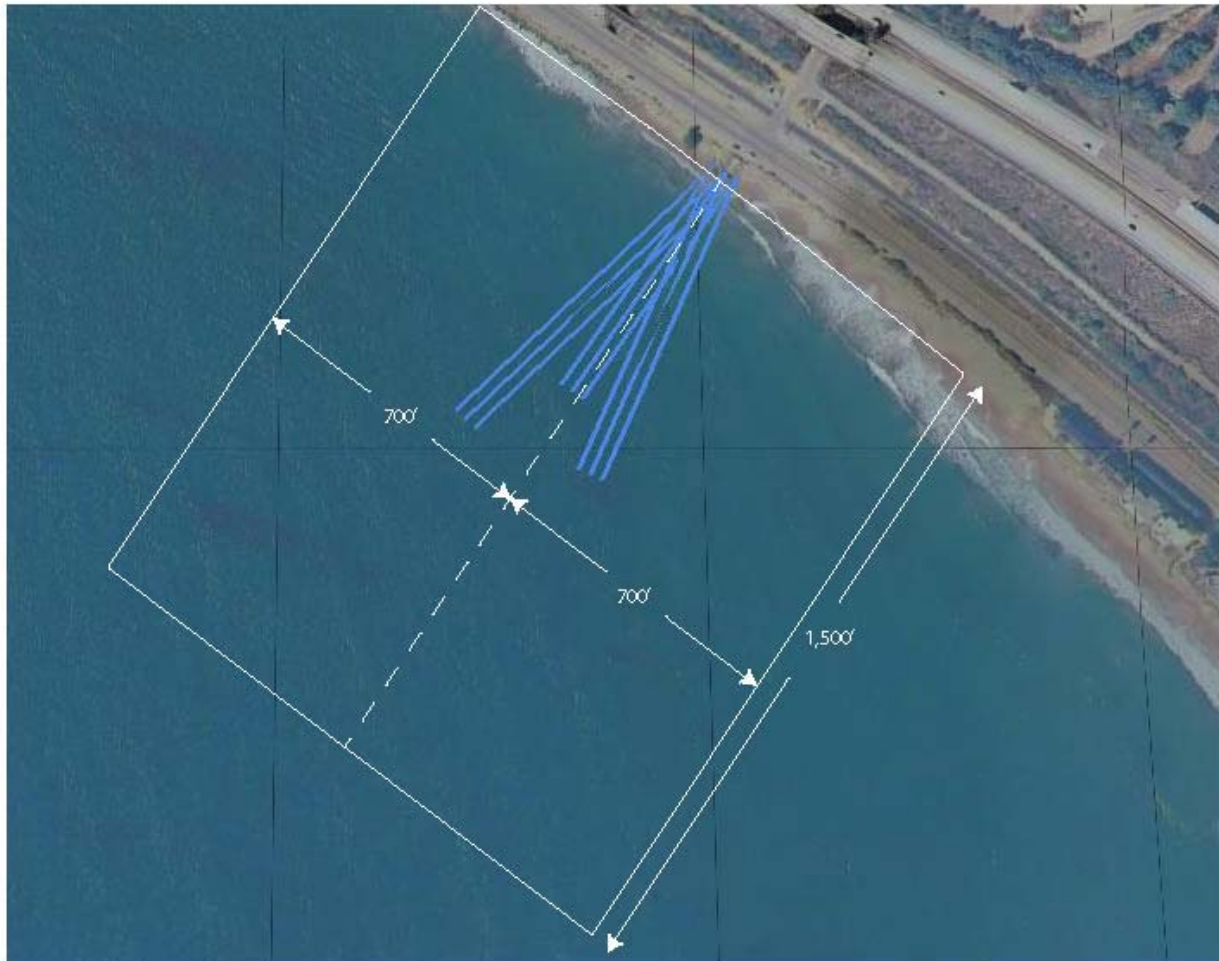
**Survey Period: December 12, 2012
Report Number: 04.64120036 D0**

Prepared for:

Donna Hebert
Padre Associates, Inc.
1861 Knoll Drive
Ventura, CA 93003
Tel: 805-644-2220



0	Issued as Draft	CP		ES	December 12, 2012
Rev	Description	Prepared	Checked	Approved	Date



PROPOSED SURVEY AREA



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B	BATHYMETRY AND SURFICIAL FEATURES MAP

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SUMMARY OF SURVEY RESULTS

Land Survey Locations:

NAD83 California Zone 5, U.S. Survey Feet		
ID	Easting	Northing
1	6149276	1940878
2	6148983	1940898
3	6149022	1940869
4	6149226	1940792
5	6148984	1940884
6	6149022	1940859
7	6149146	1940710
8	6149297	1940766
9	6149122	1940676
10	6149163	1940698

Magnetic Anomalies

NAD83 California Zone 5, U.S. Survey Feet			
Target ID	Easting	Northing	Gamma
M-1	6148856	1940148	273.5
M-2	6148724	1940258	544.2
M-3	6148778	1940312	941.4
M-4	6148842	1940269	118.3
M-5	6148897	1940226	629.3
M-6	6148937	1940321	249
M-7	6148900	1940339	1182.8
M-8	6148858	1940388	261.6

Side Scan Sonar Targets

NAD83 California Zone 5, U.S. Survey Feet						
ID	Easting	Northing	Length	Width	Height	Description
T-1	6148692	1940224	2.7	1.4	0.3	North Pipe End - Possible Diffuser
T-2	6148824	1940080	2.6	2.1	0.1	South Pipe End - Possible Diffuser
T-3	6148806	1940219	0.0	0.0	0.0	Middle Pipe End

Study Area: A 1,400 x 1,500 foot area centralized on the existing outfall alignment

Bathymetry: Minimum depth within survey area: 7 feet
Maximum depth within survey area: 17 feet

**Surficial
Features:** The bottom material consists of areas of hard bottom running parallel with the shoreline.

1. INTRODUCTION AND SCOPE OF WORK

1.1 General

On November 20, 2012, Fugro Consultants, Inc. (Fugro) conducted a bathymetric and geophysical survey of the OXY/Vintage Petroleum intake and discharge facility at Taylor Ranch. The survey area is located just offshore of Ventura, California.

The purpose of this survey was to determine existing seafloor and outfall conditions and location of existing pipelines which will be used for potential engineering structure assessment. The investigation measured water depths, determined the locations of any debris within the survey area, and the locations of the existing outfall and pipelines, where detected on the seafloor or by marine magnetometer.

High-resolution bathymetric, side scan sonar and magnetometer data were collected in a grid pattern covering the survey area. The geophysical survey limits extended from as near to shore as safely possible to approximately 1,500 feet from the shoreline with a survey corridor width of 1,400 feet (700 feet each side of existing outfall alignment) as shown in the key map above. The grid consisted of 24 survey lines (as seen in Figure 1-1), with 11 main lines oriented northeast to southwest and spaced 164 feet (50 meters) apart with two additional lines located on either side of the center pipeline. In addition, 13 lines were run perpendicular to the pipeline alignment.

Due to dense kelp, Fugro was unable to survey a 1,400' x 525' area in the southwest portion of the proposed survey area. Where possible, Fugro maneuvered between isolated kelp beds to collect data. Data was not collected beyond the surf zone for safety reasons. Both the kelp and surf zone have been identified on the accompanying chart (Appendix A).

Additionally Fugro conducted a Real Time Kinematic (RTK) survey to mark, map and provide coordinates for ten pre-determined locations onshore.

All coordinates in this report are based on the WGS 84 spheroid as North America Datum 83 (California State Plane, Zone 5, feet) grid coordinates. The vertical datum reference for this project is Mean Lower Low Water (MLLW). Depths were corrected for tide variations during field activities based upon predicted tidal data obtained from NOAA.

1.2 Units and Conventions

Units used on the survey are as follows:

- Linear units are feet.
- Angular units are degrees (°).
- Time was recorded as universal time, coordinated (UTC) (Time offset: -8:00 UTC) to all data files and both UTC and local time were noted in field logs.



1.3 Abbreviations

ACI	Analog Control Interface
A/D	Analog to Digital
DGPS	Differential Global Positioning System
KHz	Kilohertz
MLLW	Mean Lower Low Water
M/V	Marine Vessel
NOAA	National Oceanic and Atmospheric Administration
RTK	Real Time Kinematic
TIFF	Tagged Image File Format
TVG	Time Varied Gain
UTC	Universal Time, Coordinated

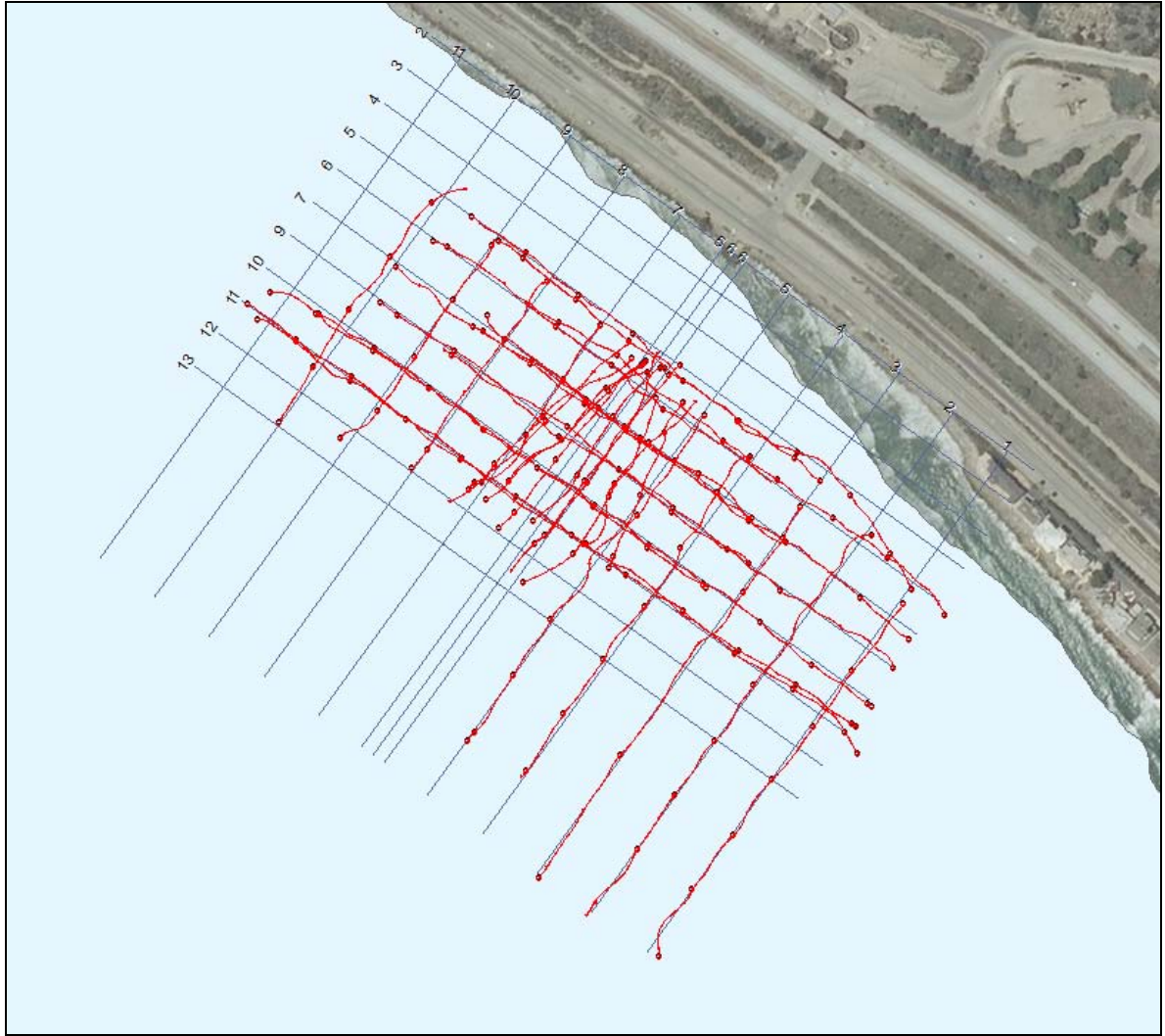


Figure 1.1: Bathymetry and Seafloor Features Survey Trackplot



2. METHODS AND RESOLUTION LIMITATIONS

2.1 Land Survey

For the land survey, Trimble R8 receivers were used to acquire locations at ten pre-determined sites, utilizing RTK corrections.

2.2 Positioning and Navigation

Wide area DGPS was used to position the survey vessel in real time. GPS is a satellite-based positioning system operated by the U.S. Department of Defense. A "wide area" application operates with correction values applied to a stand-alone GPS receiver from base stations located over large distances. DGPS corrections are supplied to the system using the STARFIX II network. This differential network is a worldwide system operated by Fugro. STARFIX II broadcasts differential corrections via a communications satellite downlink to field receivers.

The vessel information (position, heading, and GPS data) was linked to an on-board Pentium-based personal computer running Hypack navigation software. Hypack is an advanced PC-based Windows navigation system designed for both surface and subsurface vehicle positioning. A helmsman's display continually updates the true vessel position, track-lines, distances off line, and distances along line.

2.3 Bathymetric Data

An Odom CV-100 survey grade echo sounder was used to acquire single-beam bathymetric data during survey operations. The Odom CV-100 has a transducer operating at a high frequency of 200 kHz and collects digitized depth information logged directly to the navigation computer along with date, time, and position.

Prior to operations at the site a bar check calibration for speed of sound was carried out. In the bar check calibration a flat plate is suspended by a precisely marked line to a known depth below the transducer. Variations between the true bar depth and the observed depth are used to correct observed depths by adjusting the sound velocity on the echosounder until it reads correctly.

Data Processing. Using Hypack's single-beam processing suite, single-beam bathymetric data were edited to remove outliers. The soundings were reduced to MLLW based on NOAA predicted tidal information located at Rincon Point.

2.4 Marine Magnetometer

A Marine Magnetic Corporation SeaSPY magnetometer was deployed from the port quarter of the *M/V Julie Ann* to aid in mapping ferrous debris and with locating the existing pipeline. A Marine Magnetics' magnetometer measures the ambient magnetic field using a specialized branch of nuclear magnetic resonance technology applied specifically to hydrogen nuclei producing very high sensitivity and accuracy. The tow sensor was further equipped with a pressure/depth sensor and an altimeter to maintain optimum towing altitude. Total field readings were logged together with the sensor altitude and depth data to the navigation computer through the Hypack program.

Data Processing. Using Chesapeake Technologies, Inc. Sonarwiz5, the locations of observed magnetic anomalies were determined from the magnetometer data, utilizing anomaly-modeling techniques that



incorporate the anomaly duration, signature, and peak-to-peak amplitudes. The interpreted location of bipolar (dipole) anomalies is an average of the anomaly duration midpoint and the peak-to-peak midpoint. Interpreted anomaly locations were cross-checked with the side scan sonar targets to determine if exposed targets had a ferrous content. The anomalies were plotted on the post plot navigation maps and imported to the ArcView software for final mapping.

2.5 Side Scan Sonar

Surficial features have been interpreted from a digital, dual-frequency side-scan-sonar system. The system consisted of an EdgeTech Model 272-TD sonar towfish and armored tow cable that was interfaced to a data logging computer with the EdgeTech analog control interface (ACI), an A/D card, and acquisition software. Chesapeake Technology, Inc.'s SonarWiz5 software was utilized to provide real-time mosaics for quality control. The software also provided complete post processing capabilities. Features include automatic gain control, TVG, beam angle correction, integrated bottom tracking, and a navigation editor.

During the survey, the towfish was deployed from the port quarter of the *M/V Julie Ann* as the vessel traversed the survey grid. The side scan sonar was operated at a frequency of 500 kHz at a slant range of 164 feet (50 meters) for all survey lines.

Data Processing. All side scan sonar data were processed using Chesapeake Technologies, Inc. Sonarwiz5. Raw side scan files were imported into the program and corrected for layback as well as proper bottom tracking and navigation review. The files were then slant range corrected and compiled into a preliminary mosaic for target location and determination of any buried cables or pipelines. The resulting files were processed to construct a final side scan mosaic of the survey area. The complete mosaic image was geo-referenced to the local coordinate system for the final maps. The sonar mosaics are exported as geo-registered TIFF files that are imported into the ArcView system where surficial features were digitized.

3. RESULTS

The following sections discuss the features seen in the surveyed area including any anomalous features. Anomalous features may include man-made objects such as pipelines, debris, anchors, and trawl scars. Other features such as rock outcrops, coarse sediment, seafloor depressions, etc. are also noted.

Singlebeam bathymetry, side-scan-sonar, and magnetometer data were used in the compilation of Chart 1 - Bathymetry and Surficial Features map (plotted at 1"=100') located in Appendix A.

3.1 Land Survey

Table 3.1 lists the coordinates recorded for ten pre-determined locations onshore.

Table 3.1: Land Survey Coordinates

NAD83 California Zone 5, U.S. Survey Feet		
ID	Easting	Northing
1	6149276	1940878
2	6148983	1940898
3	6149022	1940869
4	6149226	1940792
5	6148984	1940884
6	6149022	1940859
7	6149146	1940710
8	6149297	1940766
9	6149122	1940676
10	6149163	1940698

3.2 Bathymetry

Bathymetric contours referenced to MLLW for the surveyed area are mapped on the accompanying Bathymetry and Surficial Features map. Water depths in the survey area were found to range from 7 feet deep along the shoreline side of the survey area and gradually drops to approximately 17 feet deep at the southwestern end of the departure route. Dense kelp growth in the southwest corner of the survey area prevented vessel entry and data collection for this portion of the survey.

The possible diffusers identified on the two outside pipelines sit in approximately 13.5 feet of water, and the last visible end of the center pipeline lies in about 12 feet of water.

3.3 Magnetic Anomalies

Eight magnetic anomalies were observed, all of which are associated with the three existing pipelines. Table 3.2 provides a listing of each anomaly with its associated Gamma value.

Table 3.1: Magnetic Anomalies

NAD83 California Zone 5, U.S. Survey Feet			
Target ID	Easting	Northing	Gamma
M-1	6148856	1940148	273.5
M-2	6148724	1940258	544.2
M-3	6148778	1940312	941.4
M-4	6148842	1940269	118.3
M-5	6148897	1940226	629.3
M-6	6148937	1940321	249
M-7	6148900	1940339	1182.8
M-8	6148858	1940388	261.6

3.4 Surficial Features

A large area of kelp prevented data from being collected in the southwestern half of the proposed survey area. The seafloor within the side scan sonar data extents is comprised of mostly hard bottom with patches of sand (as seen in the accompanying map). In addition to these geological features, all three pipelines were visible from the surf zone out to the 12-13 foot water depth.

The end of each pipe was digitized and the coordinates are tabulated below in Table 3.3.

Table 3.3: Side Scan Sonar Targets

NAD83 California Zone 5, U.S. Survey Feet						
ID	Easting	Northing	Length	Width	Height	Description
T-1	6148692	1940224	2.7	1.4	0.3	North Pipe End - Possible Diffuser
T-2	6148824	1940080	2.6	2.1	0.1	South Pipe End - Possible Diffuser
T-3	6148806	1940219	0.0	0.0	0.0	Middle Pipe End

Possible diffusers have been identified on the end of the two outside pipes, as seen in Figures 3.1 and 3.2 below.

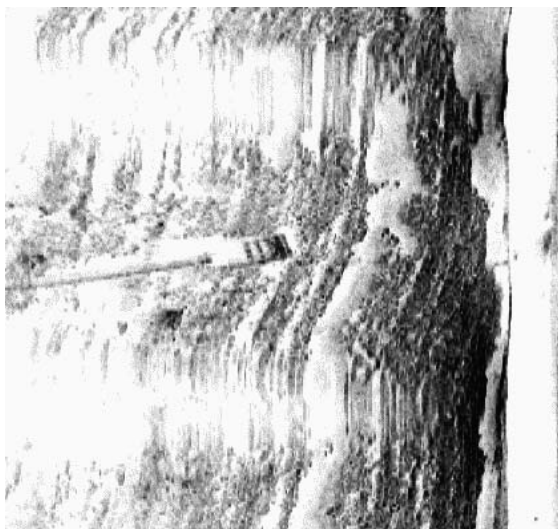


Figure 3.1: North Pipeline End – Possible Diffuser

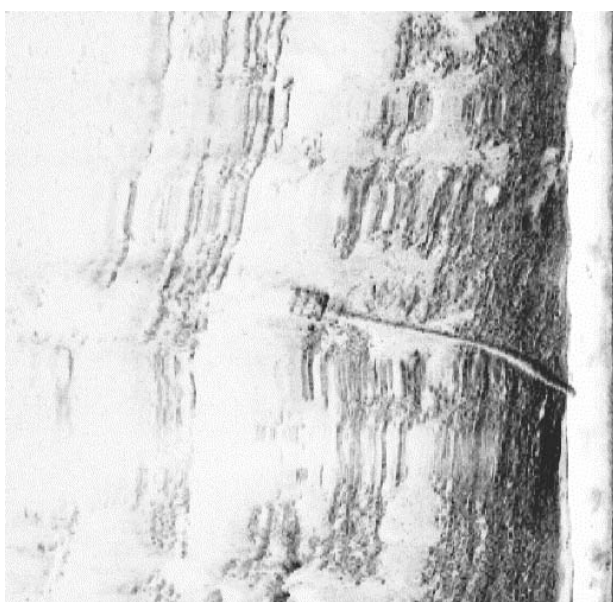


Figure 3.2: South Pipeline End – Possible Diffuser



APPENDICES

- A MARINE WILDLIFE MONITORING REPORT**
- B BATHYMETRY AND SURFICIAL FEATURES MAP**



A MARINE WILDLIFE MONITORING REPORT

November 30, 2012

Padre Project No. 1102-1851

Mr. Jeff Carothers, Survey Manager
Fugro Consultants, Inc.
4820 McGrath Street, Suite 100
Ventura, CA 93003-7778

**Subject: Marine Wildlife Monitoring Report
Bathymetric and Geophysical Survey for
OXY/Vintage Petroleum Intake and Discharge Facility at Taylor Ranch**

Dear Mr. Carothers:

In accordance with the procedures outlined in the California State Lands Commission (CSLC)-approved project-specific Marine Wildlife Contingency Plan (MWCP), Padre Associates, Inc. (Padre) is pleased to submit this monitoring report for incorporation into Fugro Consultant Inc.'s (Fugro) Field Operations Report. This report summarizes observations made by Padre's onboard marine wildlife monitor during vessel transit to and from the survey area (Figure 1), and during bathymetric and geophysical data collection (survey) on November 20, 2012. The survey was conducted during daylight hours (no nighttime operations) in water depths from approximately 1.8 to 6.7 meters (m) (6 to 22 feet [ft]) offshore of the seawater intake and discharge facility off the coast of Ventura County, California near the Grubb Oil Field.

SURVEY EQUIPMENT AND PERSONEL

The survey utilized the S/V *Julie Ann*, a 7.9 m (26 ft) vessel owned and operated by Fugro. During the observation period, geophysical equipment consisted of a single beam bathymetry system, a side scan sonar imaging system, and a marine magnetometer. The survey vessel was mobilized in Ventura Harbor, Ventura County.

Onboard Fugro personnel included Mr. Herb Tovar (Survey Chief), and Mr. Daniel Ebuna and Mr. Mark Williams (Surveyors). Onboard Padre personnel included Ms. Jennifer Klaib (Marine Wildlife Monitor).

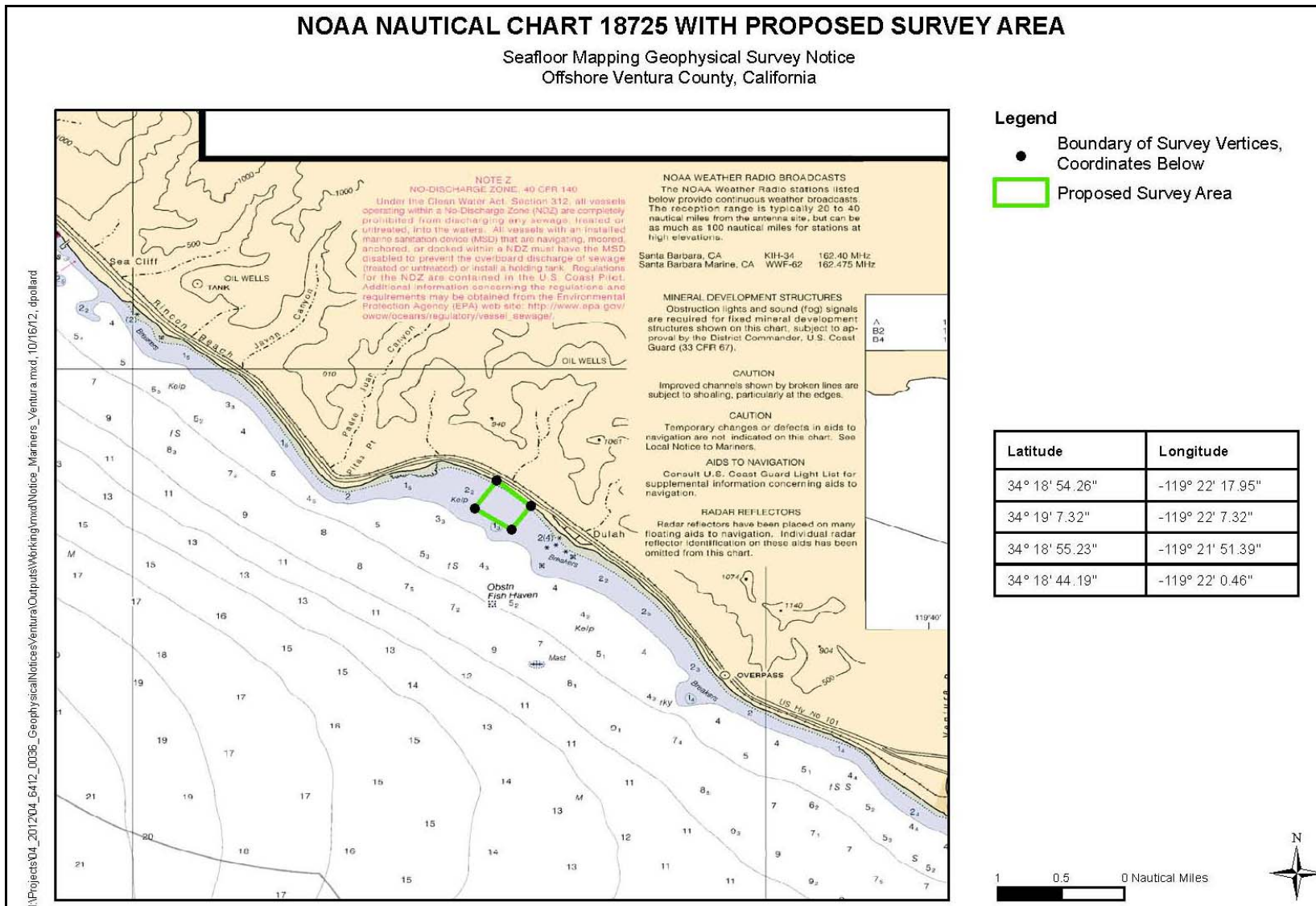


Figure 1 - Survey Area

MARINE WILDLIFE MONITORING METHODOLOGY

Transit Periods

While the survey vessel was in transit between Ventura Harbor and the project site, the onboard marine wildlife monitor was located where observations of marine wildlife could be made within an approximately 200 degree arc , centered on the direction of vessel travel. Marine wildlife observed while the vessel was transiting were noted on the monitor's reporting form and the vessel operator was informed if an animal was observed and if a collision with the animal was imminent.

Survey Periods

Once onsite and prior to initiating data collection, the onboard marine wildlife monitor was located amidships and surveyed the surrounding area while the survey crew readied the equipment for deployment. Once the survey equipment was deployed, the monitor and survey chief coordinated the startup of the equipment. The survey chief informed the monitor when the vessel was 10 minutes from the start point at which time the monitor initiated observations within the 27- m (89- ft) radius safety zone utilizing 10 X 50 reticular binoculars. One minute prior to start up of geophysical equipment, the survey chief informed the monitor and the equipment was turned on only after the monitor indicated that there was no marine wildlife (defined herein as mammals or reptiles) within the safety zone. The 27 - m (89- ft) radius safety zone was based on a previously-completed analysis of the distance between the sound source (survey equipment) and the 160 dBA re 1µPa rms sound level.

If marine wildlife was observed outside of the safety zone, the survey chief was informed and warned of possible alteration or termination of the data collection if the animals moved into the safety zone during equipment operation and displayed unusual behavior. The monitor continued observing and recording the presence and activities of marine wildlife throughout data collection. If marine wildlife approached the safety zone, the monitor notified the survey chief who informed the vessel captain and survey crew, and an alert of possible data collection termination was forwarded to all crew members. All observations were recorded on pre-printed log sheets.

Fishing Gear Clearance

In accordance with Section 4.2 of the project-specific MWCP, prior to the initiation of the data collection, the onboard monitor noted the presence of commercial fishing gear within the survey area. For each fishing buoy observed within the project site, the location, the buoy number and water depth were recorded.

RESULTS

No marine mammals were observed during transit to and from the survey site. During the pre-deployment observations, no commercial fishing gear was observed within the survey area. One harbor seal (*Phoca vitulina richardsi*) was observed outside of the safety zone during the survey period, but no marine mammals were observed within the safety zone during data collection.

SUMMARY AND CONCLUSIONS

A total of approximately 3.5 hours (1 hour in transit and 2.5 hours during data collection) of marine wildlife observations were completed during the one-day survey. A Pacific harbor seal was the only marine mammal recorded within the survey area; no marine reptiles were observed. The harbor seal did not show any detectable signs of distress and did not appear to be affected by the equipment.

In summary, the harbor seal observed during survey period is considered common within the Santa Barbara Channel, and no unusual marine mammal behavior was recorded. Based on the observations of Padre's marine wildlife monitor, and with the cooperative efforts of the Fugro survey team and vessel crew, no significant negative, survey-related effects to marine wildlife were observed.

Please feel free to contact me should you or your staff have any questions or should you require additional information.

Sincerely,
PADRE ASSOCIATES, INC.



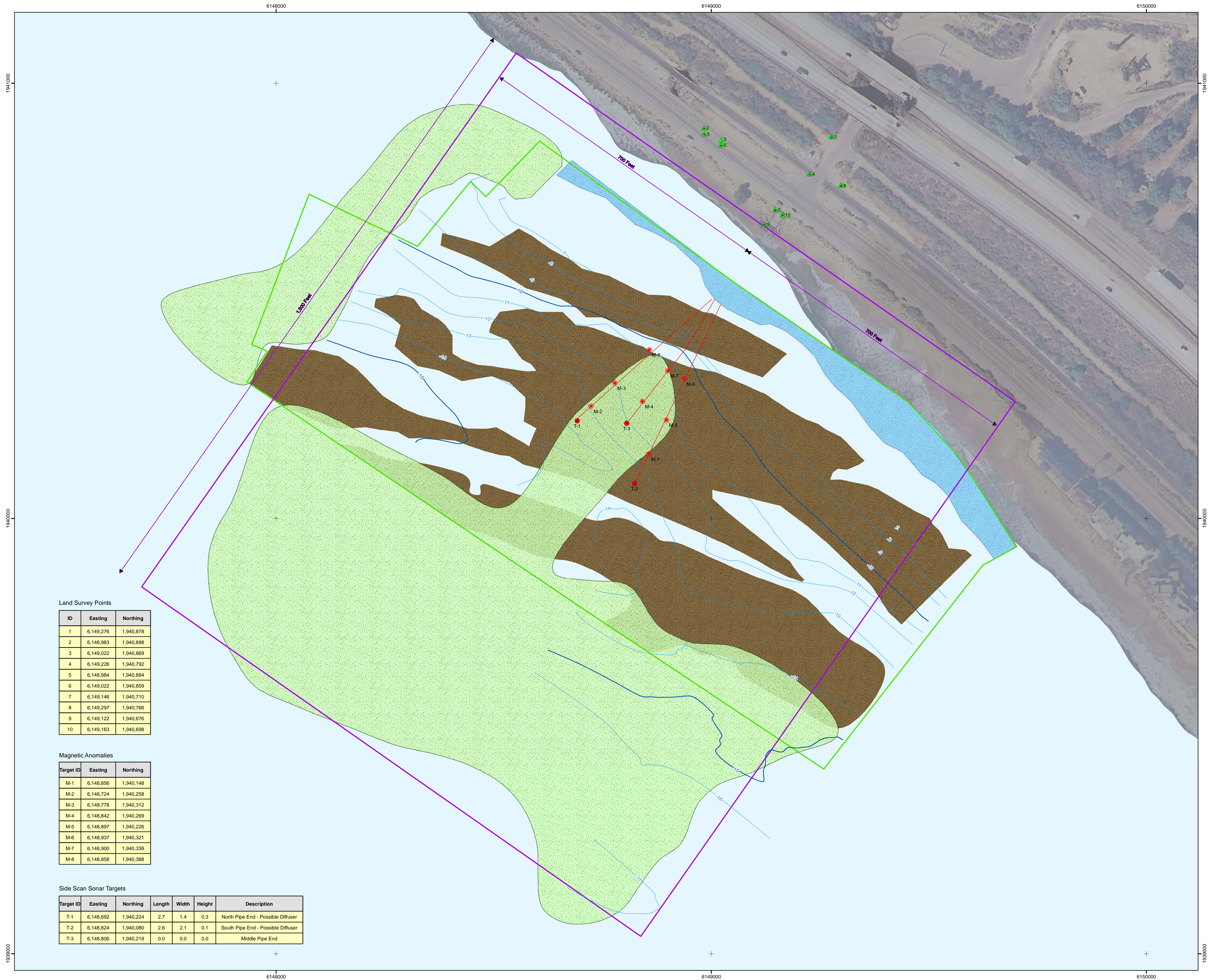
Jennifer Klaib
Staff Marine Biologist

cc: S. Poulter (Padre, Goleta)
R. de Wit (Padre, Concord)



B BATHYMETRY AND SURFICIAL FEATURES MAP

N:\Projects\04_2012\04_2012_Padre_OxyVint\Drawings\04_2012_Padre_OxyVint\04_2012_Padre_OxyVint.dwg, 12/14/12, greg



Land Survey Points

ID	Easting	Northing
1	6,149,276	1,940,878
2	6,148,983	1,940,898
3	6,149,022	1,940,869
4	6,149,226	1,940,792
5	6,148,984	1,940,884
6	6,149,022	1,940,859
7	6,149,146	1,940,710
8	6,149,297	1,940,766
9	6,148,122	1,940,876
10	6,149,163	1,940,698

Magnetic Anomalies

Target ID	Easting	Northing
M-1	6,148,856	1,940,148
M-2	6,148,724	1,940,258
M-3	6,148,778	1,940,312
M-4	6,148,842	1,940,269
M-5	6,148,897	1,940,226
M-6	6,148,937	1,940,321
M-7	6,148,900	1,940,339
M-8	6,148,858	1,940,388

Side Scan Sonar Targets

Target ID	Easting	Northing	Length	Width	Height	Description
T-1	6,148,692	1,940,224	2.7	1.4	0.3	North Pipe End - Possible Diffuser
T-2	6,148,824	1,940,080	2.6	2.1	0.1	South Pipe End - Possible Diffuser
T-3	6,148,806	1,940,219	0.0	0.0	0.0	Middle Pipe End

Legend

- Magnetic Anomaly with ID
- Side Scan Sonar Target with ID
- Land Survey Points
- Side Scan Sonar Survey Extent
- Proposed Survey Boundary
- Area of Hard Bottom
- Surf Zone
- Area of Kelp
- Map Extent (in Key Map)

Infrastructure

- Exposed Pipeline

Contours

- Major Contours, Interval = 5 Feet
- Minor Contours, Interval = 1 Foot

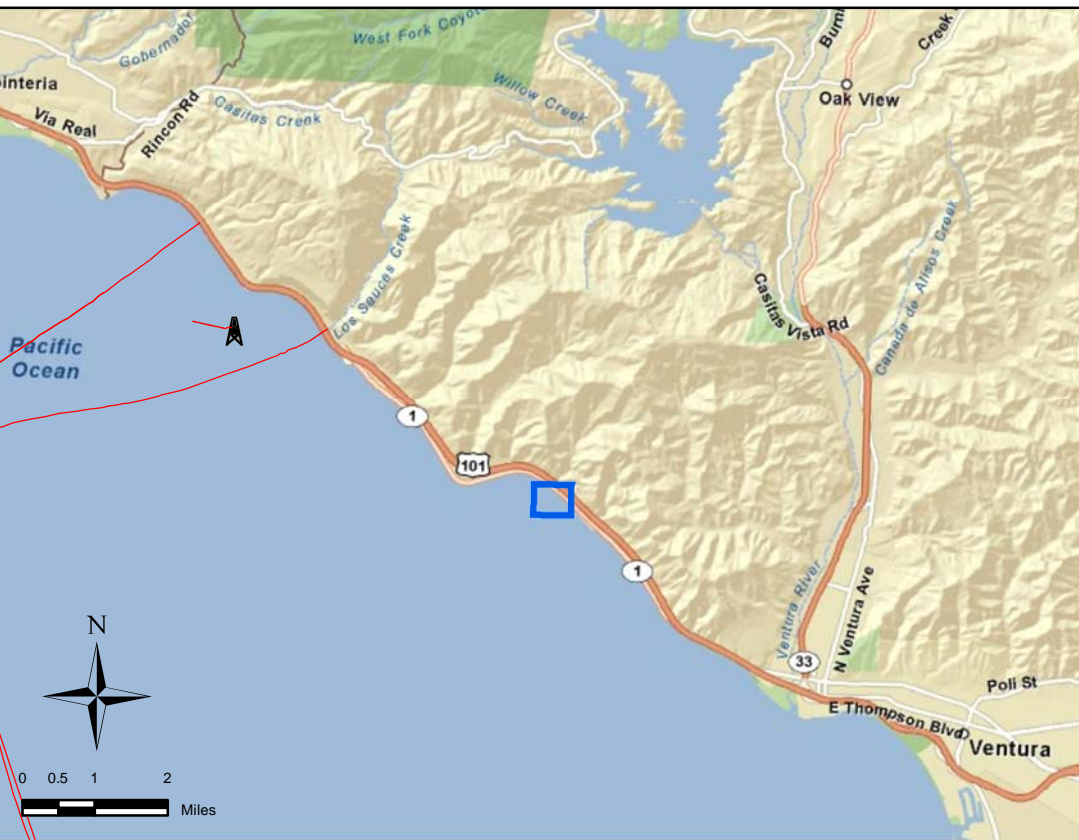
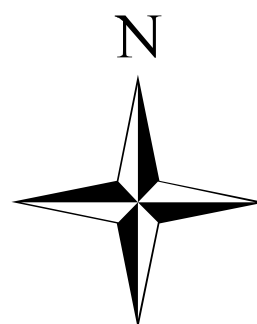
NOTES:

- Survey was conducted onboard the M/V Julie Ann on November 20, 2012.
- Bathymetric contours are mapped at 1 foot intervals and referenced to Mean Lower Low Water (MLLW).

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GEODETTIC INFORMATION

DATUM: NAD83
PROJECTION: LAMBERT CONFORMAL CONIC
CALIFORNIA COORDINATE SYSTEM
UNITS: U.S. SURVEY FEET
VERTICAL DATUM: MEAN LOWER LOW WATER (MLLW)

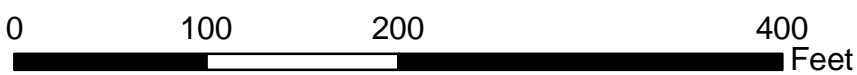


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padre
associates, inc.
ENGINEERS, GEOLOGISTS &
ENVIRONMENTAL SCIENTISTS

PADRE ASSOCIATES, INC.
OXY/VINTAGE PETROLEUM
INTAKE & DISCHARGE FACILITY
AT TAYLOR RANCH
Bathymetry and
Surficial Features
November 2012
Offshore Ventura County, California

SCALE : 1 " = 100 '



NO.	DATE:	DESCRIPTION:	DRAWN:	CHKD:	APPR:
1	Nov 2012	Bathymetry and Surficial Features	CP	AT	DES
JOB NUMBER:			CHART NO.:		

APPENDIX L

Marine Safety and Anchoring Plan



MARINE SAFETY AND ANCHORING PLAN

Introduction

This Marine Safety and Anchoring Plan (MSAP) has been developed specifically to support the marine operations that will take place during the removal and recovery of the concrete lattice box structures at the offshore ends of the intake pipelines. The purpose of this MSAP is to provide a set of procedures and protocols that will be used by L123 when executing the offshore work. The primary concerns addressed by this MSAP are personal safety, environmental safety, and vessel safety. L123 will be required to comply with U.S. Coast Guard (USCG) requirements for operations at this location.

The vessels to be used for the project and some of their key attributes are listed below:

1. The Danny C is a 77' long utility vessel. Its 3-point mooring system utilizes Bruce anchors weighing 155 lbs each.
2. The R/V JAB is a 43' long aluminum jet-drive catamaran with a 13.5 ft beam. It will not be anchored.

Operational Protocols

The following operational protocols are intended for use by L123 during the work. Notices will be issued by L123, as appropriate. At a minimum, notices shall include:

1. L123 shall file a Local Notice to Mariners with the USCG 15 days prior to the start of marine operations at the site.
2. L123 shall notify the City of Ventura Harbor Master in writing of the pending offshore operations approximately 15 days prior to the start of activities.
3. L123 shall give verbal notification to the California State Lands Commission (CSLC), California Coastal Commission (CCC) and other agencies as required by permit and certification conditions, mitigation measures and the like.

Anchor Plan

The removal of the concrete box structures at the end of each intake pipeline will be performed by a dive support vessel (DSV) with a three-point mooring system. The mooring system is explained below.

Dive Support Vessel Three-Point Mooring System. The diving support vessel will be anchored at the work areas to provide a stationary work platform. The diving support vessel will utilize a three-point mooring spread that will be deployed in pre-planned and pre-plotted anchor sets. The anchors will be deployed with assistance from the supporting anchor handling vessel. The diving support vessel may move within each anchorage to the limits of that anchorage as needed to perform work within that anchorage.



For purposes of this MSAP, an “anchorage” is defined as any combination of anchors set at predetermined locations to provide anchorage within a defined work area. For example, a three-point anchor set involves the deployment of one anchor from the bow and one anchor each from the starboard stern and port stern corners of the diving support vessel.

The anchors will anchor the diving support vessel through wire ropes (anchor wires) that are connected to anchor winches fastened to the deck of the vessel. A wire rope pennant (crown line) will be attached to the crown (bottom end) of each anchor and connected to floating buoys (crown buoys) to facilitate environmentally friendly transportation and recovery of the anchors. A combination of one anchor, the attaching anchor wire, a crown line, and a crown buoy represent one “anchor leg” (see Figure 1 – Typical Anchor Leg).

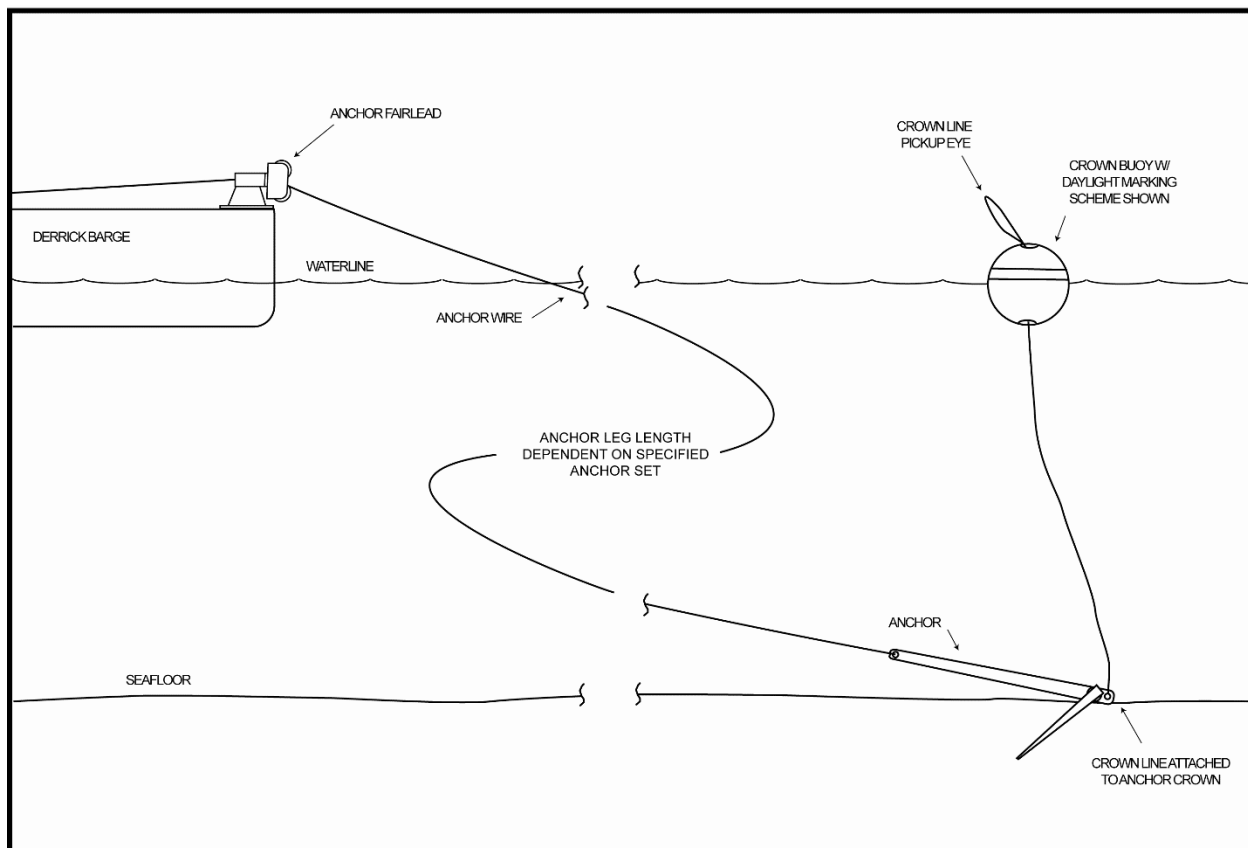


Figure 1 - Typical Anchor Leg

All anchorages have been predefined for the planned work and plotted on the anchor pre-plot drawings (See attached Proposed Anchor Positioning Plot). However, final locations and sizes of the anchorages may be adjusted as needed to suit the site conditions in existence when the work is performed. Additionally, each anchorage provides for a specific amount of lateral movement by the diving support vessel within the confines of the anchorage.



Navigation Safety Zone - Dive Support Vessel Application. L123's Project Manager will direct the placement of the anchors at pre-determined locations on the seafloor to ensure that the anchors are not endangering any hard bottom or underwater infrastructure near the offshore worksite. A navigational safety zone around the offshore worksite will be defined as an imaginary boundary drawn between each anchor crown buoy of the anchor set. The purpose of this safety zone is to provide a visual boundary that helps commercial and recreational vessels from entering the immediate work areas. The safety zone will be physically discernable at the work areas by visually sighting between the crown buoys of the anchor set. The crown buoys will be marked with appropriate colors, striping and lettering, and will be also be marked with strobe lights.

Identification of Vessels and Buoys

Marine work activities will be subject to the USCG 46 CFR Part 197 Subpart B - Commercial Diving Operations and 33 CFR 34 (Subchapter 1, Part C) – Navigational Rules, Lights and Shapes:

Diving Support Vessel. The diving support vessel will transit to the worksite under its own power. Once on site, the diving support vessel will be moored in a series of three-point anchorages. The deck of the diving support vessel will carry an integrated marine crane and other support equipment and will be equipped with deck lighting.

- 1. Daylight Marking Scheme – Anchored** - When anchored in daytime, two 3-dimensional “ball shapes” each not less than two-feet in diameter will be suspended in a vertical line at the highest point possible above the deck of the diving support vessel at the side of the vessel at which the diving operations are being conducted. In addition, two 3-dimensional “diamond shapes” each not less than two-feet in length and width will be suspended in a vertical line at the highest point possible above the deck of the diving support vessel at the side of the vessel on which another vessel may pass.
- 2. Night-Time Marking Scheme – Anchored** - When anchored at night, two “all-round” red lights in a vertical line will be displayed at the side of the vessel at which the diving operations are being conducted. Two “all-round” green lights in a vertical line will be displayed at the side of the diving support vessel on which another vessel may pass. In addition, the deck shall be lighted with deck illumination lights as needed.

Crown Buoys. The diving support vessel will be equipped with a three-point mooring system that will be deployed during the work. Each anchor of the mooring systems will be equipped with a crown wire (wire rope) and crown buoy for use in placing the anchor and recovering the anchor. The crown wire is attached to the bottom (crown) of the anchor and is used to pull an anchor backwards when recovering an anchor and to lift an anchor off the seafloor. The anchor wire attached to the anchor stock (top of the anchor) is used to set the anchor and moor the vessel. The crown buoy holds the top end of the crown line at the water surface where it can be accessed by the anchor support vessel to facilitate recovery of the anchor.

The crown buoys that will be used with the dive support vessel will consist of orange plastic buoys (Norfloats or equivalent) and will have no markings except for the orange color of the buoys. These soft plastic crown buoys will not be marked with strobe lights at night.



Other Support Vessels. Any other support vessels if needed will be lighted with navigational lighting as required by regulations for night-time operations (sidelights and a stern light) if required. No other markings will be needed as these vessels will not be used to tow vessels.

The support vessel and buoys will be marked in accordance with the United States Code of Federal Regulations, Title 33, Chapter 34, Subchapter I, Part C and the publication titled Private Aids to Navigation. If soft buoys are used as crown buoys or mooring buoys, the buoys shall be constructed of orange or red plastic buoys without markings.

General Anchoring Procedures

The following general anchoring procedures will be used in deploying and recovering all anchors used to support the offshore segment work.

Surface Navigation and Pre-Plots. The Differential Global Positioning System (DGPS) system will be deployed on the diving support vessel and will be operated by a full-time professional hydrographic surveyor. DGPS is an enhancement to standard global positioning systems that provides improved location accuracy, from the 15-meter nominal GPS accuracy to about 10 cm in case of the best implementations. DGPS equipment will be equipped with sub-meter accuracy to locate the required positions. All previous pipeline, bathymetric and geophysical survey data obtained in support of this decommissioning project will be pre-programmed into this DGPS system before the onsite work begins. The planned anchorages for the moorings will also be pre-programmed into the DGPS system. A backup system and uninterruptible power source will be provided.

The full-time professional hydrographic surveyors will be utilized throughout the project to position anchors and record every location of same when placed, to monitor for anchor slippage, and to position the marine work spread at the planned anchorages.

Real Time Display. The existing site data will be viewed by the hydrographic surveyor on a computer display located in the wheelhouse of the vessel and real-time positioning of the vessel will be superimposed over the existing site data. The display will update approximately every 0.5 second and the vessel operator will be able to view the display along with the hydrographic surveyor, piloting the vessel to the exact locations required.

Anchor Deployment. Except for the first anchor, all diving support vessel anchors will be deployed and recovered by an anchor handling vessel utilizing the basic procedures described in this section. The first anchor may be lowered from the diving support vessel to the seafloor at a pre-designated anchor location, but all other anchors must be taken from the diving support vessel by the anchor handling vessel and transported (flown) to their pre-designated locations and lowered to the seafloor by the anchor handling vessel.

Transporting Anchors to and from Each Anchorage. The anchor handling vessel will "fly" the anchors from the diving support vessel to the pre-designated anchor locations specified. Flying anchors is an anchoring procedure in which the anchor is carried or suspended by the anchor handling vessel using the anchor's crown line and buoy and carried to the pre-designated anchor location for placement. During deployment, each anchor is lowered by the crown line into place at the pre-designated site and raised vertically by the crown line with the anchor handling





vessel winch for transport back to the diving support vessel when the anchors are "weighed" (recovered). Flying anchors to and from their locations eliminates unnecessary anchor wire contact with the seafloor. It should be noted that at no time will the anchors be dragged across the seafloor.

Crown Lines and Moving Anchors. In this application, the "crown line" shall consist of a wire rope pennant with one end attached to the crown or base of the anchor stock and the other end attached to a floating crown buoy. Use of a crown line enables the anchor handling vessel to slip (trip) an anchor backwards out of its set rather than having the diving support vessel righting the anchor with the anchor wire during the anchor weighing process. Recovering anchors by utilizing crown lines generally disturbs the seafloor less than weighing the anchor vertically with the anchor wire or chain.

Crown Buoys and Marine Safety Zone. Each anchorage will consist of anchors deployed at three points around the diving support vessel. The crown buoys floating above these anchors will serve as visually indicators of a safety zone consisting of an approximately 500-foot imaginary line offset from the crown buoy around the marine construction work. The safety zones will be described in the Notice to Mariners and a thorough description of the crown buoys provided.

Marine Communications Plan

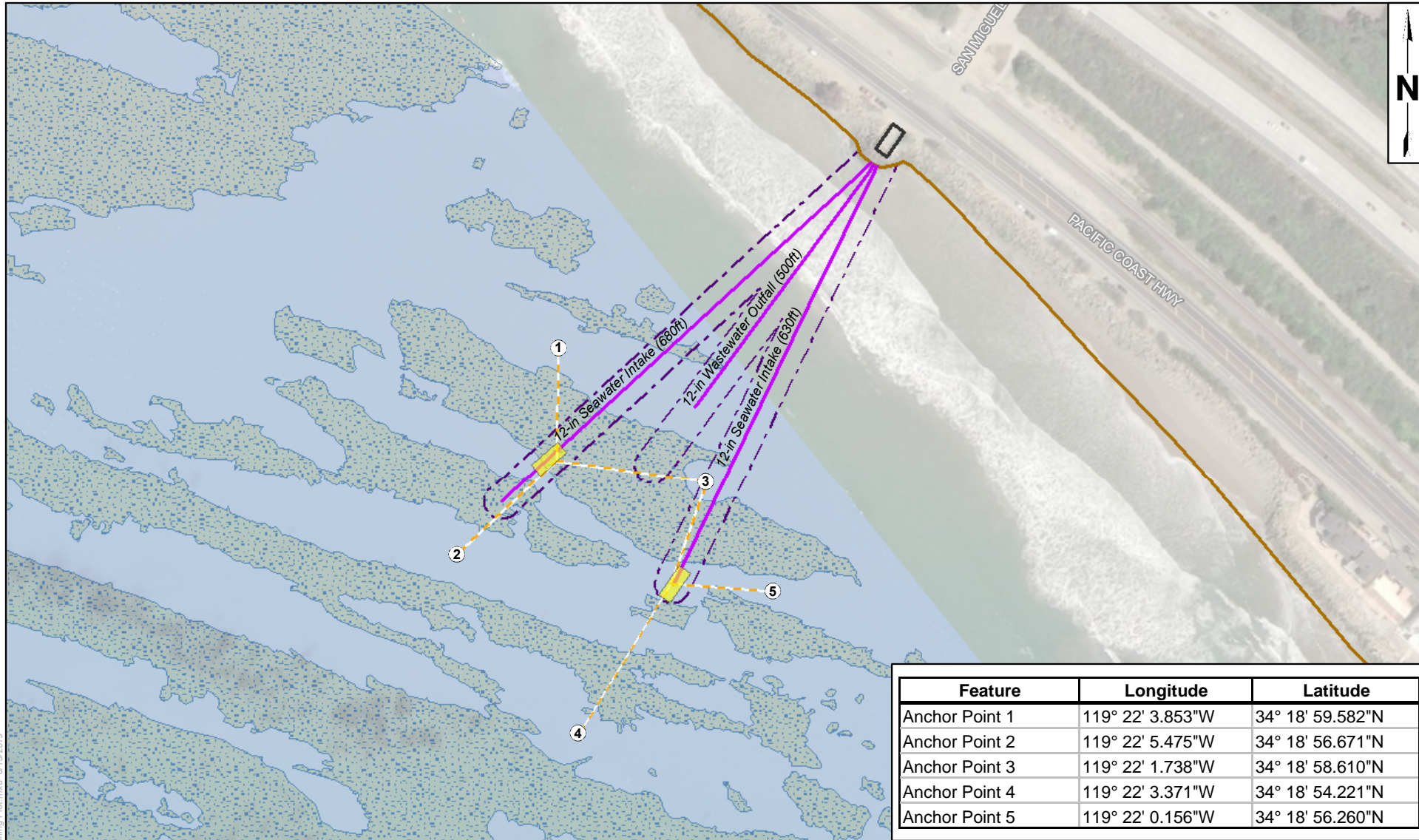
This marine communications plan will be used by the marine work vessels to communicate with each other, to communicate with vessel traffic in and around the offshore worksite and to communicate with the Channel Islands USCG Station. Radio communications will be conducted using VHF-FM marine band radios between ship and shore. The barge and all vessels will monitor channel 16. Inter-project ship-to-shore communications may also be conducted via cell phone.

USCG Local Notice to Mariners

Approximately 15 days prior to the start of marine operations, L123 will submit the Local Notice to Mariners (LNM) to the U.S. Coast Guard for publication. Except for the dates which are subject to change, the notice will read as follows:

"Longitude 123, Inc. is conducting underwater operations in Ventura, California from February 1 to February 28, 2020 near position 34-18-54N 119-22-30W. The dive support vessel M/V Danny C will be moored using a three-point mooring configuration. The M/V Danny C anchors will be marked by orange plastic crown buoys. All vessels are requested to maintain a minimum safe distance of 500 feet outside of the boundaries of the floating crown buoys. All project vessels will monitor VHF-FM Chan. 16. All Mariners are requested to transit the surrounding area with caution and all vessels approaching the moored work vessels must receive radio permission from the diving supervisor on the derrick barge before entering the 500-foot safety zone. For more details or comments contact Scot Anderson at 805-796-1235."



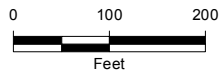


Feature	Longitude	Latitude
Anchor Point 1	119° 22' 3.853"W	34° 18' 59.582"N
Anchor Point 2	119° 22' 5.475"W	34° 18' 56.671"N
Anchor Point 3	119° 22' 1.738"W	34° 18' 58.610"N
Anchor Point 4	119° 22' 3.371"W	34° 18' 54.221"N
Anchor Point 5	119° 22' 0.156"W	34° 18' 56.260"N

LEGEND:

- ⊕ Proposed Anchor Point Location
- - - Proposed Anchor Line
- Dive Vessel
- Approximate Pipeline Location (to be fully removed)
- - - Approximate Disturbance Area
- 20ft x 40ft Concrete Vault
- ⬢ Rocky Outcropping
- Sand
- Mean High Water Mark (MHWM)

Source: Esri Online Imagery Basemap, NOAA, eTrac, Longitude 123
 Coordinate System: NAD 1983 UTM Zone 11N
 Notes: For the purposes of this map, the NOAA defined shoreline is assumed to be consistent with the MHWM line. No field studies were done to establish the MHWM line.
 ft = Feet
 This map was created for informational and display purposes only.



padre
 associates, inc.
 ENGINEERS, GEOLOGISTS &
 ENVIRONMENTAL SCIENTISTS

PROJECT NAME: CRC - DECOMMISSIONING OF
 GRUBB LEASE INTAKE/OUTFALL STRUCTURE
 VENTURA COUNTY, CA
 PROJECT NUMBER: 1802-2271
 DATE: June 2019

PROPOSED ANCHOR POSITIONING PLOT

APPENDIX M

Noise and Vibration Modeling

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 10/28/2019
Case Description: Grubb Lease offshore

**** Receptor #1 (southern residence)****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
-----	-----	-----	-----	-----
South residence	Residential	65.0	60.0	55.0

Description	Impact Device	Equipment		Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
		Usage (%)	Spec Lmax (dBA)			
Compressor (air)	No	40		77.7	850.0	0.0
Crane	No	16		80.6	850.0	0.0
Generator	No	50		80.6	850.0	0.0
Boring Jack Power Unit	No	50		83.0	850.0	0.0

Results

[illegible]

**** Receptor #2 (northern residence) ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
North residence	Residential	65.0	60.0	55.0

Equipment

	Impact	Usage	Spec	Actual	Receptor	Estimated
Description	Device	(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Compressor (air)	No	40		77.7	1450.0	0.0
Crane	No	16		80.6	1450.0	0.0
Generator	No	50		80.6	1450.0	0.0
Boring Jack Power Unit	No	50		83.0	1450.0	0.0

Results

[illegible]

Caltrans Transportation and Construction Vibration Guidance Manual

Project Name: Grubb Lease Decommissioning

Scenario: Onshore pipe removal

Select Input Values

Source Levels (PPV)		Damage Criteria (Lv)	
		<u>Human: continous, frequent intermittent sources</u>	
Vibratory roller	0.210	Barely perceptible	0.01
Large bulldozer	0.089	Distinctly perceptible	0.04
Caisson drilling	0.089	Strongly perceptible	0.1
Loaded trucks	0.076	Severe	0.4
Jackhammer	0.035		
Small bulldozer	0.003		
Crack & seat operations	2.4	<u>Structures: continous, frequent intermittent sources</u>	
		Fragile buildings	0.1
		Historic & some old buildings	0.25
		Older residential	0.3
		New residential	0.5
		Modern comecial & industrial	0.5

Soil Material Values

Weak, soft, loose soil	1.4
Competent soils	1.3
Hard compacted soils	1.1
Hard competent bedrock	1.0

Project Data

Source Level	0.089
Soil material (n):	1.3
Distance to receptor(feet)	750

Results

PPV at receptor	0.00107
-----------------	---------