Final

Environmental Impact Report
for the
Becker and Legacy Wells Abandonment and Remediation Project

SCH Number: 2016101008
CSLC EIR Number: 792; W30214

Lead Agency:
California State Lands Commission

July 2017

MISSION STATEMENT

The California State Lands Commission provides the people of California with effective stewardship of the lands, waterways, and resources entrusted to its care through preservation, restoration, enhancement, responsible economic development, and the promotion of public access.

CEQA DOCUMENT WEBSITE

www.slc.ca.gov/Info/CEQA.html

Project Geographic Location:

Latitude: 34.419807
Longitude: 119.603642

NAD 83 Datum

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Gaemus Collins, Planck Aerosystems

The cover photo was taken from a drone offshore Summerland Beach. The picture shows conditions at the time of the drone flight with additional computer vision processing using filters to highlight oil sheen detection.

Document prepared in coordination with:

mrs
Marine Research Specialists

TABLE OF CONTENTS

PART I. PREFACE TO THE FINAL ENVIRONMENTAL IMPACT REPORT

PART II. RESPONSES TO COMMENTS

PART III. REVISIONS TO THE DRAFT ENVIRONMENTAL IMPACT REPORT

LIST OF APPENDICES

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVATIONS AND ACRONYMS

	°F	Degrees Fahrenheit
	μPa	Micropascal
A	AB	Assembly Bill
	AP	Alquist-Priolo
	APCD	Air Pollution Control District
	APM	Applicant Proposed Measure
	APN	Assessor Parcel Number
	ATC	Authority To Construct
B	B	Beneficial
	BACT	Best Available Control Technology
	BD	Beach Development
	BFW	Base-of-fresh-water
	BMP	Best Management Practices
	BOEM	Bureau of Ocean Energy Management
	BOPD	Barrels of Oil Per Day
	BOPE	Blowout Preventer Equipment
C	CAAQS	California Ambient Air Quality Standards
	Caltrans	California Department of Transportation
	CAPCOA	California Air Pollution Control Officers Association
	CARB	California Air Resources Board
	CCC	California Coastal Commission
	CCIC	Central Coast Information Center
	CDFW	California Department of Fish and Wildlife
	CDIP	Coastal Data Information Program
	CDP	Coastal Development Permit
	CEQA	California Environmental Quality Act
	CFC	Chlorofluorocarbon
	CH_4	Methane
	Channel	Santa Barbara Channel
	CINMS	Channel Islands National Marine Sanctuary
	CLUP	Coastal Land Use Plan
	CNEL	Community Noise Equivalent Level
	CO	Carbon Monoxide
	CO_2	Carbon Dioxide
	CO_2e	Carbon Dioxide Equivalent
	CRHR	California Register of Historical Resources
	CSLC	California State Lands Commission
	CUP	Conditional Use Permit
D	dB	Decibels

	dBA	A-Weighted Decibel
	dB_{peak}	Peak Noise Level
	dB_{rms}	dB Root Mean Square
	DO	Dissolved Oxygen
	DOGGR	California Division of Oil, Gas, and Geothermal Resources
	DPM	Diesel Particulate Matter
E	ECAP	Energy and Climate Action Plan
	EIR	Environmental Impact Report
	EMT	Ellwood Marine Terminal
	EOF	Ellwood Onshore Facility
	ERM	Emission Reduction Measure
	ESH	Environmentally Sensitive Habitat
	ESHA	Environmentally Sensitive Habitat Area
F	FAA	Federal Aviation Administration
	FESA	Federal Endangered Species Act
	FTA	Federal Transit Administration
G	GDP	Gross Domestic Product
	GHG	Greenhouse Gas
	GP	General Plan
	GPS	Global Positioning System
	GWP	Global Warming Potential
H	H_2S	Hydrogen Sulfide
	HFC	Hydrofluorocarbon
	HOV	High Occupancy Vehicle
	Hz	Hertz
I	in/sec	Inches Per Second
	IPCC	Intergovernmental Panel on Climate Change
L	LACM	Los Angeles County Museum of Natural History
	LCP	Local Coastal Program
	L_{dn}	Day-Night Average Noise Level (Using A-Weighting)
	Leq	Equivalent Sound Level (Using A-Weighting)
	Lpk	Peak Sound Level (Without A-Weighting)
	LTS	Less Than Significant
	LTSM	Less Than Significant with Mitigation
M	MM	Mitigation Measure
	MMP	Mitigation Monitoring Program
	MMPA	Marine Mammal Protection Act
	MMS	Minerals Management Service
	MMSCFD	Million Standard Cubic Feet Per Day
	MND	Mitigated Negative Declaration

	MPA	Marine Protected Area
	$MTCO_2e$	Metric Tons of Carbon Dioxide Equivalent
N	N_2O	Nitrogen Oxide
	NAAQS	National Ambient Air Quality Standards
	NAHC	Native American Heritage Commission
	NI	No Impact
	Nm	Nautical Miles
	NMFS	National Marine Fisheries Service
	NO_2	Nitrogen Dioxide
	NOAA	National Oceanic and Atmospheric Administration
	NOP	Notice of Preparation
	NO_x	Nitrogen Oxide
	NPDES	National Pollutant Discharge Elimination System
O	O_3	Ozone
	OEHHA	Office of Environmental Health Hazard Assessment
	OGPP	Oil and Gas Production Pipeline
	OSMP	Open Space Management Plan
	OSPR	Office of Spill Prevention and Response
P	PAAPLP	Plains All American Pipeline
	Pb	Lead
	PCH	Pacific Coast Highway
	PFC	Perfluorocarbon
	pH	Hydrogen Ion Concentration
	$PM_{2.5}$	Fine Particulate Matter (Less Than 2.5 Microns in Diameter)
	PM_{10}	Particulate Matter (Less Than 10 Microns in Diameter)
	POOL	Pacific Operators Offshore LLC
	PPB	Parts Per Billion
	PPE	Personal Protective Equipment
	PPM	Parts Per Million
	PPV	Peak Particle Velocity
	Project	Becker and Legacy Wells Abandonment and Remediation Project
	PSIA	Per Square Inch Atmosphere
	PTS	Permanent Threshold Shift
R	REL	Reference Exposure Level
	ROC	Reactive Organic Compound
	RWQCB	Regional Water Quality Control Board
S	SBCAG	Santa Barbara County Association of Governments
	SBCAPCD	Santa Barbara County Air Pollution Control District
	SBCFD	Santa Barbara County Fire Department
	SCAQMD	South Coast Air Quality Management District

	SCB	Southern California Bight
	SF_6	Sulfur Hexafluoride
	SHPO	California State Historic Preservation Officer
	SLCP	Short Lived Climate Pollutant
	SMCA	State Marine Conservation Area
	SO_2	Sulfur Dioxide
	SU	Significant and Unavoidable
	SVP	Society of Vertebrate Paleontology
	SYU	Santa Ynez Unit
T	TAC	Toxic Air Contaminant
	TTS	Temporary Threshold Shift
U	UCMP	University of California Museum of Paleontology
	UPRR	Union Pacific Railroad
	USACE	U.S. Army Corps of Engineers
	USCG	U.S. Coast Guard
	USEPA	U.S. Environmental Protection Agency
	USFWS	U.S. Fish and Wildlife Service
	USGS	U.S. Geological Survey
V	VCAPCD	Ventura County Air Pollution Control District
	VMC	Visual Modification Class
	VPD	Vehicles Per Day

FREQUENTLY USED TERMS

Abandonment – The permanent plugging of a dry hole or of a well that no longer produces petroleum or is no longer capable of producing petroleum profitably.

Annulus – Any void between any piping, tubing or casing and the piping, tubing, or casing immediately surrounding it.

Bathymetric Survey – The measurement of depth of water in oceans, seas, or lakes.

Best Available Control Technology (BACT) – A pollution control standard mandated by the United States Clean Air Act.

Blowout Preventer – A large, specialized valve or similar mechanical device, used to seal, control and monitor oil and gas wells to prevent blowout, the uncontrolled release of crude oil and/or natural gas from well.

Borehole (well bore) – A narrow shaft bored in the ground; in a simple sense, completed by installing a vertical pipe (casing) and well screen to keep the borehole from caving. These can be extended by the drill rig rotating a drill string (described below) with a bit attached.

Casing – Steel pipe cemented in place during the construction process to stabilize the borehole. The casing forms a major structural component of the borehole and serves several important functions: preventing the formation wall from caving into the wellbore, isolating the different formations to prevent the flow or crossflow of formation fluid, and providing a means of maintaining control of formation fluids and pressure as the well is drilled.

Cement Retainer – A tool (composed primarily of slips, a ported mandrel, and rubber sealing elements) set in the casing which allows cement or other fluids to be pumped through the tool, but seals against any fluid movement when the tubing is released from the tool.

Circulating Liquids/Fluids – Any of a number of liquid and gaseous fluids and mixtures of fluids and solids (as solid suspensions, mixtures and emulsions of liquids, gases and solids) used in operations to drill boreholes into the earth.

Coiled Tubing Unit – A very long metal pipe, normally 1 to 3.25 in (25 to 83 mm) in diameter which is supplied spooled on a large reel. IN well drilling, the tool string at the bottom of the coil is often called the bottom hole assembly (BHA). It can range from something as simple as a jetting nozzle, for jobs involving pumping chemicals or cement through the coil, to a larger string of well bore cleanout tools or logging tools, depending on the operations.

Cofferdam – A temporary enclosure constructed to allow the confined area to be pumped or cleaned out. This creates dry work environment for major works to be proceeded. Generally made of sheet piles.

Crude oil – A naturally occurring, unprocessed, yellow to black liquid found in geological formations beneath the Earth's surface, which can be refined into various types of fuels.

Decommissioning – The process followed by the owner/operator of an offshore oil and/or gas facility to plan for, gain approval, and then implement the removal, disposal, or reuse of the platform structure, equipment, and associated pipelines and wells.

De-watering – The process of removing water from water-base drilling mud.

Drill cuttings – The broken bits of solid material removed from a borehole drilled by rotary, percussion, or auger methods.

Drill mud – A mix of clay and water with additional chemicals that are project-specific to provide the correct physical and chemical characteristics required to safely drill the well. Drill muds are used to circulate through the borehole to remove drill cuttings, clean out the borehole and provide for well control.

Hydrogen sulfide (H_2S) – A highly toxic gas sometimes associated with crude oil and gas in a reservoir.

Jack-up Barge – A type of mobile platform that consists of a buoyant hull fitted with a number of movable legs, capable of raising its hull over the surface of the sea.

Leakage – Slow release of fluids through cracks in a reservoir or through or around a well casing.

Legacy well – A well that does not have a clear ownership history or responsible party designation.

Loader – A front loader used in construction activities.

Logging Skid – A device used to examine the inside of a well casing and provide information on the condition of a well.

Perforations – Holes made in the casing, cement, and formation through which formation fluids enter a wellbore or through which cement can be “squeezed” into the area outside of a well casing at a specific location. Usually several perforations are made at a time.

Perforator – A device fitted with shaped charges or bullets that is lowered to the desired depth in a well and fired to create penetrating holes (perforations) in casing, cement, and formation.

Pier Piling – One or more poles or posts driven into the bottom of a waterway to serve as support for an aid to navigation or for a dock.

Pile Driver (Vibratory) – A machine for driving piles into the ground using vibrations and weight.

Pile Driver (Impact) – A machine for driving piles into the ground using an impact hammer raised and dropped to drive the device into the soil.

Plug (e.g., Zone Plug, BFW Plug, Surface Plug) – A watertight, gastight seal installed in a bore hole or well to prevent movement of fluids.

Pressurization – A technique used to maintain the fluid column hydrostatic pressure to prevent influx of formation fluids into the wellbore.

Produced water – Water that is produced as a byproduct along with the oil and gas from crude emulsion. Oil and gas reservoirs often have water as well as hydrocarbons, sometimes in a zone that lies under the hydrocarbons, and sometimes in the same zone with the oil and gas.

Quitclaim – The transfer of ownership of real estate from one person to another. Quitclaim deeds often are used when property isn't sold.

Reservoir (oil and/or gas reservoir) – A subsurface pool of hydrocarbons contained in porous or fractured rock formations.

<u>Riser - A pipe attached to the end of a well casing allowing the extension of the well casing to allow for access to the well without the impact of ocean waves, water, sand or soils.</u>

Seeps (natural seeps) – A natural location from where gaseous or liquid hydrocarbons flow to the earth's surface.

Shaker Pit – A device used to separate out the drill cutting from the muds by vibratory means.

Sheet Pile – A pile that is pressed or molded from sheet metal or vinyl so as to interlock with other such piles to form a retaining wall or other piling installation

Sheen – Very thin layer of oil floating on the water surface; this is the most common form of oil seen in the later stages of a spill.

Sorbants – A substance that has the property of collecting molecules of another substance by absorption and adsorption.

String (drill string) – An assembled length of steel pipe configured to suit a specific wellbore. The sections of pipe are connected and lowered into a wellbore.

Washover Pipe – An accessory used in well maintenance operations to go over the outside of tubing or drill pipe stuck in the hole because of cuttings, mud, and so forth, that have collected in the annulus. The washover pipe cleans the annular space and permits recovery of the pipe. It is sometimes called washpipe.

Wellhead – The system of spools, valves, and assorted adapters that provide pressure control of a production well.

Wireline Skid Unit – A cable system used to lower tools or logging units into a well bore.

Workover – Refers to any kind of oil well maintenance and intervention involving invasive techniques, such as wireline or coiled tubing. This may involve remedial operations such as removing and replacing the production tubing string.

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California State Lands Commission

PART I – PREFACE

Final Environmental Impact Report for the Becker and Legacy Wells Abandonment and Remediation Project, July 2017

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PART I. PREFACE TO THE FINAL ENVIRONMENTAL IMPACT REPORT

PURPOSE

This document is the Final Environmental Impact Report (EIR) for the Becker and Legacy Wells Abandonment and Remediation Project (Project). The Final EIR has been prepared for consideration by the California State Lands Commission (CSLC), as the lead agency for this Project, pursuant to the California Environmental Quality Act (CEQA) and in accordance with the State CEQA Guidelines (Pub. Resources Code, § 21000 et seq. and Cal. Code Regs., tit. 14, § 15000 et seq.).

ORGANIZATION OF THE FINAL EIR

The Final EIR, reproduced for convenience in one document, replaces the May 2017 Draft EIR. Consistent with State CEQA Guidelines section 15132, the Final EIR consists of the following elements:

- **Part I –** Preface
- **Part II –** Comments and Responses to Comments received on the Draft EIR during the 45-day public comment period, including a list of persons, organizations, and public agencies that provided comments on the Draft EIR
- **Part III –** Revisions to the Draft EIR and any other information added to the EIR by the CSLC as lead agency. Part III includes the entire text of the Draft EIR, as revised, including revisions to the text of the Draft EIR in response to comments received or for reasons that include: to update information; to refine discussions and resolve internal inconsistencies; and to make minor format changes. Some changes have resulted in a shifting of text from one page to another. Except for minor format changes, all revisions to the Draft EIR are shown as follows:
  - Additions to the text of the Draft EIR are underlined
  - Deletions of the text of the Draft EIR are shown as ~~strikeout~~

The Final EIR may be viewed at the following repository locations and on the CSLC website (http://www.slc.ca.gov/Info/CEQA/Becker.html).

Library:	**Local Government Offices:**	
Santa Barbara Public Library 40 E. Anapamu St. Santa Barbara, CA 93101 (805) 962-7653	City of Carpinteria Attn: Steve Goggia 5775 Carpinteria Ave. Carpinteria, CA 93013 (805) 755-4414	County of Santa Barbara Attn: Peter Cantle 123 E. Anapamu St. Santa Barbara, CA 93101 (805) 568-2519

CSLC Offices:	
California State Lands Commission Attn: Steve Curran 200 Oceangate, 12th Floor Long Beach, CA 90802 (562) 590-5266	California State Lands Commission Attn: Eric Gillies 100 Howe Ave., Suite 100-South Sacramento, CA 95825 (916) 574-1897

PROJECT DESCRIPTION

The CSLC proposes to abandon and remediate the Becker and potentially other onshore wells on the beach below the bluff at Lookout Park in Summerland. The legacy oil wells in the project area date back to the 1890s and early 1900s and are known to leak oil on the beach and ocean. CSLC staff conducted an assessment of the well in fall 2015 (Phase 1) and developed an engineering work plan to properly abandon the Becker well, which is Phase 2 of the Project and subject to this EIR. The full project description is provided in Section 2 of the EIR.

DECISION-MAKING PROCESS

The State CEQA Guidelines stipulate that an EIR must be prepared for any project carried out or approved by a State or local public agency that may have a significant impact on the environment. CSLC has determined the following:

1) The Becker and Legacy Wells Abandonment and Remediation Project is a "project" as defined by the State CEQA Guidelines
2) The Project may have a significant impact on the environment
3) An EIR is required

The CSLC will use this Final EIR as part of its review process, including determining whether or not to approve the Project. If the EIR is certified and the Project approved, mitigation measures will be adopted as part of the approval and incorporated as conditions of Project implementation. The CSLC must certify that:

- The Final EIR has been completed in compliance with CEQA
- The Final EIR was presented to the CSLC in a public meeting and the CSLC reviewed and considered the information contained in the Final EIR prior to considering the proposed Project
- The Final EIR reflects the CSLC's independent judgment and analysis

(State CEQA Guidelines, § 15090)

If the CSLC decides to certify the Final EIR and approve the Project, the CSLC must make one or more written findings of fact for each significant environmental impact identified in the document. The possible findings are:

- The Project has been changed (including adoption of mitigation measures) to avoid or substantially reduce the magnitude of the impact
- Changes to the Project are within another agency's jurisdiction and have been or should be adopted by such other agency
- Specific considerations make mitigation measures or alternatives infeasible

(State CEQA Guidelines, § 15091)

If any impacts identified in the EIR cannot be reduced to a level that is less than significant, the CSLC may issue a Statement of Overriding Considerations for Project approval if specific social, economic, or other factors justify the Project's unavoidable adverse environmental effects. If the CSLC approves a project for which a Final EIR has been prepared and certified, the CSLC will issue a Notice of Determination.

PROJECT CEQA CHRONOLOGY

The following is a brief chronology of the CEQA review process associated with the proposed Project (see also Part III, Section 1.2, *Overview of the Environmental Review Process*, of the Final EIR).

October 4, 2016. The Notice of Preparation (NOP) and Notice of Public Scoping Meeting was published. The environmental setting existing at the time the NOP is published normally constitutes the baseline physical conditions by which a lead agency determines whether an impact is significant (State CEQA Guidelines, § 15125, subd. (a)). Six written comment letters were received during the public review period.

October 20, 2016. A scoping meeting was held at 2:00 p.m. in the city of Carpinteria. At this meeting, the public and interested agencies were informed about the proposed Project and had the opportunity to provide recommendations for the scope and content of the environmental analysis; 12 speakers provided comments at the meeting.

May 19, 2017 – July 5, 2017. The Draft EIR was released for a 45-day public review with comments accepted by mail, email, and in person at a public meeting. Nine written comments were received.

June 7, 2017. A public meeting on the Draft EIR was held at 2:00 p.m. in the city of Carpinteria. At this meeting, attendees had the opportunity to ask questions about, and present oral or written testimony on, the Draft EIR and its contents. Six speakers provided comments at the meeting.

July 2017. In preparing this Final EIR, CSLC staff obtained additional information as needed to respond to comments, responded to all comments received, and revised the Draft EIR (see Final EIR Parts II and III). The CSLC hearing on the Final EIR and action on the proposed Project is scheduled for August 17, 2017. (See www.slc.ca.gov for further information on meeting time and location when they become available.)

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California State Lands Commission

PART II – RESPONSES TO COMMENTS

Final Environmental Impact Report for the Becker and Legacy Wells Abandonment and Remediation Project, July 2017

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PART II. RESPONSES TO COMMENTS

Pursuant to State California Environmental Quality Act (CEQA) Guidelines section 15088, the California State Lands Commission (CSLC), as CEQA lead agency, is required to evaluate comments on environmental issues received from persons who reviewed the Draft Environmental Impact Report (EIR) prepared for the Becker and Legacy Wells Abandonment and Remediation Project (Project) and to prepare a written response. The lead agency must respond to comments that it received during the noticed comment period and may respond to late comments. The State CEQA Guidelines further require the lead agency to describe in its written response the disposition of significant environmental issues raised (e.g., revisions to the proposed project to mitigate anticipated impacts or objections). If the lead agency's position varies from recommendations and objections raised in the comments, the agency must address the major environmental issues raised and give details why any specific comments and suggestions were not accepted.

Part II of this Final EIR contains copies of comment letters and oral comment (excerpts from the transcripts of the public meeting) and the CSLC's responses. Nine written comment letters were submitted in response to the Draft EIR during the public review period (Table II-1). Seven speakers provided oral comments at a public meeting on the Draft EIR held by CSLC staff on June 7, 2017 (Table II-2).

Subpart II.A provides the comment letters and responses to significant environmental issues raised in individual comments. Responses to comments are presented in the order listed in Table II-1 and Table II-2 and are organized as follows:

- Each commenter is given a unique comment set number and associated comment identification (ID) numbers for each specific comment. The comment set includes all written and/or oral comments provided by that commenter.
- Individual comments are numbered in the margins of each comment letter and/or oral comment transcript; correspondingly numbered responses follow each comment set.

Part III contains the complete EIR with revisions to the text of the Draft EIR shown in strikeout and underline that were made in response to comments that required changes or for the reasons stated on page I-1. The following conventions are used to indicate how the Draft EIR text was changed during EIR finalization in Part III of this Final EIR:

- <u>Underlined text</u> represents text added to the EIR (in some cases moved from another location in the document, in other cases new text).
- ~~Strikeout text~~ represents text removed from that location in the EIR (in some cases moved elsewhere, in other cases removed entirely).

Table II-1 summarizes written comment sets submitted during the public comment period. Written comments are listed in the order received for each category.

Table II-1 Written Comments Provided on Draft EIR and Comment Identification Numbers Used in this Final EIR

Name of Commenter	Date	Comment at Public Meeting	Comment	
			Set #	ID #
Governmental Agencies				
Santa Barbara County Air Pollution Control District	6/16/17	No	1	1-1 to 1-2
Native American Heritage Commission	6/28/17	No	2	2-1 to 2-5
Santa Barbara County (Fire Department, Planning and Development Department, and Community Services Department – County Parks Division)	7/5/17	No	3	3-1 to 3-5
California Department of Fish and Wildlife – Office of Spill Prevention and Response	7/5/17	No	4	4-1 to 4-135
Tribes				
Chumash Tribe	5/19/17	No	5	5-1
Groups / Organizations				
Heal the Ocean	6/1/17	Yes	6	6-1 to 6-4
Santa Barbara Channelkeeper	7/5/17	Yes	7	7-1 to 7-11
Get Oil Out!	7/5/17	No	8	8-1 to 8-7
Public				
Andy Heller	6/11/17	No	9	9-1 to 9-3

Table II-2 lists commenters who presented oral comments and provided from the meeting transcripts are in order of appearance at the public meeting.

Table II-2 Oral Comments Presented on Draft EIR during June 7, 2017, Public Meeting and Comment Identification Numbers Used in this Final EIR

Name of Commenter	Comment ID #
City of Goleta – Andy Newkirk	T1
Public – Summerland Resident	T2
Public – Lee Heller	T3
Heal the Ocean – Hillary Hauser	T4
Santa Barbara Channelkeeper – Jenna Driscoll	T5
Santa Barbara County Supervisor 1st District – Das Williams	T6

SUBPART II.A. INDIVIDUAL COMMENTS AND RESPONSES

COMMENT SET 1: SANTA BARBARA COUNTY AIR POLLUTION CONTROL DISTRICT

Our Vision Clean Air

Santa Barbara County
Air Pollution Control District

June 16, 2017

Eric Gillies
California State Lands Commission
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825

Re: APCD Comments on the Draft Environmental Impact Report for the Becker Well Abandonment and Remediation Project

Dear Mr. Gillies:

The Air Pollution Control District (APCD) has reviewed the Draft Environmental Impact Report (EIR) for the referenced project. The California State Lands Commission proposes to abandon and remediate the Becker and potentially other onshore wells on the beach below the bluff at Lookout Park. The legacy oil wells in the project area date back to the 1890s and early 1900s, and are known to leak oil on the beach and ocean. The project proposes to use a jack-up barge to bring in the equipment needed to abandon the well(s). Staging and unstaging would require three round-trips by sea between the Port of Long Beach and the project site to deliver and remove the abandonment equipment and materials. All construction activities are anticipated to take 3 weeks assuming no weather-related interruptions or delays due to unforeseen issues with the condition of the 100+ year old wellbore. However, it is possible due to complications in abandonment procedures that the barge could be at the project site for a period of up to 8 weeks awaiting a tide amenable to barge removal. The Project would increase emissions of criteria pollutants due to construction activities related to barge transportation (tug engines), sheet pile installation related to installation of the cofferdam (crane and pile driver engines), well abandonment activities (well rig, cement engines, etc.), removal of the cofferdam, crew boat engine emissions and employee and equipment delivery on-road emissions. The project is located on Summerland Beach in the unincorporated community of Summerland, Santa Barbara County, approximately 6 miles east of the City of Santa Barbara and 5 miles west of the City of Carpinteria. Lookout Park, operated by Santa Barbara County Parks, sits atop bluffs above the beach.

As the Draft EIR correctly notes, the successful completion of the project will reduce odors and air pollution in the long term.

Air Pollution Control District staff has the following comments on the Draft EIR:

1. **Air Quality, Page 4.3-11:** Mitigation Measure MM AQ-1c states that any portable diesel engines greater than 50 horsepower be certified to Tier 1, 2, or 3 non-road engine standards. The APCD recommends that diesel equipment meeting the CARB Tier 3 or higher emission standards for off-road heavy-duty diesel engines should be used to the maximum extent feasible. Please consider revising the language of this measure to reflect this recommendation. 1-1

2. **Air Quality, Page 4.3-12:** The Impact Discussion for Impact AQ-3 states, "*The Project would not include sources of objectionable odors. Any odors associated with diesel use by construction equipment on the barge or operation of boats during construction or maintenance would be* 1-2

Aeron Arlin Genet ◦ Air Pollution Control Officer
260 North San Antonio Road, Suite A ◦ Santa Barbara, CA ◦ 93110 ◦ 805.961.8800
OurAir.org ◦ twitter.com/OurAirSBC

APCD Comments on Draft Environmental Impact Report for the Becker Well Abandonment and Remediation Project
June 16, 2017
Page 2

short-term, intermittent, dissipate quickly, and be localized to the work area. " No mitigation measures are recommended for the project. However, page 4.3-10 states that, "*Odor emissions could occur due to off-gassing from hydrocarbon-contaminated water or drilling muds, if used. Most likely, odors would not exceed the historical level of odors experienced in the area due to the leaking wells. Measures to control odors from the construction activities are discussed in the mitigation measures*." These two pages appear to state slightly different information regarding odor generation and required mitigation. Please revise the text as appropriate to resolve the inconsistencies. 1-2 cont

If you have any questions regarding these comments, please feel free to contact me at (805) 961-8890 or via email at BarhamC@sbcapcd.org.

Sincerely,

Carly Barham

Carly Barham,
Air Quality Specialist
Technology and Environmental Assessment Division

cc: TEA Chron File

RESPONSE TO COMMENT SET 1: SANTA BARBARA COUNTY AIR POLLUTION CONTROL DISTRICT

1-1 Mitigation Measure (MM) AQ-1c is revised in the Final EIR to require that all portable diesel engines greater than 50 horsepower be certified as CARB Tier 3 or higher.

1-2 The text in Impact AQ-3 in the Final EIR is clarified to indicate that some potential odor sources could be associated with the Project, but that mitigation proposed under MM AQ-1b would address these potential impacts.

COMMENT SET 2: NATIVE AMERICAN HERITAGE COMMISSION

STATE OF CALIFORNIA Edmund G. Brown Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
Environmental and Cultural Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone (916) 373-3710

June 28, 2017

Eric GIllies
California State Lands Commission
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825

sent via e-mail: CEQAcomments@slc.ca.gov

Re: SCH# 2016101008, Becker and Legacy Wells Abandonment and Remediation Project, Community of Summerland; Santa Barbara County, California

Dear Mr. Gillies:

The Native American Heritage Commission (NAHC) has reviewed the Draft Environmental Impact Report prepared for the project referenced above. The review included the Introduction and Project Description, the Summary of Environmental Impacts and Mitigation Measures, the Environmental Impact Analysis, section 4.5, Cultural Resources, and Appendix C, NOP Comments prepared by the California State Lands Commission. We have the following concerns:

1. There is no Tribal Cultural Resources section or subsection in the Summary of Environmental Impacts and Mitigation Measures or the Environmental Impact Analysis as per California Natural Resources Agency (2016) "Final Text for tribal cultural resources update to Appendix G: Environmental Checklist Form," http://resources.ca.gov/ceqa/docs/ab52/Clean-final-AB-52-App-G-text-Submitted.pdf 2-1

2. There is no documentation of **government-to-government consultation by the lead agency** under AB-52 with Native American tribes traditionally and culturally affiliated to the project area as required by statute, or that mitigation measures were developed in consultation with the tribes. Discussions under AB-52 may include the type of document prepared and proposed mitigation. Contact by consultants during the Cultural Resources Assessments is not formal consultation. 2-2

3. There are no mitigation measures specifically addressing Tribal Cultural Resources separately. Mitigation measures must take Tribal Cultural Resources into consideration as required under AB-52, **with or without consultation** occurring. Mitigation language for archaeological resources is not always appropriate for or similar to measures specifically for handling Tribal Cultural Resources. 2-3

4. Recent Cultural Resources assessments are not documented (noted "previous" with no date). These should adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources. The lack of documented resources does not preclude inadvertent finds, which should be addressed in the mitigation measures. 2-4

The California Environmental Quality Act (CEQA)[1], specifically Public Resources Code section 21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment.[2] If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an environmental impact report (EIR) shall be prepared.[3] In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources with the area of project effect (APE). 2-5

CEQA was amended in 2014 by Assembly Bill 52. (AB 52).[4] **AB 52 applies to any project for which a notice of preparation or a notice of negative declaration or mitigated negative declaration is filed on or after July 1, 2015.** AB 52 created a separate category for "tribal cultural resources"[5], that now includes "a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment.[6] Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.[7] Your project may also be subject to

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[1] Pub. Resources Code § 21000 et seq.
[2] Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, § 15064.5 (b); CEQA Guidelines Section 15064.5 (b)
[3] Pub. Resources Code § 21080 (d); Cal. Code Regs., tit. 14, § 15064 subd.(a)(1); CEQA Guidelines § 15064 (a)(1)
[4] Government Code 65352.3
[5] Pub. Resources Code § 21074
[6] Pub. Resources Code § 21084.2
[7] Pub. Resources Code § 21084.3 (a)

Senate Bill 18 (SB 18) (Burton, Chapter 905, Statutes of 2004), Government Code 65352.3, if it also involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space. **Both SB 18 and AB 52 have tribal consultation requirements**. Additionally, if your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966[8] may also apply.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

Agencies should be aware that AB 52 does not preclude agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52. For that reason, we urge you to continue to request Native American Tribal Consultation Lists and Sacred Lands File searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/. Additional information regarding AB 52 can be found online at http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf, entitled "Tribal Consultation Under AB 52: Requirements and Best Practices". 2-5 cont

The NAHC recommends lead agencies consult with all California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources.

A brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments is also attached.

Please contact me at gayle.totton@nahc.ca.gov or call (916) 373-3710 if you have any questions.

Sincerely,

Gayle Totton

Gayle Totton, B.S., M.A., Ph.D
Associate Governmental Project Analyst

Attachment

cc: State Clearinghouse

[8] 154 U.S.C. 300101, 36 C.F.R. § 800 et seq.

2

Pertinent Statutory Information:

Under AB 52:
AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:
Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a **lead agency** shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice.
A **lead agency** shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project.[9] and **prior to the release of a negative declaration, mitigated negative declaration or environmental impact report**. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code § 65352.4 (SB 18).[10]
The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

a. Alternatives to the project.
b. Recommended mitigation measures.
c. Significant effects.[11]

1. The following topics are discretionary topics of consultation:
   a. Type of environmental review necessary.
   b. Significance of the tribal cultural resources.
   c. Significance of the project's impacts on tribal cultural resources.

If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. [12]
With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process **shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code sections 6254 (r) and 6254.10.** Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public.[13]
If a project may have a significant impact on a tribal cultural resource, **the lead agency's environmental document shall discuss** both of the following:

a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code section 21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource.[14]

Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached.[15]

Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code section 21080.3.2 **shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program**, if determined to avoid or lessen the impact pursuant to Public Resources Code section 21082.3, subdivision (b), paragraph 2, and shall be fully enforceable.[16]
If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, **the lead agency shall consider feasible mitigation** pursuant to Public Resources Code section 21084.3 (b).[17]
An environmental impact report **may not be certified**, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code sections 21080.3.1 and 21080.3.2 and concluded pursuant to Public Resources Code section 21080.3.2.
b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

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[9] Pub. Resources Code § 21080.3.1, subds. (d) and (e)
[10] Pub. Resources Code § 21080.3.1 (b)
[11] Pub. Resources Code § 21080.3.2 (a)
[12] Pub. Resources Code § 21080.3.2 (a)
[13] Pub. Resources Code § 21082.3 (c)(1)
[14] Pub. Resources Code § 21082.3 (b)
[15] Pub. Resources Code § 21080.3.2 (b)
[16] Pub. Resources Code § 21082.3 (a)
[17] Pub. Resources Code § 21082.3 (e)

3

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code section 21080.3.1 (d) and the tribe failed to request consultation within 30 days.[18]

This process should be documented in the Tribal Cultural Resources section of your environmental document.

Under SB 18:

Government Code § 65352.3 (a) (1) requires consultation with Native Americans on general plan proposals for the purposes of "preserving or mitigating impacts to places, features, and objects described § 5097.9 and § 5091.993 of the Public Resources Code that are located within the city or county's jurisdiction. Government Code § 65560 (a), (b), and (c) provides for consultation with Native American tribes on the open-space element of a county or city general plan for the purposes of protecting places, features, and objects described in Sections 5097.9 and 5097.993 of the Public Resources Code.

- SB 18 applies to **local governments** and requires them to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf
- Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.**[19]
- There is no Statutory Time Limit on Tribal Consultation under the law.
- Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research,[20] the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code sections 5097.9 and 5097.993 that are within the city's or county's jurisdiction.[21]
- Conclusion Tribal Consultation: Consultation should be concluded at the point in which:
  - The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
  - Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation.[22]

NAHC Recommendations for Cultural Resources Assessments:

- Contact the NAHC for:
  - A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
  - A Native American Tribal Contact List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.
    - The request form can be found at http://nahc.ca.gov/resources/forms/.
- Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
  - If part or the entire APE has been previously surveyed for cultural resources.
  - If any known cultural resources have been already been recorded on or adjacent to the APE.
  - If the probability is low, moderate, or high that cultural resources are located in the APE.
  - If a survey is required to determine whether previously unrecorded cultural resources are present.
- If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
  - The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

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[18] Pub. Resources Code § 21082.3 (d)
[19] (Gov. Code § 65352.3 (a)(2)).
[20] pursuant to Gov. Code section 65040.2,
[21] (Gov. Code § 65352.3 (b)).
[22] (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

4

Examples of Mitigation Measures That May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

- Avoidance and preservation of the resources in place, including, but not limited to:
  - Planning and construction to avoid the resources and protect the cultural and natural context.
  - Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
- Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
  - Protecting the cultural character and integrity of the resource.
  - Protecting the traditional use of the resource.
  - Protecting the confidentiality of the resource.
- Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
- Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed.[23]
- Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated.[24]

The lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

- Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources.[25] In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
- Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
- Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code section 7050.5, Public Resources Code section 5097.98, and Cal. Code Regs., tit. 14, section 15064.5, subdivisions (d) and (e) (CEQA Guidelines section 15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

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[23] (Civ. Code § 815.3 (c)).
[24] (Pub. Resources Code § 5097.991).
[25] per Cal. Code Regs., tit. 14, section 15064.5(f) (CEQA Guidelines section 15064.5(f)).

5

RESPONSE TO COMMENT SET 2: NATIVE AMERICAN HERITAGE COMMISSION

2-1 Revised State CEQA Guidelines Appendix G, approved in September 2016, includes a new section, “XVII. Tribal Cultural Resources.” In organizing the EIR to facilitate reader review, CSLC staff includes a detailed analysis of Tribal cultural resources in Section 4.6, *Cultural Resources – Tribal*, immediately after Section 4.5, *Cultural and Paleontological Resources*. Additionally, Executive Summary page ES-5, lists “Cultural Resources – Tribal” as one issue area where potentially significant impacts could occur, and the impact and mitigation summary table ES-2, on page ES-11 lists the “Cultural Resources-Tribal” impacts and mitigation measures. Because an analysis of potential impacts to Tribal cultural resources is, in fact, included in the EIR consistent with Assembly Bill (AB) 52 and Appendix G of the State CEQA Guidelines, no additional revisions are necessary.

2-2 Section 4.6, *Cultural Resources – Tribal*, documents the CSLC’s coordination with California Native American Tribes pursuant to AB 52. Because no Tribes that are geographically or culturally affiliated with the Project area requested CEQA notification from the CSLC, pursuant to CEQA section 21080.3.1, CSLC did not conduct government-to-government consultation under AB 52. However, consistent with State policy and the CSLC Tribal Consultation Policy (see www.slc.ca.gov/About/Tribal.html), CSLC staff conducted non-AB 52 outreach by notifying the Tribal Chairs of all Tribes identified by the Native American Heritage Commission (NAHC) as being geographically or culturally affiliated with the Project area in March 2017 as a means of inviting and incorporating meaningful input from Tribal leadership. The CSLC received one communication (March 23, 2017) from a member of the Santa Ynez Tribal Elders Council deferring to other local Tribes in response to this outreach effort. As indicated in Section 4.6.1.1 of the EIR, over the past 2 years, CSLC staff has coordinated with local Tribes and Native American groups several times related to the Project, including two separate notifications in August 2015 during the Phase I Well Assessment of the Project as well as mailing tribes the Notice of Preparation (NOP) that was sent out in October 2016. In response to the NOP, the CSLC received one email from a member of the Barbareno/Ventureno Band of Mission Indians opposing the Project. All of these coordination efforts were performed by CSLC staff and the CSLC Tribal Liaison (these efforts were not delegated to consultants). Because the EIR documents coordination and consultation with California Native American Tribes, as well as Tribal-affiliated groups, no changes to the EIR are necessary.

2-3 Mitigation measures are developed and included in Section 4.6, *Cultural Resources – Tribal*, that comply with CEQA sections 21082.3 and 21084.3, recognizing that avoidance and protection of Tribal cultural resources in place is preferred, even though AB 52 consultation did not apply and did not occur for this Project. Specifically, MMs CR-1 and TCR-2 provide for the maximum feasible avoidance of undiscovered Tribal cultural resources (no known Tribal cultural resources were identified in the Project area) by requiring the CSLC to review the detailed workplans prior to construction to ensure avoidance and to incorporate a Native American coordination strategy into the Spill Response Plan for Archaeological Resources to ensure the Tribal perspective is represented in any spill response activity. These mitigation measures are incorporated into Section 7, *Mitigation Monitoring Program*.

2-4 The CSLC submitted a NAHC sacred lands file search in September 2015. The response indicated no known presence of Native American Tribal cultural resources in the immediate Project area. Additionally, a California Historical Resources Information System record search was performed in March 2017, which indicated that three prior investigations overlap within 0.5 mile of the Project area. While these investigations pertain to "archaeological" resources generally, some of the identified resources could also be Tribal cultural resources. These previous assessments, as well as the existence of resources in the Project area, are discussed in detail in Section 4.5, *Cultural and Paleontological Resources*, and summarized in Section 4.6, *Cultural Resources – Tribal.* As stated in Response 2-3, above, significance criteria and mitigation measures specific to Tribal cultural resources are identified, based on the potential for undiscovered resources to be present, in Section 4.6 as well. Cultural resource locations are generally not disclosed in the public document in order to avoid desecration of the resource. Inadvertent finds are addressed through MM CR-1 and TCR-2; each addresses requirements for construction and response plans to incorporate avoidance of "identified and unidentified archaeological resources." MM CR-1 is amended in the EIR to address the requirement for construction plans to have measures in place in the event of inadvertent "finds" and a protocol to notify Tribal designees in the event of an inadvertent find.

2-5 Section 4.6, *Cultural Resources – Tribal,* is included pursuant to the requirements of AB 52, as indicated in the first paragraph of page 4.6-1, which states "Assembly Bill (AB) 52 (Gatto; Stats. 2014, ch. 532), which was enacted in September 2014, sets forth both procedural and substantive requirements for analysis of Tribal cultural resources, as defined in Public Resources Code section 21074, and in consultation with California Native American Tribes. This section identifies Tribal cultural resources or other resources potentially of importance to California Native American Tribes in the Project area, evaluates the type and significance of impacts that may occur as a result of the Project, and identifies measures to avoid or substantially lessen any impacts found to be potentially significant." Please also see responses to comments 2-1, 2-2, and 2-3 for specific details on the CSLC's compliance with AB 52. Senate Bill 18 applies to local lead agencies and therefore is not applicable, as the CSLC is a State agency.

COMMENT SET 3: SANTA BARBARA COUNTY (FIRE DEPARTMENT, PLANNING AND DEVELOPMENT DEPARTMENT, AND COMMUNITY SERVICES DEPARTMENT – COUNTY PARKS DIVISION)

County Of Santa Barbara

Mona Miyasato
County Executive Officer

105 East Anapamu Street, Room 406
Santa Barbara, California 93101
805-568-3400 • Fax 805-568-3414
www.countyofsb.org

Executive Office

July 5, 2017

Mr. Eric Gillies
Project Manager
California State Lands Commission
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825
E-Mail: CEQA.comments@slc.ca.gov
Fax: (916) 574-1885

Re: Becker and Legacy Wells Abandonment and Remediation Project

Dear Mr. Gillies,

Thank you for the opportunity to comment on the Draft Environmental Impact Report for the Becker and Legacy Wells Abandonment and Remediation Project in Santa Barbara County. At this time, the County is submitting the attached letters from the County Fire Department, Planning and Development Department, and the Community Services Department – County Parks Division.

The County looks forward to participating in the process as this project moves forward. If you should have any further questions, please do not hesitate to contact my office directly, or Glenn Russell, Director of the Planning and Development Department, at (805) 568-2085.

Sincerely,

Dennis Bozanich
Deputy County Executive Officer

cc: Glenn Russell, Ph.D., Director, Planning and Development Department
Peter Cantle, Deputy Director, Energy and Minerals Division
Dan Klemann, Deputy Director, Long Range Planning
Rob Hazard, Battalion Chief/Deputy Fire Marshall, Santa Barbara County Fire Department
Brian Yanez, Deputy Director, Parks Division

Attachments: June 28, 2017 Letter, Planning and Development Department
June 12, 2017 Letter, County Fire Department
June 9, 2017 Letter, Community Services Department – Parks Division

Terri Maus-Nisich
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tmaus@countyofsb.org

Matthew P. Pontes
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mpontes@countyofsb.org

Jeff Frapwell
Assistant County Executive Officer
jfrapwell@countyofsb.org

Dennis Bozanich
Deputy County Executive Officer
dbozanich@countyofsb.org

Fire Department
"Serving the community since 1926"
HEADQUARTERS
4410 Cathedral Oaks Road
Santa Barbara, CA 93110-1042
(805) 681-5500 FAX: (805) 681-5563

Eric Peterson
Fire Chief
County Fire Warden

Rob Heckman
Deputy Fire Chief

June 12, 2017

Eric Gillies
Project Manager
100 Howe Avenue, Suite 100-South
California Lands Commission
Sacramento, CA 95825

Dear Eric Gillies,

SUBJECT: Becker and Legacy Wells Abandonment & Remediation
SCH No. 2016101008

I have reviewed the Draft EIR for the Becker and Legacy Wells Abandonment & Remediation Project and have no comments on the project as presented at this time.

As always, if you have any questions or require further information, please call 681-5568 or 681-5523.

In the interest of life and fire safety,

Rob Hazard
Battalion Chief/ Deputy Fire Marshal
Santa Barbara County Fire Department

Serving the cities of Buellton, Goleta and Solvang, and the Communities of Casmalia, Cuyama, Gaviota, Hope Ranch, Los Alamos, Los Olivos, Mission Canyon, Mission Hills, Orcutt, Santa Maria, Sisquoc, Vandenberg Village

County of Santa Barbara
Planning and Development
Glenn S. Russell, Ph.D., Director
Dianne Black, Assistant Director

June 28, 2017

Eric Gillies, Project Manager
100 Howe Avenue, Suite 100-South
California State Lands Commission
Sacramento, CA 95825

RE: Becker and Legacy Wells Abandonment and Remediation Project DEIR Comments
SCH No. 2016101008; EIR No. 792, W30214

Dear Mr. Gillies:

The Santa Barbara County Planning and Development Department (P&D) appreciates the opportunity to provide comments on the Draft Environmental Impact Report (EIR) for the Becker and Legacy Wells Abandonment and Remediation Project. P&D is supportive of the project as it would be beneficial for all Santa Barbara County residents and visitors. According to the EIR, the California State Lands Commission (State Lands) proposes to abandon and seal the Becker Well to current Division of Oil, Gas, and Geothermal Resources standards and to alleviate oil leaking into the environment. The Becker Well is located below the mean high tide line in State-owned tideland adjacent to Lookout Park in Summerland, Santa Barbara County, California. The EIR also includes within its scope similar future abandonment activities required for numerous wells in the vicinity of the Becker Well. 3-1

P&D staff has reviewed the EIR and requests that State Lands describe in greater detail the components of work that would be performed within the jurisdiction of Santa Barbara County. Specifically, P&D requests a description of the nature, location, timing and duration of all work, accompanied by a new exhibit in the EIR that clearly shows the full extent of any exclusion zones and lateral beach closures necessary to complete the abandonment work. Any necessary beach closures should be clearly described in the text of the project description, as well as identified as an impact to recreation and appropriately mitigated to the fullest extent feasible. In addition to EIR mitigation TRM-1 (Publication of U.S. Coast Guard Local Notice to Mariners), advance noticing should be conducted within the local community so beach users know this portion of the beach will be closed to horizontal access for the duration of construction activities. 3-2

Additionally, P&D requests greater resolution in aerial photos used as exhibits in the EIR to provide the reader with a better situational understanding of the surrounding environment. 3-3

123 E. Anapamu Street, Santa Barbara, CA 93101 • Phone: (805) 568-2000 • FAX: (805) 568-2020
624 W. Foster Road, Santa Maria, CA 93455 • Phone: (805) 934-6250 • FAX: (805) 934-6258
www.sbcountyplanning.org

Eric Gillies
Becker and Legacy Wells Abandonment and Remediation Project DEIR Comments
SCH No. 2016101008; EIR No. 792, W30214
June 28, 2017
Page 2

Once again, we are very supportive of this important effort and hope you find our comments useful. If you have any questions regarding this letter, please contact Joseph Dargel at jdargel@countyofsb.org or (805) 568-3573. 3-3 cont

Sincerely,

Peter Cantle, Deputy Director
Planning and Development Department

cc: Case file (to Planner)
CEQA.comments@slc.ca.gov (electronic)
Dianne Black, Assistant Director
Peter Cantle, Deputy Director
Errin Briggs, Energy Specialist
Joseph Dargel, Planner

Community Services Department

George Chapjian, Director, Community Services
Brian Yanez, Deputy Director, Parks Division
Dinah Lockhart, Deputy Director, Housing & Community Development
Ryder Bailey, CPA, Chief Financial Officer, Community Services
Angela Hacker, Division Chief, Division of Energy & Sustainability Initiatives
Sarah York Rubin, Executive Director, Office of Arts & Culture

RECEIVED
JUN 13 2017
S B COUNTY
PLANNING & DEVELOPMENT

June 9, 2017

To: Selena Evilsizor, Planner
Planning & Development, LRPD

From: Claude Garciacelay, Park Planner
CSD – Parks Division

RE: Draft EIR for the Becker and Legacy Wells Abandonment/Remediation

County Parks would like to offer the following comments to be considered as part of the EIR:

1) Mitigation for Impacts to Recreation, REC-1, should mitigate for the temporary impacts to recreational users by requiring notice of project activities on the beach prior to and for the duration of the project. We recommend that at the three major beach access way locations, Lookout Park, Wallace Avenue and Loon Point that serve Summerland Beach, be posted to notice the public of the project activities on the beach at least two weeks prior to and during the work at the beach including temporary beach closures. We would also recommend that notice of the pending project be provided in the local print media, such as the Coastal View, describing beach access interruptions, closures, safety concerns and project duration. 3-4
2) We would also recommend that the project mitigate for any impacts or damage caused by the project that would require repairs to the recreation infrastructure (e.g. staging area at Lookout Park, ramp access to the beach, etc.) and was caused by the project activities. Said infrastructure is necessary to provide on-going recreation to the public and must be returned to its original condition by the project proponents to mitigate impacts. County Parks shall be notified by the project proponents or their agents at least two weeks before the staging for the project, and photo documentation of the staging area, ramp access, etc. shall be catalogued to compare with site photos post project. Any necessary repairs shall be provided for by the project proponents. 3-5

Thank you for the opportunity to comment.

County Parks Division, Division of Energy & Sustainability Initiatives, Housing & Community Development Division:
123 East Anapamu Street, 2nd Floor, Santa Barbara, CA 93101 • T: (805) 568-2461 • F: (805) 568-2459
Office of Arts and Culture: 1100 Anacapa Street, 3rd Floor, Rotunda Tower, Santa Barbara, CA 93101
sbccsd.org

RESPONSE TO COMMENT SET 3: SANTA BARBARA COUNTY (FIRE DEPARTMENT, PLANNING AND DEVELOPMENT DEPARTMENT, AND COMMUNITY SERVICES DEPARTMENT – COUNTY PARKS DIVISION)

3-1 The scope of the EIR is inclusive of both the Becker well and other legacy wells located within the Summerland Oil Field.

3-2 The Final EIR is modified to include additional descriptions of beach exclusion areas, including adding exclusion areas to Figure 2-4 and to address in more detail recreational impacts related to beach closures in Section 4.11, *Recreation*. MM HAZ-1 is expanded to include notices to local residences to ensure that beach users know this portion of the beach will be closed to horizontal access for the duration of the closure.

3-3 The resolution of the underlying aerial photographs in Figures ES-1, 1-1, and 4.11-1, are increased.

3-4 Please see response to comment 3-2 from Santa Barbara County in regard to the noticing of local residences. MM HAZ-1 is revised to include information on posting locations and noticing in the local newspaper.

3-5 MM REC-1 is added to the Final EIR requiring that the contractor repair any damaged infrastructure to pre-Project conditions. Section 7, *Mitigation Monitoring Program*, requires that the CSLC monitor and document infrastructure conditions prior to and after Project activities, thereby ensuring that on-going recreation to the public is maintained. The Mitigation Monitoring Program includes the notification of the County Parks Division prior to project activities.

COMMENT SET 4: CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE – OFFICE OF SPILL PREVENTION AND RESPONSE

State of California -The Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Office of Spill Prevention and Response
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EDMUND G. BROWN JR., *Governor*
***CHARLTON H. BONHAM**, Director*

July 5, 2017

California State Lands Commission
Mr. Eric Gillies, Project Manager
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825

Dear Mr. Gillies:

The following comments on the May 2017 Becker and Legacy Wells Draft Environmental Impact Report (DEIR) were prepared by Mr. Ken Wilson, Senior Environmental Scientist with Department of Fish and Wildlife, Office of Spill Prevention and Response (CDFW-OSPR). The comments on the main document are annotated by the PDF page number, then by the document page number at the bottom of each page, then by section and/or line number. Comments on Appendix D are listed by page number at the bottom of each page.

1. Page 1 cover – Does the cover image show the general area in which legacy wells will be abandoned? It does not show evidence of oil seepage in the vicinity of the Becker Well. 4-1

2. Page 2 Project Geographic Location -
Latitude: 34.419807/Longitude: 119.603642 NAD 83 Datum

These coordinates are similar to those of what Leifer and Wilson called the Becker intertidal seep. We found seepage in 2005 at: 34.414817 -119 603650

Locations of Becker Onshore (MRS in red) and Becker Intertidal Wellhead (Leifer and Wilson) 4-2

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Mr. Eric Gillies
California State Lands Commission
July 5, 2017
Page 2

3. Page 17, Page ES-1 Line 10 - Is there a figure depicting what is defined as the "Project Area"? Figure ES-1 designates only the "Project Location". Figure ES-1 designates the Project Location simply as the Becker Well. What are the locations of the legacy wells that are to be abandoned? This information should be included up front in the Executive Summary.

The following text describes the Project area:
"*Within the Project area is the inactive Summerland Oil Field, an area of naturally occurring oil and gas seeps, where wells were drilled first from onshore and then from piers that extended into the Pacific Ocean (Figures ES-1 and ES-2).*"
Is it the intent of the proposed project to abandon and seal the Becker Well and any other wells within the highlighted area in Figure ES-1 entitled "Project Location"? There is no specific reference to a project area or specific wells to be abandoned in the Executive Summary or in the Introduction and this should be included. The same two figures are shown on Page 1-2 but, again, the label has the title "Project Location" that designates approximately 1.5 miles of beach. 4-3

4. Page 18, Page ES-2 - "Project Location" Shouldn't this read "Project Area"? 4-4

5. Page 19, Page ES-3, Lines 10-15 - The project description is not clear this DEIR addresses abandoning other infrastructure in addition to the Becker Well and this should be clarified. 4-5

6. Page 20, Page ES-4, Lines 5-9 - It states the proposed project of abandoning the Becker Well and other Legacy wells will require a total of 3 to 8 weeks. It is unclear in the DEIR how many wells besides the Becker Well are proposed for abandonment within the 3 to 8 week time period; and it is not clear the 3 to 8 weeks is an accurate time estimate. 4-6

7. Page 20, Page ES-4, Lines 19-23 – As noted above, it is not clear regarding what is being proposed for the other legacy wells. 4-7

8. Page 21, Page ES-5 - Please define an "upset." What hazardous materials are at risk of being released besides oil? All potential contaminants should be evaluated. 4-8

9. Page 22, Page ES-3, Lines 15-20 - There is no map that specifically depicts which wells, besides the Becker Well, will be abandoned. 4-9

10. Page 23, Page ES-7, Lines 16-24 - how many legacy wells and which ones are to be abandoned? 4-10

Mr. Eric Gillies
California State Lands Commission
July 5, 2017
Page 3

11. Page 26, Page ES-10, Section 4.1 HAZ-2, Applicant Proposed Measure (APM) 3 - A detailed list of emergency response equipment and trained response personnel should be included. 4-11

12. Page 26, Page ES-10, Section 4.1 HAZ-2a and HAZ-2b, Removal of Contaminated Sands (and other potentially contaminated materials and fluids) and Water Handling - These risks should be evaluated and a contingency plan should be developed to address these risks. OSPR would like to review/approve of any contingency plan dealing with the potential release of deleterious materials associated with this project. 4-12

13. Page 27, Page ES-11, Table ES-2 HAZ-2b - Please incorporate a more detailed description/contingency plan for oil spill response, concrete spillage, and other contaminants such as drilling muds, etc. 4-13

14. Page 28, Page ES-12, Section 4.11 – We suggest you also coordinate with Santa Barbara County Parks and local residents in addition to providing notice to U.S. Coast Guard and Notice to Mariners. 4-14

15. Page 29, Page ES-13, Section 4.1 - Again, define "Risk of Upset." 4-15

16. Page 29, ES-13, Section 4.4 – There is no mention of other contaminants such as concrete waste, drilling muds, etc.; and there is no mention of effects on kelp forests and associated species by continuous vessel traffic, which should be evaluated. 4-16

17. Page 30, Page ES-14, Section 4.9 WQ-1 and Section 4.11 REC-2 – Should incorporate risks from spills of other deleterious materials e.g., concrete and drilling muds, etc. 4-17

18. Page 31, Page 1-1, Introduction - Leifer and Wilson have observed as much as 6 feet of sediment overburden covering what appeared to be a sandstone bedrock near Becker Well, for your information. 4-18

19. Page 33, Page 1-3, Lines 3-7 and Figure 1-3 - It is not clear which legacy wells are to be abandoned and this should be clarified. 4-19

20. Page 33, Page 1-3; FIG 1-3 – OSPR staff have observed oil leakage (some significant) from what appears to be other legacy oil wells along the shoreline (just seaward of what is designated as the Becker Well) and it is not clear if this project is addressing these other legacy wells which should be clarified in the text and in the figures. It is also not clear in this figure where the Becker Onshore Well is; blue arrows seem to point to incorrect location. 4-20

21. Page 40, Page 1-10, Figure 1-4 - The leakage in these photos could be from one of 3 leaking wells located in the intertidal area just seaward of the west end of Lookout Park. All three of 4-21

Mr. Eric Gillies
California State Lands Commission
July 5, 2017
Page 4

the wells have been found to leak to varying degrees as the sand is eroded from the beach. Photos below are from Leifer and Wilson that show two of three seep areas in exposed bedrock near Becker intertidal and the bottom photo is a close-up of seep in foreground.

22.

4-21 cont

Mr. Eric Gillies
California State Lands Commission
July 5, 2017
Page 5

23. Page 45, Page 2-1, Lines 20-21: Again, it is unclear which legacy wells will be abandoned and how they will be abandoned and the schedule is unclear if all leaking wells in the Summerland Area will be sealed within the projected 8-week work period. A more detailed schedule should be included. 4-22

24. Page 45, Page 2-1, line 30 – OSPR recommends including Leifer and Wilson 2004 report and publication on Summerland oil seeps. 4-23

25. Page 46, Page 2-2, Table 2-1 - Regarding 1994 information, seepage may vary in amount but the quantitative field studies conducted in February 2003 by Leifer and Wilson, from what appeared to be the "Becker Well," suggested that approximately 12 liters were discharged in a 24-hour period when the well was covered by sand. Also OSPR, the USCG, and CSLC surveyed Summerland Beach weekly over a 50-week period from September 2002 to April 2004 to locate, describe, and quantify beach oil. Weathered tarballs were found on the beach on most days generally covering less than 0.1% of the intertidal area. Oil mousse was observed in trace amounts on seven survey days during the 19-month study (Oil Emissions from Nearshore and Onshore Summerland: Final Report Final Draft - April 11, 2007, Ira Leifer (UCSB), Ken Wilson, Robin Lewis, and Randy Imai (DFG-OSPR), and John Tarpley (NOAA)). 4-24

26. Page 47, Page 2-3, Lines 2-4 - Please include the coordinates for the Becker well. 4-25

27. Page 49, Page 2-4, Line 9 – Please define a riser, it is not in the glossary. 4-26

28. Page 49, Page 2-5, Line 21 and Figures 2.1 & 2.2 - Regarding the well designated in Figures 2.1 and 2.2, it is unclear if this is what you are referring to as the 'Becker Onshore Well'. From previous OSPR surveys there appeared to be sedimentary bedrock surrounding the seeps (see photos in comment 21). 4-27

29. Page 49, Page 2-5, Lines 14-16 - OSPR has photos that may be of a different well in a nearby location because OSPR photos indicate a well casing is surrounded either by natural sedimentary bedrock substrate or some form of concrete; an excavator may have difficulty moving this casing back and forth. 4-28

30. Page 49, Page 2-5 Lines 21-22 and Figure 2.2 - It should be clarified how these structures were mapped. Were they visually observed then mapped with the Trimble as was done with the Becker Well? What was the tide when the photographs were taken? 4-29

Mr. Eric Gillies
California State Lands Commission
July 5, 2017
Page 6

31. Page 50, Page 2-6, Figure 2-2 – This figure is difficult to interpret -- there are large black targets near red rectangles but unclear what these mean. There are also small black dots with indecipherable green numbers next to them which are presumably the wellheads but this should be clarified and it should be clarified which wells will be abandoned/sealed. It is also not clear if the CH Olsson 805 is one of the legacy wells you propose to abandon and this should be clarified. From the configuration of the well casing and the position of cobbles, it appears the four smaller photos are all of one well casing, but this is not clear and should be clarified. OSPR staff observed at least 2 exposed well casings near the seawall near the brown house and there was less sand than in your photos. Photo below is one of the two seeping wells OSPR staff observed in 2003 near what is noted as the Olsson 805 in the DEIR. The 2 wells were observed in a bed of cobbles below the brown house at the west end of Summerland Beach. 4-30

32. Page 51, Page 2-7, Line 36 – During OSPR 2003 surveys we previously observed approximately 3 leaking wells in the lower intertidal in/near the location referred to as Becker Well in this DEIR; all 3 wells appeared to be drilled into sandstone bedrock. The easternmost of these wells was seeping a lot of oil. It is unclear if a sheet pile cofferdam could be installed in sandstone bedrock. If not previously done, we suggest conducting test bores in the proposed work locations to verify sheetpile can be driven to the appropriate depth in the areas needed. 4-31

33. Page 53, Page 2-9, Line 14 – We suggest an oil spill contingency plan be prepared that considers deploying oil containment boom surrounding the work area(s) or sorbents/snare 4-32

Mr. Eric Gillies
California State Lands Commission
July 5, 2017
Page 7

placed within the cofferdam to capture any oil released from the well casing and/or during the abandonment process, particularly during the vibratory installation of the sheetpiles. 4-32 cont

34. Page 54, Page 2-10, Figure 2.5 - Regarding the configuration of the barge, anchors, cofferdam walls, etc., it is not clear if this same configuration will be used for all the wells to be abandoned (if other wells will be abandoned as part of the project) or if this configuration applies only to the Becker well. This should be clarified. 4-33

35. Page 55, Page 2-11, Lines 11 and 12 - CDFW vessel operations in the area revealed that the seabed in the proposed work area is flat and gently sloping. Shallow draft vessels may be necessary to help position the barge for intertidal operations. 4-34

36. Page 56, Page 2-12, Lines 11-15 – Please clarify if skiffs will also be used to access the barge. 4-35

37. Page 56, Page 2-12, Line 29 - CDFW and UCSB observations of leaking wells below the west end of Lookout Park suggest that there are at least 3 leaking wells located in what appears to be sandstone bedrock in the vicinity of Becker Intertidal and cobble around the CH Olson well head. It is not clear if studies were conducted to verify the sheetpiling can be installed to the appropriate depth in the appropriate location if there is bedrock/cobble. This should be clarified. 4-36

38. Page 57, Page 2-13, Lines 2-3 states, "*The cofferdam would extend approximately 15 to 20 feet above the beach surface and would be driven downward 20 to 30 feet into the sand*." It is not clear if any alternatives to sheetpile were evaluated and it is not clear how it was verified the sheetpiles will be able to be driven to the desired depth to ensure stability. 4-37

39. Page 57, Page 2-13, Line 6 – Define "unprocessed." 4-38

40. Page 57, Page 2-13, Lines 7-8 - Water leaking into the work area within the cofferdam is likely to contain seep oil, and may contain concrete, drilling muds, etc. This water should be treated before it can be discharged into the ocean or it should be stored for later disposal. This should be clarified here and also in Appendix D. 4-39

41. Page 58, Page 2-14, Line 22 – Clarify if you mean excavation or extraction area. 4-40

42. Page 58, Page 2-14, Lines 34-36 - If practicable, the cofferdam should be enclosed with sorbent boom and containment boom to ensure that the amount of oil discharged into the environment is minimal should a release occur. 4-41

Mr. Eric Gillies
California State Lands Commission
July 5, 2017
Page 8

43. Page 58, Page 2-14, Lines 32-33 - There are far better materials to capture seep oil than sorbent pads. Consider snare or pom-pom fencing. 4-42

44. Page 60, Page 2-16, Line 2 states, "*In the unlikely event of a release into the water beyond the capabilities of the onsite team, Clean Seas would be notified, providing for additional spill response personnel and equipment*." Clean Seas is now owned/operated by MSRC. Regarding spill reporting, NRC and Cal OES should also be notified. It is also not clear in this section who will monitor and make the determination that oil spillage is not excessive and this should be clarified. 4-43

45. Page 60, Page 2-16, Lines 8-11 - Harbor boom, snare and pom-poms might also be useful additions to the spill response equipment. Depending upon the magnitude of expected and unexpected discharges of oil, drilling muds, circulation and reservoir fluids, etc, consider having a storage tank or barge on site (unless the 500 bbl. Liquids Storage Tank in Figure 2-7 on the barge will be used for storage of spilled liquids and not for some other purpose). 4-44

46. Page 61, Page 2-17, Lines 4-5 - What provisions are being made to avoid spilling concrete and drilling fluids into the containment area where it will be pumped into the ocean? What is proposed should also be included in Appendix D. . May want to consider using a skimmer barge onsite to address these contaminants (unless the 500 bbl tank will be used for that purpose). Please also make language consistent with Appendix D. 4-45

47. Page 62, Page 2-18, Lines 2 and 3 - Can tugboats work in the depths required to access the work barge on a more or less continuous basis irrespective of tides? We recommend skiffs as an alternative for transporting personnel once the barge is in place (unless materials and equipment need to be transferred). Potential impacts to nearshore kelp forests and associated biota are of concern and should be evaluated. 4-46

48. Page 62, Page 2-18, Applicant Proposed Measure (APM)-1: The area of the wells is located within the Ortega Fault zone; abandonment of the T-10 Well had to be done twice and leaking continues. The seabed in this location is fractured due to the intersection of two fault zones. From the description to this point, it sounds like the EIR was put together to address abandonment of the Becker Onshore Well which is located in the intertidal environment. The DEIR does not appear to address in much detail what will be done with the other 'legacy' wells nearby. If the Becker Well is sealed, will leakage increase from legacy wells nearby that are not abandoned as Leifer and Wilson hypothesize? 4-47

49. Page 62, Page 2-18, APM-2 Lines 25-28 - Earlier sections state that water that seeps into the containment area will be pumped into the ocean with no mention of oil, concrete, and other 4-48

Mr. Eric Gillies
California State Lands Commission
July 5, 2017
Page 9

fluids that may enter the containment area as a result of abandonment operations. OSPR would like to review and approve of the contractor's work plan before work proceeds. 4-48 cont

50. Page 63, Page 2-19, APM 3 - Suggest adding pom-poms and snare to response equipment. 4-49

51. Page 63, Page 2-19, Lines 24 and 25 - Consider conducting a geotechnical analysis in the proposed work area(s) to ensure the sheetpile will be able to be driven to the appropriate depths. OSPR staff observations have been of leaking wells surrounded by what appears to be sandstone bedrock in this area. 4-50

51. Page 78, Page 4-4, Lines 37 and 38 - This statement is appropriate as long as no pollutants, including but not limited to petroleum products, concrete, drilling muds, etc. are pumped into the ocean and are properly disposed. 4-51

52. Page 83, Page 4.1-1, Lines 17 -20 - Leifer and Wilson measured the leakage from a beach seep thought to be the Becker wellhead located in the intertidal area at (34 25.189 N x 119 36.219 W). This seep was extrapolated to produce 11 +/- 0.46 liters/day on 8 Feb 2005 (Oil Emissions from Nearshore and Onshore Summerland: Final Report Final Draft - April 11, 2007. Ira Leifer (UCSB), Ken Wilson, Robin Lewis, and Randy Imai (DFG-OSPR), and John Tarpley (NOAA)). At least three other leaking wellheads were located in and west of the above mentioned site. Plugging seepage from one well could increase seepage from nearby wells if not properly abandoned. Leifer and Wilson state (using electrical voltage fluctuations as an analogy): "*It should be noted that physical characteristics of the seep system can change over time. For example, as asphalt is deposited in pathways, the resistance increases and the capacitance decreases. This increase in resistance leads to a greater voltage drop (pressure drop) across the portion of the pathway that has been blocked; these processes will lead to decreased seepage. If the pathway becomes entirely blocked there will be a significant increase in pressure behind the blockage, and seepage will then be forced to use other pathways. However, the pressure drop across the blockage could also blow free the asphalt, lowering resistance and increasing seepage. Increases in pressure can originate from within the seepage system, or from external forces, such as increased aquifer pressure. And finally, seismic processes can change the physical character of the seepage system, as would corrosion and decomposition of plugging materials.*" 4-52

53. Page 83, Page 4.1-1, Line 26 - Oil seeping from intertidal and nearshore sources often contributes more to beach oiling if the offshore kelp canopy is well developed and onshore winds prevail. 4-53

54. Page 84, Page 4.1-2, Line 20 - Absorbent pads are often of limited use. Snare and pom-poms should also be added to the list of response materials. 4-54

Mr. Eric Gillies
California State Lands Commission
July 5, 2017
Page 10

55. Page 84, Page 4.1-2, Lines 24-26 and 29 - The contractor should have more spill response equipment onsite for both onshore and offshore areas. CDFW-OSPR will need to review their draft of the oil spill prevention plan before this project is initiated. 4-55

56. Page 85, Page 4.1-3, Lines 4-5 - Contractor must also comply with any CDFW and RWQCRB laws, rules, regulations, and policies. 4-56

57. Page 85, Page 4.1-3, Lines 24-26 - In addition to oil, depending upon the proposed operations, there also is an increased potential for discharging concrete, drilling muds, etc., into the environment which should also be taken into account. 4-57

58. Page 86, Page 4.1-4, Lines 13-17 – It is unclear if Penco actually measured the pressures 23 years ago or if this was an estimation. This should be made more clear. 4-58

59. Page 86, Page 4.1-4, Line 27 - It was mentioned earlier that seawater could be used as a 'circulation fluid'. Do you also intend to use other materials as circulation fluid? Is the circulation fluid contaminated by being circulated through the well? If so, where will it be disposed? A more precise description of the nature of 'reservoir fluids' should be provided and should include details regarding containing/disposing of these fluids, if they will be contaminated. 4-59

60. Page 87, P 4.1-5, Lines 16-18 – Same comment as above, please clarify what the circulation fluids will be and their potential impacts if they are released into the environment. 4-60

61. Page 87, Page 4.1-5, Line 26: As stated previously, OSPR would like to review the Abandonment and Contingency Plan. 4-61

62. Page 87, Page 4.1-5, Lines 27-28 – As noted previously, a more complete description of the circulation fluids and/or drilling muds and methods for preventing spills or discharges of such materials to the environment is needed. 4-62

63. Page 88, Page 4.1-6, Lines 22-23 – Regarding contaminated water from within the cofferdam, please clarify what will is proposed to protect the environment from concrete waste, reservoir fluids, circulations fluids, and drilling muds being discharged into the ocean from within the cofferdam. 4-63

64. Page 88, Page 4.1-6, Lines 24-25 - Please clarify if this statement refers to sediments taken from within the cofferdam enclosure. The operator should have the appropriate spill response equipment in place surrounding the area in which the sheetpiles are being installed to build the cofferdam(s) to capture oil escaping from contaminated sands in the surrounding area should they be present. 4-64

Mr. Eric Gillies
California State Lands Commission
July 5, 2017
Page 11

65. Page 88, Page 4.1-6, Lines 30-32 – Has there been any consideration of what will be proposed if sheetpile cofferdams won't work in the area because of the presence of unfavorable substrate? 4-65

66. Page 89, Page 4.1-7, Lines 1-4 - Is this the volume of contaminated sand estimated for the Becker Well abandonment only or does it also include contaminated materials for the unknown number of Legacy Wells that are also proposed for abandonment? 4-66

67. Page 89, Page 4.1, Line 7 - Clarify what the definition of a 'riser' is and clarify why de-watering will not be necessary since it was stated earlier that cofferdams are not always completely water tight. 4-67

68. Page 89, Page 4.1-7, Lines 5-18 - This mitigation measure appears to address only oil contamination but does not appear to address disposal of concrete wastes, drilling muds, circulation fluids, etc. 4-68

69. Page 90, Page 4.1-8, Lines 3-6 - This states, "*The fate of oil spilled into the marine environment depends on multiple variables, primarily wind speed and direction, ocean currents, ocean conditions, and oil characteristics. Direct oiling and impacts of a spill would be limited to the immediate Summerland Beach area.*" Please add the presence of a dense kelp forest canopy can also influence the fate of spilled oil. 4-69

70. Page 90, Page 4.1-8, Line 9 - Again, the abandonment of the Becker Well is only discussed here is and it is unclear if this includes abandonment of other legacy well(s). This should be clarified. Additionally, we suggest a contingency be prepared in the event the barge setup for wells closer to shore is not feasible. 4-70

71. Page 91, Page 4.1-9, Lines 11-15 - Consider containment for fluids other than simply oil such as accidental spills of concrete, drilling muds etc. 4-71

72. Page 91, Page 4.1-9, APM-3 – Please clarify what is proposed for spills of other than oil. Additionally, has there been any consideration to run sorbent booms and snare around the trash pump intake or discharge to attempt to capture free oil? 4-72

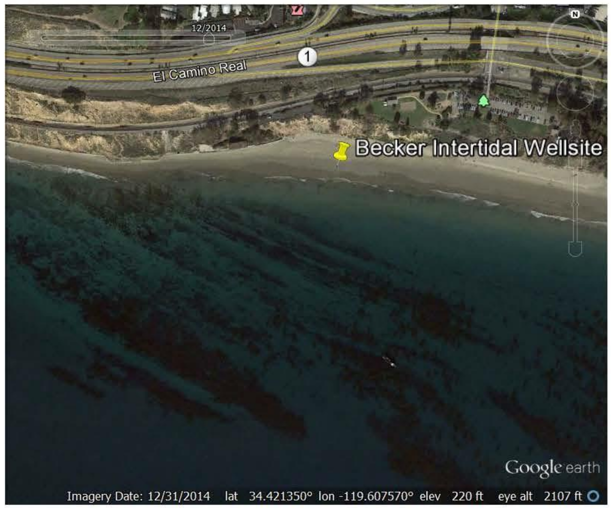
73. Page 91, Page 4.1-9 MM HAZ-2b - This measure is necessary to capture liquids that may be contaminated with substances other than oil. 4-73

74. Page 121, Page 4.3-15, Lines 34-35 - The snowy plover also feeds in the intertidal zone and the least tern feeds in nearshore waters. 4-74

75. Page 126, Page 4.4-6, Lines 3-19 - Although kelp beds and associated species occur along the Santa Barbara area coastline as depicted in figure below, no specific mention or description 4-75

Mr. Eric Gillies
California State Lands Commission
July 5, 2017
Page 12

of kelp forests in the project area is noted in the DEIR nor were potential effects from the operations included. Additionally, there was no mention of methods to reduce the effects of boat traffic and abandonment operations on the kelp forest, which should be included.



4-75 cont

76. Page 128, Page 4.4-10 - Although an important component of the biota in the project area there is no description of Shorebirds or the potential effects of operations on these species. 4-76

77. Page 132, Page 4.4-12 – Regarding Southern Sea Otters, rafts of sea otters were observed in nearshore kelp beds along the Gaviota coast off Hollister Ranch in May of 2015. Individual sea otters also have been observed swimming along the coastline between El Capitan State Beach and Ellwood, rafting in kelp beds off Isla Vista near Coal Oil Point, and in kelp beds just east of Arroyo Burro Beach in Santa Barbara. Individuals have been observed as far south in California as San Diego. Populations of sea otters have become established on San Miguel Island. For questions from CDFW regarding Sea Otters, please contact Michael Harris 805.772.1135 or U.S. Fish and Wildlife Service Lillian Carswell 805.677-3325 for the latest otter count and distribution near Summerland. 4-77

78. Page 134, Page 4.4-14 - As mentioned previously, there was no description, maps, or aerial photos of local kelp forests off the project area in Summerland in the Environmental Impact Analysis section, including impacts from repeated boat traffic passing through the area and no proposed mitigation measures to reduce the impacts of the abandonment operations on kelp forests and associated species. Additionally there were no references to local impacts on sport 4-78

Mr. Eric Gillies
California State Lands Commission
July 5, 2017
Page 13

and commercial fisheries for crabs and lobsters nor was there any mitigation measures proposed for operations which could extend from Fall 2017 to 2019. 4-78 cont

79. Page 134, Page 4.4-14, Lines 27-30, Impact BIO-1 - Although there was a discussion of oil spills there was no discussion on potential spills of toxic or deleterious materials related to the operations, such as concrete, drilling muds, circulation fluids, etc. Please include a discussion regarding the handling, spill prevention and response for these materials. 4-79

80. Page 136, Page 4.4-16, Lines 8-9 – This section states, "*Spilled crude oil that is not recovered and managed, or that does not evaporate or wash ashore, is eventually incorporated into bottom sediments*." Please add that biodegradation also occurs. 4-80

81. Page 140, Page 4.4-20, Line 22 - The statement regarding construction activities is rather misleading because it only appears to address what is expected for Becker Well abandonment and it does not appear to address operations required to address abandonment of an unknown number of legacy wells. 4-81

82. Page 140, Page 4.4-20, APM-4 Use of Vibratory Pile Driver - This Section only addresses noise; it does not discuss the possibility of the vibratory driver dislodging oil accumulated in beach sand when constructing the cofferdam. If there is a potential for liquefaction to occur, oil could rise to the surface of the sand and be washed into the water column. The DEIR should discuss this potential source of oil contamination what potential measures will be taken to limit possible releases into the environment. 4-82

83. Page 145, Page 4.4-25 - There is not discussion offered to describe potential effects of operational activities on shorebirds that occur in the area (there was no description of any other shorebirds other than snowy plovers). There are no suggestions to mitigate the effects of construction on this group of birds, which should be included. 4-83

84. Page 148, Page 4.4-28 – Please provide CDFW-OSPR copies of the Final Marine Wildlife Monitoring Report. 4-84

85. Page 148, Page 4.4-28 – This section is unclear if this is only regarding abandonment of Becker Well or if this timeframe also includes the abandonment of all legacy wells. 4-85

86. Page 149, Page 4.4-29, Line 10 - Both squid and grunion are affected by artificial lighting and should be mentioned. Mitigation measures seem appropriate. Shielding should be examined and approved by a qualified biological monitor. Beach in project area should be monitored if operations occur during grunion spawning period and times. Operations should be modified accordingly to reduce impacts. Grunion are a species of fish that leave the water at night to spawn on beaches during the spring and summer months throughout Southern California. For four consecutive nights, beginning on the nights of the full and new moons, spawning occurs 4-86

Mr. Eric Gillies
California State Lands Commission
July 5, 2017
Page 14

after high tides and continues for several hours. Peak spawning is from late March to early June. Link for projected times of grunion runs, which occur during the months of March, June, July, August & September 2017 is: https://www.californiabeaches.com/grunion-run-schedule. 4-86 cont

87. Page 151, Page 4.4-30, Lines 5-8 –It is unclear what the project boundaries are. The project location is noted as lat/long of the Becker Well. The DEIR also mentions the 'project area'. As noted previously it is unclear how many legacy wells are to be abandoned, where are they located, and when approximately each will be abandoned. 4-87

88. Page 155, Page 4.5-5, Line 29 - Again, define project area. 4-88

89. Page 166, Page 4.6-2, Line 36 – Again, what is the project boundary? Distances from critical archeological, cultural, and biological sites are discussed but it is unclear if are they measured from the Becker Well or from the area of coastline encompassed by the Summerland Field. 4-89

90. Page 171, Page 4.7-1, Lines 22-27 – It is unclear if this text describe the beach and nearshore areas because there is no description of sandstone bedrock underlying the overlayment of sand on wellheads near the Becker Well. However, in Final Report, July, 2000 Earthquake Hazard of the Santa Barbara Fold Belt, California NEHRP Award #99HQGR0081 SCEC Award #572726 (E. A. Keller (PI) and L. D. Gurrola - Institute for Crustal Studies, UC Santa Barbara), Keller states re the Casitas Formation . . . *"The basal Casitas Formation grades into regressive units of nearshore marine sandstones and siltstones and is exposed in the sea cliff Loon Point at Summerland."*
We have photos that suggest sandstone bedrock shelves may underlie a portion of the beach near Becker Well. A geotechnical study should be considered. 4-90

91. Page 182, Page 4.8-6, Lines 5-11 - It is not clear if this 3-week time projection is for the Becker Well and all the leaking legacy wells within the Summerland Field or just for the Becker Well. 4-91

92. Page 187, Page 4.9-1, Line 18 – It is unclear what the point of measurement of the 'Project area' is. Please clarify. 4-92

93. Page 4.9-1, Line 34-37 - Leifer and Wilson's studies in the Summerland area suggest that the presence of kelp canopies can also affect the movement of floating oil and debris. 4-93

94. Page 190, Page 4.9-4, Lines 13-14 - Leifer and Wilson estimated that 12 liters/day were leaking from the Becker Well on 8 Feb 2005. A bedrock outcropping was observed where the intertidal seeps were seen, near the former Becker Onshore Well location. The exposed portion of the outcropping ran ~21 m parallel to the shoreline, ~41-m seaward of the cliff base, and was partially buried in sand in 2003. When the intertidal oil tank 'petrolarium' was deployed on 4-94

Mr. Eric Gillies
California State Lands Commission
July 5, 2017
Page 15

August 25, 2003, a sand overburden of undetermined depth had accumulated over the seep formation. Despite this overburden, estimated site oil emissions were 12 L dy-1. There was a cluster of several, primarily oil vents within a few centimeters, while nearby, oily bubbles burst at the wet sand surface. Shortly after surfacing, tiny bubbles became visible in the oil and grew, presumably due to outgassing of dissolved gas in the oil. During equally low negative tides in October 2003, no oil traces were found at the same location, possibly due to a very thick (>2 m) sand overburden. Beach surveys were conducted by CSLC, USCG, and OSPR from September 2002 to April 2004 to locate, describe, and quantify beach oil. Weathered tarballs were found on the beach on most days generally covering less than 0.1% of the intertidal area. Oil mousse was observed in trace amounts on seven survey days during the 19-month study. 4-94 cont

95. Page 192, Page 4.9-6 to 4.9-8 - There was no mention in this section of potential spills of concrete, drilling muds, circulation fluids, etc., or proposed mitigation measures which should be included. 4-95

96. Page 193, Page 4.9-7, Line 16 and lines 8-10 – It states abandonment and remediation activities would eliminate future oil releases. We suggest this be changed to "Abandonment and remediation activities are likely to reduce significantly the magnitude and frequency of future oil releases in the Summerland Field." While repeated attempts were made to stop seepage from other wells in the area, most succeeded in reduction of seepage not elimination. 4-96

97. Page 200, Page 4.10-6, Lines 8-19 – We request this the final EIR address the possibility that vibration, caused by driving sheetpile with a vibratory pile driver, could release accumulated seep oil from sediments while constructing the sheetpile cofferdam. 4-97

98. Page 203, Page 4.10-9, Figure 4.10-1 regarding Summerland Area Noise Levels - This figure appears to address only the Becker Well and not similar activities in legacy wells located within the Summerland Field. 4-98

99. Page 205, Page 4.10-11, Lines 11-12 – It states construction that would be within 1,600 feet of sensitive receptors would be performed outside the timeframe of weekdays between the hours of 8 a.m. to 5 p.m. This would be better for roosting birds as well. 4-99

100. Page 209, Page 4.10-15, Lines 9-12 APM-4 - CDFW recommends that the applicant conduct a geotechnical survey of the construction area(s) to assess the possibility of sediment that will be difficult to drive sheetpile through. 4-100

101. Page 4.10-15, Impact NOI-2 - Limiting sheetpile installation to daylight hours is also good from wildlife perspective. 4-101

102. Page 221, 4.12 Marine Transportation - This section and its environmental impact analysis do not address the effects of vessel traffic, the barge, anchoring, and shuttles on kelp forests 4-102

Mr. Eric Gillies
California State Lands Commission
July 5, 2017
Page 16

and associated marine species that exist offshore of the Becker Well and other Legacy Wells. Augment the discussion on vessel traffic and its effects on kelp forests and associated biota. The project proponent should describe the extent and location of existing kelp forests in the Summerland area and develop mitigation to reduce the effects of operations on this sensitive resource. 4-102 cont

103. Page 227, Page 5-3, Table 5-1 - The DEIR does not address spills or discharges of concrete, drilling mud, circulation fluids, etc. or appropriate response strategies. This should be included. 4-103

104. Page 5.3, Line 19 – As mentioned previously, please include effects of operations and vessel traffic on kelp forests and associated species. 4-104

105. Page 228, Page 5-4. Lines 3-6 – Again, there is no discussion addressing the possibility that sheetpiles cannot be used in the abandonment process in some locations due to substrate type. 4-105

106. Page 229, Page 5.5, Lines 11-13 – Again, there is no mention of conducting any geotechnical studies to verify substrate type. Additionally, please define the word 'mudline' as it is unclear if you mean below grade as determined by the top of the well casing. 4-106

107. Page 237, Page 5-13, Other Legacy Well Alternatives Evaluated in EIR - Again it is unclear what other legacy wells are proposed for abandonment and where they are located. Only the 805 Olsson Well was mentioned in this document and no details were included. A table and figure showing which wells, their depths, and locations should be included. 4-107

108. Page 240, Page 5-16, Lines 23-24 – Please clarify what 'unprocessed' means. It is not clear if oil contaminated sand will be placed back in the excavation area or if it will be stored and disposed of offsite. 4-108

109. Page 241, Page 5-17, Figure 5.3 - This appears to be the first diagram that shows the Becker Well and three 'abandoned' legacy wells. It is unclear which of these wells are included in this abandonment project. We suggest you designate all the wells you intend to abandon on Figures 1-3, 2-2, and 5-3 and any other figure that discusses the Summerland Field. Alternately, you could include one figure that shows the precise locations of all the wells you propose to abandon and a corresponding table that shows the description elevation/depth and precise lat/longs of each. 4-109

110. Page 242, Page 5-18, Table 5-10, Hazardous Materials and Risk of Upset – This section, and others as mentioned previously, should addresses risk and preventive measures from spills of concrete, drilling muds, circulation fluids, etc. in addition to oil. 4-110

111. Page 242, Page 5-18, Table 5-10 Biological Resources - As mentioned previously, the analysis and mitigation measures have not mentioned the effects of transportation efforts on 4-111

Mr. Eric Gillies
California State Lands Commission
July 5, 2017
Page 17

kelp forests and associated biota nor on possible effects on shorebirds and grunion; these effects should be included. 4-111 cont

112. Page 242, Page 5-18, Table 5-10 Hydrology and Water Quality - This section and others as mentioned previously, should addresses risk and preventive measures for spills of concrete, drilling muds, circulation fluids, etc. in addition to oil. 4-112

113. Page 243, Page 5-19, Table 5-10 Transportation - Again, please include a discussion regarding the effects of vessel and barge operations on kelp forests. 4-113

114. Page 247, Page 6-3, Section 6.5.1 – As mentioned previously it is not clear which legacy wells you intend to abandon except for what was shown as 'abandoned well's in Figure 5-3. 4-114

115. Page 252, Page 7-2, Lines 5-8 - Include in the DEIR a monitoring plan for all proposed operations that could affect the marine environment and associated species. We suggest this include monitoring for all types of spills or releases of oil and other hazardous and deleterious materials; effects of vibrations involved with installation of the cofferdams; effects of nighttime lighting on local biota including grunion; the effects of all operations on shorebirds and other birds, mammals, and marine turtles in the local nearshore environment; and the effects on kelp forests by vessel traffic. 4-115

116. Page 254, Page 7-4, Table 7-1 Hazardous Materials and Risk of Upset – Again, there is no mention of risk of spills from concrete, drilling muds, circulation fluids, etc. 4-116

117. Page 258, Pages 7-8 to 7-13, Table 7-1 Mitigation Monitoring Program – Again, there is no description of the effects of proposed operations on kelp forests and kelp associated fish and invertebrate species that could be affected by vessel and barge movements in the area. 4-117

118. Page 260, Page 7-9, Implementation of APM-4 – We suggest you monitor for potential releases of oil when installing sheetpile cofferdams and implement protective measures as required to minimize releases of oil into the surrounding environment. 4-118

119. Page 263, Page 7-1, Table 7-1 – There is no discussion as to potential effects on, nor mitigation for, effects on grunion runs that may occur in the area during operations. This should be included. 4-119

120. Page 267, Page 7-17, Hydrology and Water Quality - Again, no mention of effects or mitigation for potential spills of concrete, drilling mud, circulation fluids, etc. 4-120

121. Page 271, Page 7-21, APM-2 Barge System Engineering - OSPR would like to review and approve the contractor's plan to mitigate potential impacts to grunion, kelp forests, and 4-121

Mr. Eric Gillies
California State Lands Commission
July 5, 2017
Page 18

associated marine life during abandonment operations, particularly those related to transportation and barge handling activities. 4-121 cont

122. Page 271, Page 7-21, Table 7-1 APM-1 - OSPR would like to review and approve the contractor's Abandonment and Contingency Plan, particularly in reference to the use, handling, and spill prevention and response procedures for 'circulation fluids and/or drilling muds', concrete, or any other substance that could be detrimental to marine life. 4-122

123. Page 272, Page 7-22, APM-4 - The contractor should be required to deploy such equipment as is necessary to contain and recover any releases. 4-123

124. Page 274, Page 8-1, Line 17 Section 8.2 Commercial Fishing – Please clarify how these percentages were calculated. 4-124

125. Appendix D, Page 1, Section 1, Project Description and Figure 1 - Please show locations of proposed legacy wells intended for abandonment on this figure. 4-125

126. Appendix D, Page 3, Section 5.1 – It states, "*Fluids that accumulate in the cofferdam area are planned to be pumped from the cofferdam area to the ocean using a trash pump system from the barge*." This EIR discusses oil spills but there was no discussion of how spills of other hazardous and deleterious materials such as cement, drilling muds, circulation fluids, etc. will be addressed. Information describing fluid handling should be clarified in the main document and Appendix D. 4-126

127. Appendix D, Page 3 Section 5.2 states, "*Onsite absorbent pads shall be used as necessary to capture the free seep oil in the double-walled cofferdam containment area*." There are far better oil sorbent materials than sorbent pads e.g. snare and/or pom-poms, etc. Other sorbents that would not generate as much waste and that are more efficient than sorbent pads should be included for use. 4-127

128. Appendix D, Page 3 Section 5.3 – As mentioned previously, please include spills of other substances such and concrete, drilling muds, and circulation fluids and clarify how these will be contained, stored, and disposed of. 4-128

129. Appendix D, Page 4, Section 5.5 - The contingency plan should include handling of hazardous and deleterious substances in addition to petroleum (e.g. concrete, drilling muds, circulation fluids, etc.) and spill prevention and response procedures. 4-129

130. Appendix D, Page 6, Section 6.2 – We recommend updating this section to make clear that spill notification procedures are necessary for all spills of oil, hazardous materials, and deleterious substances. 4-130

Mr. Eric Gillies
California State Lands Commission
July 5, 2017
Page 19

131. Appendix D, Page 8, Section 7 - Recommend updating this section to make clear that all spills of oil, hazardous or deleterious substances should be recorded. 4-131

132. Appendix D, Section 7.2, Page 9 – We recommend augmenting deployment of sorbent pads with snare and pompoms and other more effective sorbents. 4-132

133. Appendix D, Section 7.4, Page 11 - Same comment as on Section 7.2, augment deployment of sorbent pads with snare and pompoms and other more effective sorbents. 4-133

134. Appendix D, Page 12 Section, 8.0 - Sufficient storage should be available on site to contain not only spilled oil but also hazardous and other deleterious substances. 4-134

135. Appendix D, Page 12, Section 8.0 - A list of all hazardous and potentially deleterious substances used onsite should be included. 4-135

Thank you for the opportunity to provide comments on this DEIR. If you have any questions regarding any of these comments, please contact Mr. Ken Wilson at (805) 558-1006 or Ken.Wilson@wildlife.ca.gov.

Sincerely,

Thomas M. Cullen, Jr.
Administrator
Office of Spill Prevention and Response

RESPONSE TO COMMENT SET 4: CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE – OFFICE OF SPILL PREVENTION AND RESPONSE

4-1 The cover picture was developed as part of the effort implemented by Heal the Ocean to identify leak sources and was reprinted with their permission. It was taken by a drone under contract with Planck Aerosystems with computer vision processing to highlight oil sheen detection offshore Summerland Beach. As indicated in the Draft EIR, the leakage at the Becker well is intermittent and is a function of sand cover, tides and water cover. There is not a sheen associated with the Becker well all the time and the drone surveillance that was conducted to produce the cover picture was done during a period when the Becker well was not leaking enough crude oil to produce a sheen. The cover picture is the actual conditions at the time of the drone flight, with additional processing through filters to make the sheen more visible, and is not a simulation.

4-2 The Becker well GPS location was determined during the 2015 Phase I assessment to identify the exact location of the Becker well and was identified using a Trimble r10 GNSS GPS receiver with digital correction performed using the CAL-VRS network. The survey location was determined by WM Surveys, Inc. Subsequent measurements conducted during the 2017 survey were also conducted by WM Surveys Inc., who confirmed the coordinates and collected coordinates of other nearby legacy wells and miscellaneous debris that were exposed at the time of the survey.

4-3 Figures ES-1 and 1-1 are modified to more accurately depict the “Project Area,” which encompasses portions of Summerland Beach, including locations where a jack-up barge would be anchored and a cofferdam would be built adjacent to the Becker well site in the surf zone. In addition, portions of Lookout Park are proposed for use as a staging area for oil spill response equipment. Similar types of activities would be associated with other Summerland legacy well abandonment and remediation projects. Modifications to text in the impact sections have also been included in the Final EIR in order to more accurately define the Project area versus the Project site, which is the location where the barge would anchor and the cofferdam walls would be constructed.

The objectives of the Project are provided on Page ES-1 of the Executive Summary as well as in Section 1.1, and are defined as abandonment of the Becker well and abandonment of legacy wells in the Summerland Beach area.

4-4 Figures ES-1 and 1-1 are modified in the Final EIR to read “Project area.”

4-5 The objectives of the Project are provided on the first page of the Executive Summary and in Section 1.1, and are defined as abandonment of the Becker well and abandonment of legacy wells in the Summerland Beach area. The Final EIR is modified to indicate that the project duration and impacts are assessed for the abandonment of the Becker well only, but that the EIR as a stand-alone or programmatic CEQA document may also be used for abandonment of other legacy wells. Figure 1-3 provides a historic map of wells in the Summerland Oil Field; however, locating these wells is difficult. The abandonment of other legacy wells that are found to be leaking have not been prioritized at this point; however, once leaking wells are identified, they can be targeted for abandonment as additional funding becomes available.

4-6 Please see response to comment 4-5.

4-7 Please see response to comment 4-5.

4-8 Section 4.1, *Hazardous Materials and Risk of Upset*, discusses hazardous materials and the risk of upset. This section is expanded in the Final EIR to discuss the range of hazardous materials, including drilling muds and concrete wastes, and to more accurately define an upset. The executive summary summarizes the Project and its impacts; detailed discussion of the impact issues is provided in the individual impact sections in Section 4 of the Final EIR.

4-9 Please see response to comment 4-5.

4-10 Please see response to comment 4-5.

4-11 Appendix D includes the Oil Spill Contingency Plan that addresses equipment lists and details the oil spill response capabilities, containment and cleanup, initial response actions, notification, communication, fueling procedures, etc. The Oil Spill Contingency Plan will be updated as additional information becomes available, such as the specific employee positions and the response vessels used for any response. Applicant Proposed Measure (APM)-3 requires the use of readily available response vessels onsite during operations to ensure rapid response.

4-12 MMs HAZ-2a and HAZ-2b require the removal of contaminated sands and oily water which would eliminate the discharge of these materials to the environment. Water within the cofferdam would be removed to allow for installation of the riser and access to the Becker wellhead. MM HAZ-2b requires that the water be stored on the barge for removal or separated before discharged to the marine environment. The Oil Spill Contingency Plan, detailed in Appendix D, provides information on the spill prevention and response measures (please see response to comment 4-11).

4-13 Please see response to comment 4-12.

4-14 Please see responses to comments 3-2 and 3-4.

4-15 Please see response to comment 4-8.

4-16 Please see response to comment 4-8. In addition, the Final EIR incorporates additional text and discussion on potential impacts to kelp due to vessel transit. MM BIO-5b is added to ensure that kelp avoidance measures by support vessel pilots is conducted. As the project duration would be short and temporary, impacts to kelp are considered less than significant.

4-17 The discussion of spills in Section 4.1, *Hazardous Materials and Risk of Upset*, is expanded to include spills of concrete waste and drilling muds under Impact HAZ-2, which could potentially reach the marine environment. Mitigation measures, including ensuring that the barge has full containment of spills, would reduce the potential for these scenarios to impact the marine environment.

Cofferdam liquids would be removed from the cofferdam area and then stored on the barge and hauled offsite or, if extensive water levels are encountered, treated before discharge. This is included in MM HAZ-2b, Water Handling, and will be added to the Oil Spill Contingency Plan once it is finalized.

4-18 Comment acknowledged. Due to the dynamic nature of the beach at Summerland, the extent of overburden of sand on top of the Becker well can vary throughout the year. During the Phase 1 assessment in 2015 (Section 2.3.1.1), the top of the well was 4 feet below the beach. Figure 2-1 shows the excavation of the well.

4-19 Please see response to comment 4-5.

4-20 Figure 1-3 is a historical figure depicting the general location of wells and piers in the area. Recent GPS location techniques have allowed for better and more accurate location of the Becker well and the corresponding Becker well pier. Revised Figure 1-1, for example, shows the location of the Becker well with the most recent survey data incorporated for both the Becker well and the piers.

4-21 Seepage is noted in multiple areas, as depicted in Figure 2-2 and in the text. Drone flyovers conducted by Planck Aerosystems on behalf of Heal the Ocean have identified a number of leaking locations. Please see response to comment 4-1.

4-22 Please see response to comment 4-5.

4-23 The Draft EIR contains information on the seeps and their locations (see Environmental Settings for Geology and Soils (Section 4.7.1.6) and Hydrology and Water Quality (Section 4.9.1.7)) establishing the existing baseline conditions as required by CEQA, including recent surveys conducted in 2011, 2013, 2015, and 2017 as described in Table 2-1.

4-24 Comment acknowledged. Additional information regarding the amount of beach oiling, seepage, tarball, and oily mousse observations as provided in the comment further define the baseline conditions in the EIR (see response to comment 4-23). As stated on Page 2-1 in the EIR, Table 2-1 is not an exhaustive list but provides examples of several activities undertaken since 1956.

4-25 The coordinates for the Becker well are located on the inside front cover describing the Project's geographic location.

4-26 The definition for a riser is added to the glossary in the Final EIR.

4-27 The photographs in Figure 2-1 show the location of the Becker well during the Phase 1 excavation, when significant sand cover was present (see response to comment 4-18). Figure 2-2 shows the general area of the west end of the Summerland Beach with additional legacy wells that were surveyed in 2017. During the 2017 survey, the Becker well was not visible, and no excavations were conducted.

4-28 There are multiple wells located in the western end of Summerland Beach, and some of them are located immediately adjacent to bedrock, such as the Olsson well casing, shown in Figure 2-2. It is possible that the OSPR surveys identified this well as the Becker well.

4-29 The 2017 surveys were performed at a very low tide (February 27, 2017, with a -0.8 tide), and the 2017 surveys observed and GPS identified only those structures that were visible at the time. As there was some sand cover, not all structures in the area may have been identified as some may not have been visible. The GPS method used was a Real-Time Kinematic. Data corrections were provided by Cal-VRS and conducted by WM Surveys, Inc.

4-30 Figure 2-2 in the Final EIR is modified to connect the labels with the actual back target locations of the structures identified. The photos have also been labeled to identify the structure that the photo shows. A footnote is added clarifying the meaning of the small blue text, which shows the Division of Oil, Gas, and Geothermal Resources (DOGGR) location of the historical wells. Please see response to comment 4-5.

4-31 Multiple wells and associated structures are located in the Becker well area. See response to comment 4-29. The installation of the sheet piling is planned to be conducted during a period when extensive sand cover would be expected (November). As the sheet pile structure would be self-supporting, it does not have to be driven into the bedrock, and driving of the sheet pile into the bedrock is not anticipated. Some support pile may be installed, along with the "bumper" piles, to ensure that the sheet piles are adequately supported.

4-32 Please see responses to comments 4-11 and 4-12. APM-3 in the EIR requires the availability of sorbent pads and booms on the barge. Use of the sorbent materials in the cofferdam or outside of the cofferdam is added to APM-3 as feasible. Use of pads on a continuous basis within the cofferdam or outside of the cofferdam will be added to the Oil Spill Contingency Plan as well, once the plan is finalized with the contractors. The placement of continuous pads might prevent access to some necessary construction elements and, as the construction zone will be in the surf zone, may not be effective, potentially causing additional issues. APM-3 has also been modified to include the option for snare or pom-pom fencing or other strategies. Use of sheet pile sealant, such as Decaseal, is included in MM HAZ-2b to reduce leakage of contaminated water to the environment.

4-33 The barge and anchor configuration, and the configuration of all other elements except the installation of a pier from the barge as needed under the alternative for some of the legacy wells, would be similar to those discussed in the Draft EIR for the Becker well. Please see response to comment 4-5.

4-34 As provided in Section 2.4.3.1 of the EIR, a bathymetric survey will be conducted to determine the exact vessel and barge arrangements that can access the well location.

4-35 Skiffs have not been proposed for use in accessing the barge. As described in the EIR, personnel would access the barge using support vessels from Santa Barbara Harbor or from other locations to deliver equipment. The barge is large, and would extend 80 to 100 feet into the ocean from the lowest tide. If smaller vessels, such as skiffs, or shallower draft vessels are required due to bathymetric constraints, this would not change the CEQA analysis as the impacts would be the same as those of larger vessels.

4-36 The Final EIR is modified to indicate that support piles may be installed as part of the sheet pile installation to allow for bumpers for the barge, as indicated in Figure 2-5 and Table 2-3, as well as to provide stabilization of the sheet pile walls if sufficient sand cover is not present. The Project is planned for November, when sand cover is normally deep and would be expected to support the installation of the sheet pile without additional support piles. Bumper piles would be installed if the barge is anticipated to be removed and brought back into the site multiple times.

4-37 See response to comment 4-36.

4-38 The word “unprocessed” in the Draft EIR was intended to communicate that the sand would not be processed in any way, such as removal of contamination, and would be placed back into the excavation area once the abandonment is completed. The Final EIR is revised to remove the word “unprocessed.”

4-39 Please see responses to comments 4-12 and 4-17.

4-40 The relevant Final EIR text is corrected to “excavation area.”

4-41 Please see response to comment 4-32.

4-42 APM-3, Emergency Response Equipment Availability, describes the measures to be put in place for emergency response equipment. In the Final EIR, APM-3 is modified to indicate that "sorbent pads, or snare or pom-pom fencing or other effective strategies" be required to be available on the barge. The Oil Spill Contingency Plan will be updated with this information and requirements once finalized with the contractors and CSLC.

4-43 The Draft EIR indicates that "Clean Seas, or another equivalent organization" be used for response. In addition, APM-3 indicates that the response vessel shall be located at the Project site during cofferdam installation and well abandonment, thereby ensuring a rapid response in the event of a release of contaminants. Notification requirements are listed in Appendix D. Table 5-1 in the Oil Spill Contingency Plan provides the notification matrix which includes the California Office of Emergency Services, the U.S. Coast Guard and the National Response Center, among others.

4-44 Please see responses to comments 4-12 and 4-17.

4-45 Please see responses to comments 4-12, 4-17, and 4-43. Appendix D is the proposed spill containment plan before the inclusion of the mitigation measures detailed in the EIR. The spill containment plan will be updated and finalized once the CEQA process is completed and the contractors are secured, as the contractors may add further measures to enhance response capabilities.

4-46 The Draft EIR provides that a bathymetric study would be completed to ensure accessibility to the site by the barge and supply boats. The use of skiffs could be incorporated into the Project as needed. See responses to comments 4-35 and 4-16.

4-47 Abandonment of legacy wells that are located offshore in shallow water would require the same approach as the Becker well, which would involve the use of a barge, positioned immediately adjacent to the well; the installation of a riser and the subsequent steps taken to abandon the well; delivery of employees and materials using supply boats, etc. Sheet pile may be installed to protect the well area from wave action and to isolate and contain the work area in the event of oil leakage. From a CEQA standpoint, the level of impacts from spills, air quality, biological resources, cultural resources and other issues areas would be similar if not less than under the Project (such as a reduction in recreational and noise impacts). An offshore legacy well abandonment project would provide multiple beneficial impacts through the elimination or reduction in oil leakage and subsequent elimination or reduction in impacts to recreational, biological, hydrological and air quality impacts, as would the Project.

The Treadwell-10 well had a cement seal placed over the wellhead in an attempt to prevent leakage, which was not successful. Abandonment of the Becker well might cause increased leakage from other leak paths, as per the description in the Leifer and Wilson California Department of Fish and Wildlife (CDFW) report from 2004/2007 (as provided in comment 4-52). However, abandoning existing wells substantially reduces the low resistance leak paths available to the reservoir fluids and would result in a net reduction in leakage from the Summerland oil field. The Draft EIR indicates that leakage "would be reduced or eliminated" with the implementation of the Project.

4-48 Please see responses to comments 4-12 and 4-17.

4-49 Please see response to comment 4-32.

4-50 Please see response to comment 4-36.

4-51 Section 2, *Project Description*, indicates that water would be pumped back into the ocean from the cofferdam. However, as determined in Section 4.1, *Hazardous Materials and Risk of Upset*, discharging of cofferdam liquids, if contaminated, could generate a significant impact. MM HAZ-2b requires water handling to use tanks and to prevent discharges to the ocean of contaminated water. Please see responses to comments 4-12 and 4-17.

4-52 Please see responses to comments 4-23 and 4-47.

4-53 The Final EIR Section 4.1, *Hazardous Materials and Risk of Upset*, is modified to include the influence of the offshore kelp canopy on beach oil transport for offshore wells.

4-54 Please see response to comment 4-32.

4-55 Appendix D includes a more thorough listing of equipment than that listed in Section 4.1, *Hazardous Materials and Risk of Upset*, as indicated in the Final EIR page 4.1-2, line 25. The Oil Spill Contingency Plan contained in the appendix will be finalized once a contractor is selected and the Final EIR mitigation measures are incorporated. The CDFW-OSPR will have the opportunity to review the Oil Spill Contingency Plan.

4-56 Under CEQA, all existing rules and regulations are assumed to be complied with as part of any project, and these requirements are not included as mitigation measures. Appendix A has an extensive listing of regulatory requirements.

4-57 Please see response to comment 4-17.

4-58 The Penco reports indicate the well pressure when the wells were drilled as 265 psia, indicating that no measurements were taken at the time the Penco report was prepared. The CSLC staff is not aware of any measurements taken during any of the surveys or previous abandonment activities. However, based on the low flows from the Summerland oil wells when they were in production, well head pressures were most likely low.

4-59 The well circulation fluid has not been determined at this time. As per APM-1, Abandonment and Contingency Plan, the circulation fluid and handling will be determined and approved by DOGGR and CSLC staffs prior to activity commencement. Also, as per MM HAZ-2b, no contaminated fluids are allowed to be discharged to the marine environment.

4-60 Please see response to comment 4-59.

4-61 Please see response to comment 4-55.

4-62 Please see response to comment 4-59.

4-63 The EIR proposes several mitigation measures to reduce the potential for discharge of contaminants to the environment and would provide for immediate containment and response in the event of a release of contaminants to the environment. Please see responses to comments 4-12, 4-17 and 4-32.

4-64 The statement in the EIR, Page 4.1-6, Lines 24-25 is referring to release of contaminants that are contained within the sands removed from the cofferdam. Sands will be removed from the cofferdam area in order to access the Becker wellhead and to install the riser. As these sands will have been in close proximity to the leak, they may be saturated and contaminated by crude oil. The liquids within the cofferdam would be pumped out and the water stored in tanks, as per MM HAZ-2b. The EIR proposes several mitigation measures to address potential releases of contaminants that could occur during construction activities. Please see responses to comments 4-12, 4-17, and 4-32.

4-65 Please see response to comment 4-36.

4-66 The equipment arrangement for the abandonment of legacy wells would be similar as under the Project, with the same sheet pile configuration (10-foot-square inner walls, etc.). Therefore, the amount of sand within the cofferdam that would be removed would also be similar. The estimates of sand volume are based on the sand depth of up to 10 feet, which is conservative for Summerland Beach. Sand volumes most likely would not be greater, but if they are greater, this would require additional storage on the barge and/or additional use of the supply boats to haul the sand away. The CEQA analysis encompasses these potential scenarios by assuming that supply boats visit the barge on a daily basis and would be available for transport of materials to and from the barge.

4-67 Please see responses to comments 4-12, 4-17, and 4-26.

4-68 Please see response to comment 4-8.

4-69 Information on the influence of kelp on spilled oil fate and transport is added to the Final EIR, Section 4.1, *Hazardous Materials and Risk of Upset*.

4-70 Please see responses to comments 4-5 and 4-47.

4-71 Please see response to comment 4-8.

4-72 Please see responses to comments 4-8 and 4-32.

4-73 Implementation of the Project as described in Section 2, *Project Description* (see response to comment 9-1), along with implementation of mitigation measures, such as MM HAZ-2b, would ensure that impacts are reduced to the extent feasible. The MM HAZ-2b will be incorporated into the contractor agreements as well as the Oil Spill Contingency Plan that will be implemented for the Project construction.

4-74 Information on use of the intertidal zone and near offshore waters by western snowy plovers and least terns for foraging is included in the discussion of sandy beach biological resources on Page 4.4-1 in the Draft EIR.

4-75 Areas of kelp bed habitat are depicted in Figure 4-4-1, and recent historical kelp forest data (CDFW 2017) are depicted in Figure 4.4-2. A description of kelp bed habitat and the biological resources this habitat supports is provided under the subtidal habitats resource section on Page 4.4-7. In addition, text on page 4.4-16 describes kelp beds as being present immediately offshore of the Project site along the entire length of Summerland Beach. The Final EIR incorporates additional text and discussion on potential impacts to kelp due to vessel transit. MM BIO-5b is added to ensure that kelp avoidance measures by support vessel pilots is conducted. As the Project duration would be short and temporary, impacts to kelp are considered less than significant.

4-76 The Final EIR incorporates additional text on Page 4.4-1 to include other potential shorebirds expected to be present in the Project area.

4-77 Section 4.4, *Biological Resources*, discusses sea otters and indicates that their range extends into Southern California. MM BIO-4c includes monitoring for the presence of sea otters and other marine mammals, which would minimize the potential for spill impacts or hydroacoustic impacts to these species. Due to the relatively small spill size potential and the readily available response equipment, potential spills are anticipated to have only a small effect on marine mammals.

4-78 Figure 4.4-2 shows the extent of kelp over the past 5 years based on CDFW online databases. Measures to minimize the impact of support vessel traffic on kelp are added to the Final EIR. Please see response to comment 4-17. The EIR recognizes recreational and commercial fishing in Section 4.11, *Recreation*. Section 8.2, *Commercial Fishing*, assesses potential impacts to commercial fishing.

4-79 Please see response to comment 4-8.

4-80 Biodegradation of spilled crude oil as a fate of crude oil spills is added to Impact BIO-1 in Section 4.4, *Biological Resources*, of the Final EIR.

4-81 Please see responses to comments 4-5 and 4-47.

4-82 Section 4.1, *Hazardous Materials and Risk of Upset*, page 4.1-6 discusses the potential for “Increased leakage of crude oil through the annulus spacing due to nearby construction activities (vibratory installation of sheet pile).” The release of crude oil through this mechanism is another potential release scenario that could introduce contaminants into the marine environment that are discussed with proposed mitigation in the EIR.

4-83 The Final EIR incorporates additional text on Page 4.4-1 to include other potential shorebirds expected to be present in the Project area.

4-84 MM BIO-4c in Section 7, *Mitigation Monitoring Program*, is modified in the Final EIR to include submission of copies of the Marine Wildlife Monitoring Report to CDFW-OSPR once finalized.

4-85 Please see responses to comments 4-5 and 4-47.

4-86 Information on grunion is added to Section 4.4, *Biological Resources*. Squid is added to species that could be affected by night lighting under the Impact BIO-5 discussion in Section 4.4, *Biological Resources*.

4-87 Please see response to comment 4-3.

4-88 Please see response to comment 4-3.

4-89 Please see response to comment 4-3. Distances from the Project site to archaeological and cultural sites are based on the distance from the Project site, not the Project area, which is a general location; the Final EIR is modified accordingly.

4-90 Section 4.7.1, *Environmental Setting*, of Section 4.7, *Geology and Soils*, is modified to indicate that sandstone bedrock underlies the beach sand.

4-91 Please see responses to comments 4-5 and 4-47.

4-92 Please see response to comment 4-3.

4-93 Please see response to comment 4-53.

4-94 Please see response to comment 4-23.

4-95 Please see response to comment 4-17.

4-96 Text on Page 4.9-7 as identified in the comment is added to the Final EIR to indicate that the Project would significantly reduce the magnitude and frequency of oil releases to the environment.

4-97 Please see response to comment 4-82.

4-98 Please see responses to comments 4-5 and 4-47.

4-99 Noise impacts to biological resources are discussed in Section 4.4, *Biological Resources* (see Impact BIO-4). Seabirds are addressed in the Final EIR page 4.4-27 under the heading “Potential Effects of Vibratory Pile Driving on Birds.”

4-100 Please see response to comment 4-36.

4-101 Please see response to comment 4-99.

4-102 Please see response to comment 4-16.

4-103 Please see response to comment 4-17.

4-104 Please see response to comment 4-17.

4-105 Please see response to comment 4-36.

4-106 The term “mudline” is replaced with “surface of the sand” in Section 2, *Project Description*. The depth of the wellhead below the sand would be a function of the sand covering at the time of the construction activities.

4-107 Please see responses to comments 4-5 and 4-47.

4-108 Please see response to comment 4-38.

4-109 Please see responses to comments 4-5 and 4-47.

4-110 Please see response to comment 4-17.

4-111 Please see responses to comments 4-17, 4-76, and 4-86.

4-112 Please see response to comment 4-17.

4-113 Please see response to comment 4-16.

4-114 Please see responses to comments 4-5 and 4-47.

4-115 The Mitigation Monitoring Program (MMP) included in the EIR includes measures to ensure that all mitigation measures are implemented and monitored appropriately. For example, MM BIO-4c requires marine mammal monitoring, and the results of that monitoring would be reviewed as part of the MMP requirements, including the preparation and submittal of a Marine Wildlife Monitoring report. Mitigation for support vessels to avoid kelp, for example, would be monitored for effectiveness, which would include daily reports on support vessel paths and the effectiveness of the kelp avoidance methods. The MMP is presented in, and is the purpose of, Section 7 of the EIR, which includes monitoring of the biological mitigation measures. General monitoring reporting procedures are included in Section 7.4.2 of the EIR. Monitoring reports would be submitted to the CSLC periodically during the Project.

4-116 Please see response to comment 4-17.

4-117 Please see response to comment 4-16.

4-118 Please see response to comment 4-32.

4-119 Please see response to comment 4-86.

4-120 Please see response to comment 4-17.

4-121 The CSLC staff will coordinate with CDFW-OSPR in regard to site visits and review of plans.

4-122 Please see responses to comments 4-55 and 4-121.

4-123 APMs are included in Section 7, *Mitigation Monitoring Program*, and will be monitored. Contractors will be required to implement all parts of APMs.

4-124 The percentages are based on significance criteria the CSLC has used for potential oil spill impacts to commercial fisheries in past environmental reviews of oil and gas projects in the Santa Barbara Channel (e.g., Revised PRC 421 Recommissioning Project EIR, November 2014).

4-125 Please see responses to comments 4-5 and 4-47.

4-126 Please see response to comment 4-17.

4-127 Please see response to comment 4-32.

4-128 Please see response to comment 4-17.

4-129 Please see response to comment 4-17.

4-130 The Oil Spill Contingency Plan in Appendix D will incorporate mitigation measures prescribed in the Final EIR, including the response to all hazardous materials spills, and will be finalized with CSLC and contractor input.

4-131 Please see response to comment 4-130.

4-132 Please see response to comment 4-32.

4-133 Please see response to comment 4-32.

4-134 Please see responses to comments 4-17 and 4-32.

4-135 Please see response to comment 4-130.

COMMENT SET 5: CHUMASH TRIBE

Fri 5/19/2017 4:48 PM
Chumash People ksen_sku_mu@yahoo.com
Re: Becker and Legacy Wells Abandonment and Remediation Project
Gillies, Eric@SLC <Eric.Gillies@slc.ca.gov>

Hello Eric,

I wonder if you are able to provide me with some specifics on one topic. Who was contacted from the Chumash community.

On page 166/288 it shows several contacts. Who is this "Chumash Tribal Representative"?

Owl Clan is a nonprofit and last time I checked not a tribe? Are they listed on the AB52 list from the NAHC? 5-1
The same question also allies to Wishtoyo Foundation, they are just a non-profit run by non natives.

It would be most helpful if you are able to clarify this for me.

I will be submitting comments on this project.

Thanks, Frank

pg 166/288 DEIR.
The outreach letters
23 sent in March 2017 included the following Tribes:
24 • Barbareno/Ventureno Band of Mission Indians
25 • Coastal Band of the Chumash Nation
26 • Chumash Tribal Representative
27 • Owl Clan
28 • Santa Ynez Band of Mission Indians
29 • Santa Ynez Tribal Elders Council
30 • Wishtoyo Foundation

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Σαντα Βαρβαρα, Χα 93102
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RESPONSE TO COMMENT SET 5: CHUMASH TRIBE

5-1 The Tribal contacts were provided by the Native American Heritage Commission and gathered from previous CSLC projects in Santa Barbara County. Specific Chumash Tribal Representatives receiving outreach letters included Ernestine DeSoto, Frank Arredondo, and John Ruiz. Regarding the Owl Clan and the Wishtoyo Foundation, the Final EIR is revised to clarify that they are non-profit groups.

COMMENT SET 6: HEAL THE OCEAN

HEAL THE OCEAN

1430 Chapala Street, Santa Barbara, CA 93101;
PO Box 90106, Santa Barbara, CA 93190; Telephone (805) 965-7570; fax (805) 962-0651
www.healtheocean.org

June 1, 2017

Eric Gillies, Project Manager
100 Howe Avenue, Suite 100-South
California State Lands Commission
Sacramento, CA 95825

Re: Becker Well Project DEIR Comments

Dear Mr. Gillies:

Heal the Ocean, a Santa Barbara-based citizens' action group, has been actively involved in the Becker Well project, raising funds to hire consultants (Dudek Environmental, Santa Barbara) to locate possible grant funding to add to the State Lands Commission (SLC) budget for capping the well, and working with SLC also on an aerial and underwater survey of the Summerland oil field, to identify other problem wells. These surveys are paid entirely by Heal the Ocean through the generosity of our donors.

The Draft Environmental Impact Report (DEIR):

The draft EIR should be approved without delay - or held up by negative comments that require another draft of the DEIR. The residents of Summerland and the health of the coastal environment should not wait for an additional 30 days to respond to comments, followed by an additional 30 days for final approval. The capping of Becker Well needs to begin as soon as possible. The remaining $700,000 needed for properly capping this well is expected to be approved shortly after the approval of the DEIR. It is in the best interest of the California State Lands Commission to be prepared to act as soon as this funding is available. 6-1

Addressing the Significant and Unavoidable Impacts:

AQ-1: Air Emissions from Construction:

This impact is listed as significant and unavoidable due to tug boat emissions, and other construction vehicle emissions that would be in violation of the South Coast Air Quality Management District regulations. One has to weigh this violation in relation to the hydrocarbon emissions that escape every day from the oil bubbling up from the Becker Well. Any air quality 6-2

2

violation will be more than offset by the long term air-quality benefits produced by capping Becker Well. 6-2 cont

The DEIR lists the following Significant and Unavoidable impacts from the "No Project" alternative:

- HAZ-1: Long-term Oil Spill Impacts to the Environment
- AES-3: Long-term Oil Spill Impacts to the Environment
- AQ-2: Long-term Air Quality Impacts
- BIO-2: Long-term Oil Spill Impacts to Marine Biological Resources 6-3
- WQ-2: Marine Water Quality from Eliminating Becker Well Oil Releases
- REC-3: Long-term Oil Spill Impacts to the Environment

The issues raised by a "No Project" alternative are unacceptable – to the ocean, the citizens of Summerland, and to all Santa Barbara County residents who love Summerland Beach.

Heal the Ocean respectfully requests the Becker Well Project Draft Environmental Impact Report be approved immediately. Thank you! 6-4

Sincerely,

Hillary Hauser, Executive Director

Alex Bennett, Policy Analyst

RESPONSE TO COMMENT SET 6: HEAL THE OCEAN

6-1 Comment acknowledged. CSLC staff understands the urgency to implement the Project and properly abandon the Becker well and staff has submitted permit applications for the Project to the appropriate agencies as provided in the EIR (Section 4, *Agency Use of the EIR / Anticipated Approvals*).

6-2 Air quality impacts are determined through the comparison of the peak day emissions with the thresholds from different jurisdictions. Peak day emissions from multiple tug boat and supply vessels would temporarily exceed the SCAQMD thresholds and have therefore been determined to be significant. This significant and unavoidable impact will be evaluated along with the benefits of the Project identified in the EIR (Table ES-3 and Table 6-2) and Impact AQ-1: Long-term Air Quality Impacts.

6-3 Comment acknowledged. As provided in Section 6.5, *Comparison of Proposed Project and Alternatives and Environmental Superior Alternative*, the No Project Alternative was not identified as the environmental superior alternative due to the number of significant and unavoidable impacts as compared to the Project.

6-4 Comment acknowledged.

COMMENT SET 7: SANTA BARBARA CHANNELKEEPER

Santa Barbara CHANNELKEEPER®

714 Bond Avenue
Santa Barbara, CA 93103

tel 805.563.3377
fax 805.687.5635

info@sbck.org
www.sbck.org

July 5, 2017

Eric Gillies
100 Howe Avenue, Suite 100-South
California State Lands Commission
Sacramento, CA 95825

RE: Becker Well Project Draft EIR

Dear Mr. Gillies,

Please accept the following comments on the Draft Environmental Impact Report for the Becker and Legacy Wells Abandonment and Remediation Project, which are hereby submitted by Santa Barbara Channelkeeper. Channelkeeper is a local non-profit environmental organization dedicated to protecting and restoring the Santa Barbara Channel and its watersheds through science-based advocacy, education, field work and enforcement.

Poorly-abandoned legacy wells off the coast of Santa Barbara County are leaking oil that pollutes our beautiful beaches, threatens public health, jeopardizes wildlife health and habitats, and negatively impacts our beach-based economy. Channelkeeper thanks the State Lands Commission for your dedication to addressing leaking legacy wells and we strongly **support the current actions** to properly re-abandon the Becker Well. We offer the following comments to ensure the DEIR is as robust as possible. 7-1

Project Description

Although we understand that pending legislation would allow for the development of a programmatic EIR to properly abandon legacy wells throughout the entire coast, Channelkeeper suggests incorporating abandonment of legacy wells in Goleta into this EIR. Much of the document already addresses impacts throughout the entire Santa Barbara Channel and County of Santa Barbara. It would be prudent of the Commission to include the Goleta wells in case the legislation fails. 7-2

Channelkeeper also requests a more accurate characterization of the oiling conditions at Summerland Beach. Several chapters in the DEIR state that oil is observed near the Becker Well for ten days per year. While it is acknowledged that recent anecdotal evidence suggests oiling has increased in regularity, it is important to clarify that conditions have deteriorated significantly and persistent oiling has impacted public health and recreation. Channelkeeper has been conducting bi-monthly tar ball monitoring at seventeen beaches from Ventura to Gaviota since October 2015. Oil was documented at Summerland beach during every survey, often with bands of oily mousse and sheen on the water. It is clear that oiled conditions are now more common. We suggest editing the statements to reflect that oiling was "*historically*" present about ten days per year but current conditions represent a more significant risk. 7-3

Keeping watch for clean water

Impact Analysis

Hazardous Materials and Risk of Upset

We recommend editing the final sentence of Section 4.1.1.4 to state, "Leakage from wells causes biological, hydrological, *recreational, economic, and public health* impacts and has been ongoing for years at the Project location." 7-3 cont

Air Quality

The DEIR does not currently indicate that air quality monitoring will occur during the project. We recommend including air quality monitoring in order to protect public health as previous beach closures have been necessary due to strong petroleum odors. Additionally, recent scientific studies[i, ii] indicate that fluctuating barometric pressure and even modest diurnal fluctuations are sufficient to move significant volumes of subsurface vapors to the surface. We recommend utilizing frequent or continuous monitoring to ensure that abandonment efforts do not result in gas releases that would be potentially impactful to workers or nearby residents and to ensure that proper sealing has occurred post-abandonment. 7-4

Biological Resources

Although we understand that the Becker Well abandonment is scheduled to be conducted in November, we encourage the Commission to include a discussion of potential impacts and associated mitigation measures to protect steelhead trout, grunion, and tidewater goby to inform future abandonment activities. Mitigation measures should include avoidance of critical periods, presence monitoring, and turbidity monitoring. 7-5

Impacts to gray whales should also be more adequately addressed in the DEIR. As the DEIR indicates, gray whales are present in the immediate project vicinity and nearby areas generally from December through May. This period also coincides with the most conducive low tides for well abandonment. In addition to MM-BIO-3, MM-BIO4a-4c, and APM-4, an additional mitigation measure should be incorporated to avoid critical periods from February through April when significant numbers of mothers and calves are often close to shore for protection from predators during their north-bound migration. 7-6

Additional minor recommended changes to the biological resources section include:

- Figure 4.1-1 should be updated to include island seal haulouts or the legend should be updated to indicate the star icon signifies "mainland seal haulouts." 7-7
- The Marine Sanctuaries and Reserves section should include identification of the network of coastal Marine Protected Areas that were developed in 2012 by the California Department of Fish and Wildlife. 7-8

Hydrology and Water Quality

A mitigation measure should be included to protect water quality from stormwater runoff. In the event that a storm occurs during project implementation best management techniques for stormwater capture should be deployed for onsite equipment and equipment staging areas. This is particularly important as the proposed equipment staging area at Lookout Park will be adjacent to a concrete access ramp that could potentially serve as an expedited conduit of stormwater runoff to the marine environment. 7-9

Oil Spill Contingency Plan
The DEIR and Oil Spill Contingency Plan specifically call out Clean Seas as a potential oil spill response contractor. It is our understanding that Clean Seas has been purchased by the Marine Spill Response Corporation (MSRC). The Commission should ensure that MSRC will be able to provide 7-10
adequate resources in the event of a spill from project activities as resources may be in flux due to the transition.

Thank you for the opportunity to comment on the DEIR for the Becker and Legacy Wells Abandonment and Remediation Project; we appreciate your attention to the issues and concerns we raise and trust you will address them before certifying the EIR. Ultimately, Channelkeeper strongly supports the adoption of the "Enhanced Barge Alternative" and endorses the Commission's efforts 7-11
to adequately abandon leaking legacy wells off our coast. Please feel free to contact me via email at jennad@sbck.org or telephone at 805.563.3377 ext.5 should you have any questions.

Sincerely,

Jenna Driscoll, Watershed and Marine Program Associate

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[i] Hosangadi V., Shaver B., Hartman B., Pound M., Kram M., Fresscura C. High-Frequency Continuous Monitoring to Track Vapor Intrusion Resulting From Naturally Occurring Pressure Dynamics. *Remediation*. Spring 2017. wileyonlinelibrary.com DOI: 10.1002/rem.21505.

[ii] Kram M., Morris P., Everett L. Dynamic Subsurface Explosive Vapor Concentrations: Observations and Implications. *Remediation*. Winter 2011. wileyonlinelibrary.com. DOI: 10.1002/rem.21299

RESPONSE TO COMMENT SET 7: SANTA BARBARA CHANNELKEEPER

7-1 Comment acknowledged.

7-2 The scope of the EIR is for the Becker well and the legacy wells associated with the Summerland oil field. As oil fields and wells drilled into them have different characteristics, in terms of downhole pressures, depth of wells, blowout potential, and other reservoir characteristics, this EIR groups the Becker and legacy wells associated with the Summerland oil field into one CEQA document. The inclusion of additional areas along the California coast that are associated with different oil fields with different characteristics would necessitate a subsequent or supplemental EIR.

7-3 The text related to the frequency of oiling is modified in the Final EIR to indicate that the oiling frequency is based on historical observations and that anecdotal evidence indicates that leaks in and around the Becker onshore well have increased in regularity. Text modifications are made to Section 4.1.1.4 to reflect the impacts to biological, hydrological, air quality and recreational impacts. Impacts due to economic issues are not a part of the scope of the EIR.

7-4 Odor impacts from escaping gases could occur during well abandonment activities from oily water or from the well muds and the well bore. MM AQ-1b addresses the implementation of air filtration using carbon canisters and the separation of gases from drilling muds, thereby addressing many sources of odors from Project activities. The CSLC has been in coordination with the APCD on this Project, and those mitigation measures were added at the request of the APCD to help ensure that odors are not an issue. Air quality monitoring has not been determined to be necessary, particularly given the low production rate of oil and gas from these wells historically and the lack of hydrogen sulfide gas.

7-5 Section 4.4, *Biological Resources*, in the Final EIR is expanded to address additional species, including grunion, steelhead trout and tidewater goby. Impacts to grunion are not anticipated as grunion are not a protected, threatened or special status species, and the area that would be impacted on the beach during construction activities would be minimal. Tidewater goby are limited to brackish water areas, which are not present at the Project site. Steelhead are an open water fish and are discussed under the general impacts to marine species from construction activities, lighting and spills detailed in impacts BIO-1 (oil spill impacts), BIO-4 (noise impacts) and BIO-5 (Construction and Lighting Impacts). BIO-5 is expanded to include impacts from construction, including construction lighting.

7-6 Concerns with impacts to marine mammals stem primarily from the construction noise generated as part of the sheet pile installation techniques. Extensive analysis was conducted regarding noise levels and thresholds for impacts to marine mammals (see Section 4.4, *Biological Resources*). MM BIO-4c includes marine mammal monitoring, which would allow for stoppage of noise-producing work activities when marine mammals are spotted close to the work area. This would prevent impacts to marine mammals and ensure that noise levels for marine mammals are maintained below the appropriate thresholds. MM BIO-4c is sufficient to ensure that impacts are reduced to less than significant. Preventing construction work for long periods of the year might prevent the ability of the CSLC staff to abandon the wells during ideal periods of equipment availability and tide accessibility.

7-7 Figure 4.4-1 is updated in the Final EIR to indicate that the seal haul out areas are mainland seal haul out areas only.

7-8 The Final EIR Section 4.4, *Biological Resources*, discussion on Marine Sanctuaries and Reserves is expanded to discuss some of the nearby Marine Protected Areas (MPAs) that were established by the California Department of Fish and Wildlife. None of these MPAs is located within 18 miles of the Project site.

7-9 APM-2 requires that the barge be designed so that spills are contained within the barge. In the Final EIR, this mitigation measure is expanded to include spills and storm water to ensure that storms that occur during the Project do not cause contaminated runoff from the barge into the marine environment. The only equipment that would be located in Lookout Park would be the spills response trailer. Spills from the spill response trailer are not anticipated as it would not contain quantities of oils or other hazardous materials; therefore, additional measures for storm water at Lookout Park are not needed.

7-10 The EIR indicates that “Clean Seas, or another equivalent organization experienced in on-sea oil spill containment and recovery operations” would be used, such as the Marine Spill Response Corporation. The oil spill response plan will be updated with the appropriate organization once arrangements are completed, as per measure APM-3.

7-11 The EIR identifies a number of mitigation measures and Applicant Proposed Measures to ensure that the Project will be effectively and efficiently completed with minimal environmental impacts.

COMMENT SET 8: GET OIL OUT

GOO!
Get Oil Out

PO Box 23625 - Santa Barbara, CA 93121

July 5, 2017

Eric Gillies
100 Howe Avenue, Suite 100-South
California State Lands Commission
Sacramento, CA 95825

RE: Becker Well Project Draft EIR

Dear Mr. Gillies,

Please accept the following comments on the Draft Environmental Impact Report for the Becker and Legacy Wells Abandonment and Remediation Project, which are hereby submitted by Get Oil Out! (hereinafter "GOO!"). GOO! was formed in the wake of the Santa Barbara Oil Spill of 1969. Over the years, GOO! has had many successes in fighting to protect California from further oil development and exploitation. The organization's focus is on developing better techniques to end our addiction to oil.

GOO! commends the State Lands Commission's dedication over the past decades to remove coastal hazards from poorly-abandoned legacy wells off the coast of Santa Barbara County. GOO! **strongly supports the current actions** to properly re-abandon the Becker Well and offers the following comments to ensure the DEIR is as robust as possible. 8-1

Project Description

GOO! recommends incorporating abandonment of legacy wells in Goleta into this EIR. GOO! recognizes that pending legislation would allow for the development of a programmatic EIR to properly abandon legacy wells throughout the entire coast, but nevertheless urges the Commission to address the Goleta wells in case the legislation fails. Furthermore, incorporating this discussion into the EIR is appropriate given that the DEIR addresses impacts throughout the entire Santa Barbara Channel and County of Santa Barbara. 8-2

1

Impact Analysis

Oil Spill Contingency Plan
The DEIR and Oil Spill Contingency Plan identify Clean Seas as a potential oil spill response contractor. GOO! has heard rumblings that Clean Seas has recently been purchased. If so, GOO! requests that the Commission ensure that adequate resources will be provided in the event of a spill from project activities as resources may be in flux due to the transition. 8-3

Air Quality
The DEIR does not expressly state that air quality monitoring will occur during the project. We recommend including air quality monitoring in order to protect public health as previous beach closures have been necessary due to strong petroleum odors. 8-4

Biological Resources
Although the Becker Well abandonment is scheduled to be conducted in November, we encourage the Commission to include a discussion of potential impacts and associated mitigation measures to protect steelhead trout, grunion, and tidewater goby to inform future abandonment activities. 8-5

GOO! also recommends that impacts to gray whales be more adequately addressed. Gray whales are present in the immediate project vicinity and nearby areas from December through May—the most conducive low tides for well abandonment. 8-6

Hydrology and Water Quality
Finally, GOO! recommends that a mitigation measure be included to protect water quality from stormwater runoff. Such a mitigation measure is critical where the proposed equipment staging area at Lookout Park is adjacent to a concrete access ramp that could potentially expedite stormwater runoff to the marine environment. For this reason, GOO! requests that best management techniques for stormwater capture be deployed for onsite equipment and equipment staging areas in the event that a storm occurs during project implementation. 8-7

Thank you for the opportunity to comment on the DEIR for the Becker and Legacy Wells Abandonment and Remediation Project. Do not hesitate to contact me via email at mtlyonslaw@gmail.com should you have any questions.

Sincerely,

Michael Lyons

Michael Lyons, President, Get Oil Out!

2

RESPONSE TO COMMENT SET 8: GET OIL OUT

8-1 Comment acknowledged.

8-2 Please see response to comment 7-2.

8-3 Please see response to comment 7-10.

8-4 Please see response to comment 7-4.

8-5 Please see response to comment 7-5.

8-6 Gray whales are discussed in Section 4.4, *Biological Resources*, and are addressed under Impact BIO-3, regarding collision-related vessel traffic impacts on marine mammals and turtles as well as MM BIO-3, which addresses marine mammal and sea turtle avoidance and response training. Whales are also addressed under BIO-4, related to noise impacts on marine species, as well as under MMs BIO-4a through BIO-4c, which address the potential impacts through observations and limits on noisy activities.

8-7 Please see response to comment 7-9.

COMMENT SET 9: ANDY HELLER

To: Eric Gillies, Project Manager 100 Howe Avenue, Suite 100-South California State Lands Commission Sacramento, CA 95825

Subject: Becker Well Project DEIR Comments

Dear Eric,

After reviewing EIR, I have several comments.

1st, my understanding is that this is initial EIR. So I am confused as to why there is a "Proposed Project" that is distinct from the "Enhanced Barge Alternative" that is recommended. I think the default "Proposed Project" should the "Enhanced Barge Alternative" and the current "Proposed Project" can be an alternative. Certainly makes more sense to reduce the number of trips between POLB and the Project site. And it seems that timing would make sense at high tide to move barge from one site to another site. 9-1

Page ES-1 mentions "oil seepage from the area around the Becker onshore well (Project) has been reported to occur approximately 10 days every year." I assume this is based on low tides when the seepage is clearly visible. However, this statement is highly misleading as it is very hard to believe that there is no seepage on the other 355 days when it's not clearly visible. 9-2

Page ES-1 Project Objective mentions "Abandon and seal other legacy wells as appropriate in the surrounding area …". EIR should more clearly state how the "other legacy wells" will be identified and prioritized. 9-3

Thank you for opportunity to provide comments.

Andy Heller
220 W YANONALI ST
SANTA BARBARA, CA 93101-3526
(805) 448-7689
Jaheller7@hotmail.com

RESPONSE TO COMMENT SET 9: ANDY HELLER

9-1 The CSLC conducted preliminary studies contemplating Project design to identify a number of viable Project options. These different options were then submitted to construction contractors to obtain a range of costing for Project implementation. These equipment options were then used to formulate the EIR "proposed Project" and some of the alternatives, with the "proposed Project" being the preferred equipment arrangement that was developed and submitted to contractors for bids. The equipment options submitted to contractors and also examined in the EIR included the "proposed Project" along with the "small cofferdam and pier" alternative and the "large cofferdam and platform" alternative. The use of an enhanced barge with a single trip to the POLB was not presented to contractors as an equipment option. It was developed as part of the EIR process and was therefore included as an additional alternative. The equipment options can be either analyzed as the "proposed Project" or as an "alternative" as long as the alternative is analyzed to a Project level of detail, which the alternatives are in this EIR.

9-2 The Final EIR is modified to indicate that the "oil seepage from the area around the Becker onshore well (Project) has been reported to become visible approximately 10 days every year." Additional periods of the year may have seepage. This is made consistent through the Executive Summary and Section 1, *Introduction*, and Section 2, *Project Description*.

9-3 Text is added to the Executive Summary and Section 1, *Introduction*, to indicate that the identification and prioritization of the legacy wells has not been conducted at this time, but that the EIR was prepared so that it may be used for other legacy wells under similar situations as the Becker well.

The following six comments are taken from the transcripts from the June 7, 2017, public hearing on the Draft EIR in the city of Carpinteria.

COMMENT T1: CITY OF GOLETA – ANDY NEWKIRK

Oral comments submitted at Public Meeting on Becker and Legacy Wells Abandonment and Remediation Project Draft EIR, June 7, 2017

Hi, I'm Andy Newkirk, senior planner with the City of Goleta. First off, I want to thank the Commission and their staff for all the great work being done to address oil and gas legacy hazards along our coastline. During the past year, State Lands crews out to Goleta on two separate occasions for a total of six days of hazards removal work. A lot of hazards were removed and we are grateful for this effort and look forward to continuing our working relationship with State Lands to try to remove the remaining beach hazards. Although significant removal work has been done, our coastline is still littered with hazards. After storm events earlier this year, we updated an inventory of beach hazards along our coast. This inventory identifies 70 locations that need to be addressed. Included in this inventory are approximately 11 exposed wellheads. We applaud State Lands' recent efforts to document and inventory legacy wells. Included in the most recent legacy well inventory are two visible wells along Ellwood shoreline in the intertidal zone. These two wells were abandoned in 1937 and are of serious concern to us. Among the other exposed wells in our coastline not currently identified as legacy wells by State Lands, three were abandoned in the 1930s, and three more were abandoned in the 1940s. All these wells pose potential risk to our public and to the environment, and we are dedicated to doing all we can to ensure any potential risk associated with these wells are addressed as soon as possible. The draft EIR currently limits the geographic scope to Summerland. We suggest expanding the scope of a programmatic EIR like this to all legacy wells. Including all legacy wells at a programmatic level would, we think, most efficiently support the direction of SB 44 that currently is in the legislature, and in doing so would avoid the need to prepare multiple environmental documents for well abandonments beyond Summerland. The programmatic approach is serving us well in the beach hazards removal project currently, and we would be pleased to continue the city-county-state coordination in future efforts to removing legacy wells. Once again, we want to thank the State Lands for all the work you guys are doing to deal with these legacy hazards left by oil and gas operations and look forward to working together in the future. T1

RESPONSE TO COMMENT T1: CITY OF GOLETA – ANDY NEWKIRK

T1 Please see response to comment 7-2.

COMMENT T2: PUBLIC – SUMMERLAND RESIDENT

Oral comments submitted at Public Meeting on Becker and Legacy Wells Abandonment and Remediation Project Draft EIR, June 7, 2017

So as a resident of Summerland, you were talking about 24-hour working but no lights at night. Tell me, what in the evening hours, what type of work will be done and what is the sound level that we can anticipate? T2

RESPONSE TO COMMENT T2: PUBLIC – SUMMERLAND RESIDENT

T2 Project construction for well abandonment would occur 24 hours per day. Lighting at night would be required for the well abandonment; however, MM AES-1 would require shielding project lighting. The noisiest construction activity would involve installation of sheet pile using a vibratory hammer and would be limited to the hours between 8 a.m and 5 p.m. As provided in MM NOI-1, no nighttime sheet pile installation would be allowed. Noise levels associated with vibratory hammers could cause noise levels at residences to increase by 10 to 20 dBA, with a peak hour noise level at the closest residence to the Project site of 81.5 dBA. Noise levels during other activities, when the vibratory hammer is not being used, would range up to 64.4 dBA at the closest residences to the Project site.

COMMENT T3: PUBLIC – LEE HELLER

Oral comments submitted at Public Meeting on Becker and Legacy Wells Abandonment and Remediation Project Draft EIR, June 7, 2017

And then back to the comments from Goleta, I remember originally or at one point this was going to be a programmatic EIR and then circumstances moved it away from that. Is there a chance you're going to shift back to that or are you going to move forward with this as is? T3

RESPONSE TO COMMENT T3: PUBLIC – LEE HELLER

T3 Please see response to comment 7-2.

COMMENT T4: HEAL THE OCEAN – HILLARY HAUSER

Oral comments submitted at Public Meeting on Becker and Legacy Wells Abandonment and Remediation Project Draft EIR, June 7, 2017

So you're probably not going to have to do a whole bunch of supplementals. I don't know. But anyway, we've been waiting a long time for this and we've looked at all the negative -- the no project is not a possibility. We have to fix this and I just hope that the process can just move along and that we don't have to redo the EIR because that November date, to me, is the limit, because we've got a summer coming up and so we actually got a bid from Aqueos to mop up, do oil mop up from now until project implementation. T4

RESPONSE TO COMMENT T4: HEAL THE OCEAN – HILLARY HAUSER

T4 Please see responses to comments 6-1 and 7-2.

COMMENT T5: SANTA BARBARA CHANNELKEEPER – JENNA DRISCOLL

Oral comments submitted at Public Meeting on Becker and Legacy Wells Abandonment and Remediation Project Draft EIR, June 7, 2017

My name is Jenna Driscoll, with Channelkeeper, and I agree, this is a great move in the right direction. We're really excited about the implementation of the project. Just really fast, I did just do a quick scan of the document and I noticed there wasn't any really discussion about impacts to grunion or steelhead. Grunion are mentioned, and I know the November implementation wouldn't really impact grunion, but if we're looking to expand this to future documents, you might just want to cover those since they are steelhead critical habitat and grunion areas, too. But overall, great job, excited to see it implemented. T5

RESPONSE TO COMMENT T5: SANTA BARBARA CHANNELKEEPER – JENNA DRISCOLL

T5 Please see response to comment 7-5.

COMMENT T6: SANTA BARBARA COUNTY SUPERVISOR 1ST DISTRICT – DAS WILLIAMS

Oral comments submitted at Public Meeting on Becker and Legacy Wells Abandonment and Remediation Project Draft EIR, June 7, 2017

First of all, I want to say I really appreciate you coming to the community to roll this out and for a timeline that is relatively prompt in our world of government, and so that's really encouraging. Part of the reason why I'm here is because there has been a lot of community angst about the budget not being finalized. I'm not worried about it and you guys, obviously, aren't either, from what I've gathered here today, and I think it's because this governor, a deal's a deal, you know, and I think that's why we're confident. Then the other reason why I'm here, and forgive me if this question was already answered in your presentation, but our enemy in the past has been seismic activity that can dislodge capping, so can this time line be thrown off by seismic activity or should we be praying that whatever seismic activity happens before November? It would be strange for us to be praying for seismic activity in our own community, but tell us about the long haul. T6

RESPONSE TO COMMENT T6: SANTA BARBARA COUNTY SUPERVISOR 1ST DISTRICT – DAS WILLIAMS

T6 As indicated in Section 4.7, *Geology and Soils*, although the Project site is located in a seismically active region of Southern California, the proposed plugging and abandonment activities will not induce seismic movement or cause ground shaking that would have effects outside of the Project area. Similarly, the plugging and abandonment of the well will be done in accordance with existing standards which would reduce the susceptibility of an oil spill as a result of any ground shaking once the Project is completed.

Once the well is abandoned, there would be little impact from future seismic activity as the well bore and surrounding spaces around the well bore would be filled with concrete and there would be no potential for dislodging of caps or increased leakage. During the interim period before the well is abandoned, seismic activity could dislodge existing measures, such as caps, causing a change in leakage rates.

One area of seismic concern in the Summerland area is the Ortega fault zone, an onshore escarpment that projects offshore and goes right through Treadwell. The Becker well is farther away from the Ortega fault zone and is not affected by it. For legacy wells where seismic activity is a greater issue, such as Treadwell #10, the use of different types of cements that have thixotropic properties (they flex when the earth starts to shake, becoming a liquid and then they'll solidify again), would be used. The cement type and abandonment procedures would be detailed in the Abandonment and Contingency Plan as required under APM-1.

California State Lands Commission

PART III – REVISIONS TO DRAFT EIR

Final Environmental Impact Report for the Becker and Legacy Wells Abandonment and Remediation Project, July 2017

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BACKGROUND AND PROJECT LOCATION

The California State Lands Commission (CSLC), as lead agency under the California Environmental Quality Act (CEQA; Pub. Resources Code, § 21000 et seq.), has prepared this Environmental Impact Report (EIR) for the proposed Becker and Legacy Wells Abandonment and Remediation Project (Project). The Project is located on Summerland Beach in the unincorporated community of Summerland, Santa Barbara County, approximately 6 miles east of the city of Santa Barbara and 5 miles west of the city of Carpinteria. Lookout Park, operated by Santa Barbara County Parks, sits atop bluffs above the Beach. Within the Project area is the inactive Summerland Oil Field, an area of naturally occurring oil and gas seeps, where wells were drilled first from onshore and then from piers that extended into the Pacific Ocean (Figures ES-1 and ES-2). First developed in the 1890s, the Summerland Oil Field produced 3.18 millions of barrels of oil during its 50-year lifespan, with the last wells produced in 1939-40.

Few records exist regarding the original wells drilled into the Summerland Oil Field. When production became less economical in the early 1900s, many oil wells and piers were left to deteriorate. To the extent operators performed well abandonments, during that time they used procedures that do not meet current regulatory requirements. The CSLC refers to abandoned wells with no clear ownership history or responsible party designation as "legacy" wells. Although the State received no revenues from legacy wells, which were drilled without State authority and while trespassing on State property, CSLC staff spends significant time and resources to ameliorate legacy coastal hazards, including remnants of piers, oil wells, pilings, and old pipelines. (For information on the CSLC's Coastal Hazards Program, see www.slc.ca.gov/Programs/Coastal_Hazards.html). This Project is intended to address oil releases from one or more legacy Summerland area oil wells.

SUMMARY OF PROJECT OBJECTIVES, PURPOSE AND NEED

Due to natural seeps or leaks from improperly abandoned legacy wells, oil sheens are intermittently observed in the water and on the sand at Summerland Beach. Oil seepage from the area around the Becker onshore well (Project) has historically been reported to become visible approximately 10 days every year. After conducting an assessment of the Becker well in 2015 (Phase 1), the CSLC is now seeking to conduct Phase 2 abandonment activities, which include the following objectives:

- Abandon and seal the Becker well to current Division of Oil, Gas, and Geothermal Resources (DOGGR) standards to alleviate oil leaking into the environment with minimum impacts to the beach and recreational resources
- Abandon and seal other legacy wells, as appropriate, in the surrounding area of the Becker well in the Summerland Beach area.

Figure ES-1. Project ~~Location~~ Area

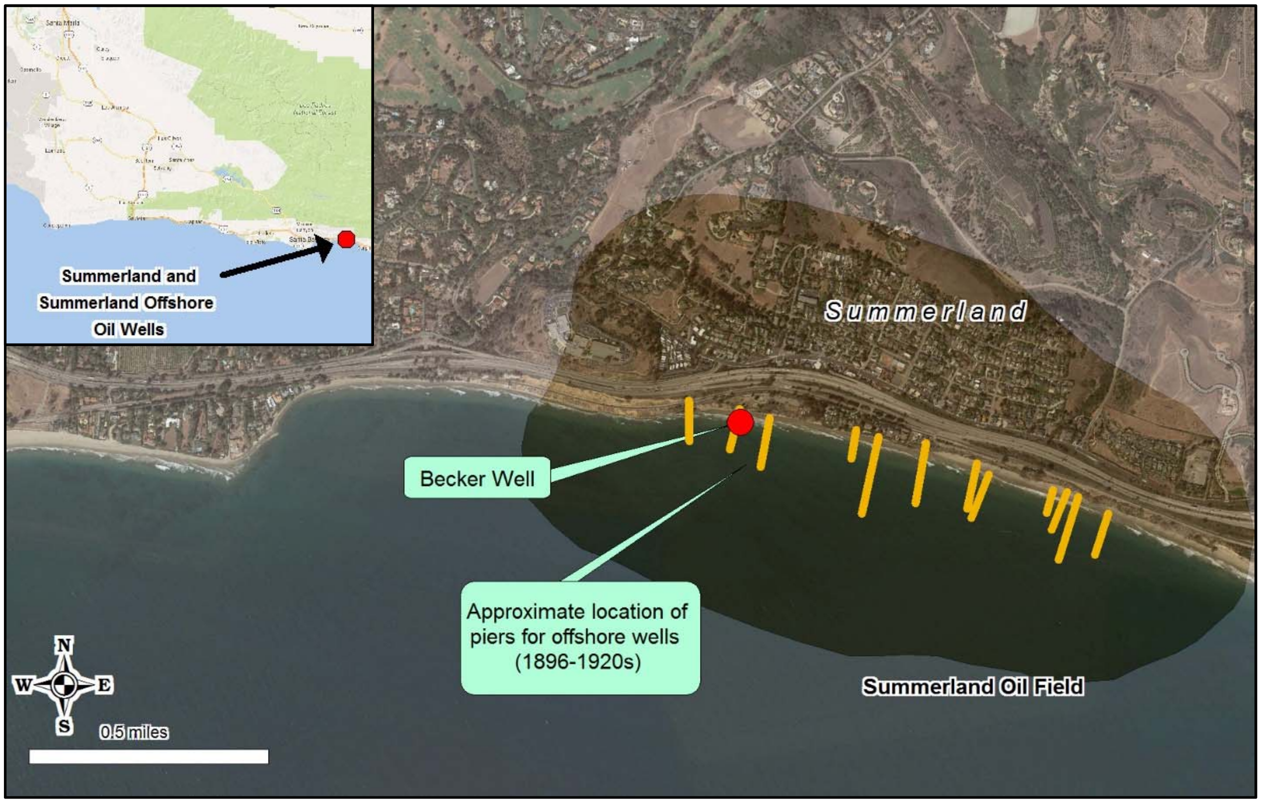
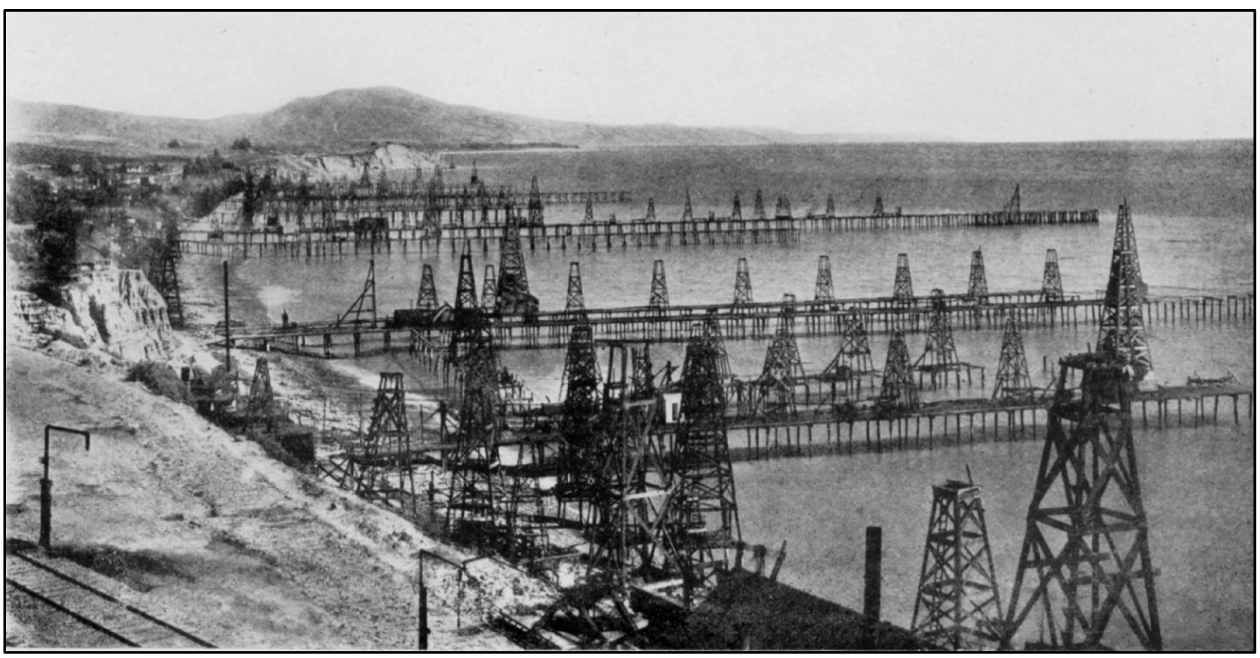


Figure ES-2. Photograph of Historic Summerland Wells and Piers



Source: National Geographic, February 1920. Photograph taken between 1906 and 1915, Becker well most likely in the foreground.

The purpose of this EIR is to identify the significant impacts on the environment of the Project (proposed abandonment and remediation <u>of Becker well as well as other legacy wells using similar</u> activities), to identify alternatives to the Project, and to indicate the manner in which those significant effects can be mitigated or avoided (Pub. Resources Code, § 21002.1, subd. (a)). This EIR is intended to provide the CSLC with information required to exercise its jurisdictional responsibilities with respect to the Project (to be considered at a noticed public hearing). Responsible agencies can use the information in a certified EIR in exercising their respective jurisdictional or regulatory responsibilities.

PROJECT DESCRIPTION

In addition to staging and unstaging, construction would occur in three main phases:

1. Construction of a double-walled cofferdam in the surf zone around the well to isolate it from ocean tides and provide access to the well
2. Well abandonment using a jack-up barge, 80 feet by 100 feet in size, to provide access to the Becker Well site from the ocean
3. Cofferdam removal

Staging and unstaging would require three round trips by sea between the Port of Long Beach (POLB) and the Project site to deliver and remove the Project's abandonment equipment and materials. The jack-up barge would be used during all construction activities at the well, including well abandonment. Figure ES-3 shows a typical jack-up barge in the surf zone.

Figure ES-3. Typical Jack-up Barge Configuration in Nearshore Setting

On each trip, the barge would be loaded at the POLB with the equipment and materials necessary for that phase of the operation. The barge would then be towed to the Project site and positioned and anchored with small tugboats during high tides. Work activities for the particular phase would then commence. Upon completion, the barge would be towed back to the POLB to prepare for the next Project phase. All construction activities are anticipated to take 3 weeks assuming no weather-related interruptions or delays due to unforeseen issues with the condition of the 100+ year old wellbore. However, it is possible due to complications in abandonment procedures that the barge could be at the Project site for a period of up to 8 weeks awaiting a tide amenable to barge removal.

Abandonment of the subject well would be undertaken using a conventional rig equipped with tools to allow drilling out any old cement inside the well casing. Current procedures require that a well is plugged by placing cement in the well-bore or casing at certain intervals as specified by DOGGR regulations. The cement seals the wellbore or casing and prevents fluid from migrating between underground rock layers or from the reservoir to the surface. Coordination with DOGGR would occur during the abandonment process if issues with the well or access to the entire wellbore arise and the abandonment process has to deviate from DOGGR abandonment standards. In such cases, an abbreviated abandonment approved by CSLC and DOGGR staffs will be implemented. This contingency is necessary since the downhole conditions of the Becker well are unknown and junk present in the well hole or irregularities with the well casing (e.g., a parted casing) could prevent the well bore from being cleaned out to a 100-foot depth. This is not unusual for a well abandoned to essentially non-existent standards at the time (early 1900s). The following contingencies could include:

- Place a cement plug to the maximum depth possible (if placement to at least a 100-foot depth, as specified by DOGGR regulations, cannot be achieved);
- Increase the interval of cement squeezes to less than 25-foot intervals;
- Use washover pipe to create space for cementing;
- Use a coiled tubing unit; and
- Expand abandonment operations to include removing a portion of the casing and filling the remaining “open” hole with cement.

SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

This EIR identifies potential significant impacts of the Project on the following environmental issue areas:

- Hazardous Materials and Risk of Upset
- Aesthetics
- Air Quality
- Biological Resources
- Cultural and Paleontological Resources
- Cultural Resources – Tribal
- Geology and Soils
- Greenhouse Gas Emissions
- Hydrology and Water Quality
- Noise
- Recreation
- Transportation (Marine)

Impacts within each affected environmental issue area are analyzed in relation to pertinent significance criteria. Impacts are classified as one of five categories.

Significant and Unavoidable	A substantial or potentially substantial adverse change from the environmental baseline that meets or exceeds significance criteria, where either no feasible mitigation can be implemented or the impact remains significant after implementation of mitigation measures
Less than Significant with Mitigation	A substantial or potentially substantial adverse change from the environmental baseline that can be avoided or reduced to below applicable significance thresholds
Less than Significant	An adverse impact that does not meet or exceed the significance criteria of a particular resource area and, therefore, does not require mitigation
Beneficial	An impact that would result an improvement to the physical environment relative to baseline conditions
No Impact	A change associated with the Project that would not result in an impact to the physical environment relative to baseline conditions

The Project includes the following Applicant Proposed Measures (APMs) to address Project construction activities (see full text in Section 2, *Project Description*). The APMs will be monitored by CSLC staff or CSLC contracted monitors along with the Project's overall Mitigation Monitoring Program (see Section 7, *Mitigation Monitoring Program*).

APM-1. Abandonment and Contingency Plan.

APM-2. Barge System Engineering.

APM-3. Emergency Response Equipment Availability.

APM-4. Use of Vibratory Pile Driver.

The Project would generate potentially significant environmental impacts associated with the following issue areas: hazardous materials and risk of upset; aesthetics, air quality; biological resources, cultural resources, tribal cultural resources, hydrology, noise and recreation.

One significant unavoidable impact (i.e., impacts that cannot be reduced to a level of insignificance) is associated with the Project. That impact relates to air emissions in the South Coast Air Quality Management District (SCAQMD) associated with tug boat emissions occurring from the portion of barge travel within the South Coast Air Basin. Project emissions in the Ventura and Santa Barbara air basins are below the applicable thresholds.

Table ES-2 at the end of this Executive Summary lists the impacts associated with the Project.

SUMMARY OF ALTERNATIVES TO PROPOSED BECKER WELL PROJECT

The California Environmental Quality Act (CEQA) requires the CSLC, as the CEQA Lead Agency, to describe and evaluate the comparative merits of a reasonable range of alternatives to a proposed project or its location, that would feasibly attain most of the basic objectives of the project while avoiding or substantially lessening any significant environmental effects (State CEQA Guidelines, § 15126.6, subd. (a)). CEQA also requires an EIR to evaluate a “no project” alternative. The purpose of describing and analyzing a “no project” alternative is to allow decision-makers to compare the impacts of approving a project with the impacts of not approving a project.

For abandonment of the Becker well, which is located in the surf zone with sufficient depth of water at high tide, the use of a barge system is feasible. However, other legacy wells at Summerland Beach are located where a barge might not be feasible (e.g., more inland). In addition, pending the results of a bathymetric analysis, the Becker well might not be able to directly use a barge. Therefore, this EIR also provides information on methods for abandoning legacy wells from locations that are not accessible to a barge-type system. Table ES-1 identifies potential Project alternatives, which are described and evaluated in detail in Sections 5.3 through 5.5.

Table ES-1. Summary of Alternatives Screening Results

Role in EIR	Alternative	Issue Areas Affected Compared to Proposed Project
Alternatives Evaluated in this EIR for the Becker well Project (Section 5.4)	No Project Alternative	*Continued Impacts: AQ, BIO, HAZ, REC, WQ*
	Enhanced barge and materials transport	*Impacts* ↓: AES, AQ, BIO *Impacts* ↑: None
Alternatives Eliminated from Consideration for the Becker well (Section 5.3) **but** **Evaluated in this EIR for other legacy wells (Section 5.5)**	Small Cofferdam, Pier	*Impacts* ↓: None *Impacts* ↑: BIO, NOI, REC
	Large Cofferdam, Platform	*Impacts* ↓: None *Impacts* ↑: BIO, NOI, REC
	Enhanced Barge and Pier	*Impacts* ↓: AES, AQ, BIO *Impacts* ↑: None
Alternatives Eliminated from Further Consideration in this EIR	Small Cofferdam, Barge	*Impacts* ↓: None *Impacts* ↑: BIO, NOI, REC

Notes: ↑ = increased; ↓ = reduced; AES = Aesthetics/Visual Resources; AQ = Air Quality; BIO = Biological Resources; HAZ = Hazards/Hazardous Materials; NOI = Noise; REC = Recreation, WQ = Hydrology/Water Quality

No Project Alternative

Under the No Project Alternative, the Becker well would not be abandoned, crude oil would continue to leak from the Becker well resulting in continued odor impacts, recreational impacts to the community, and impacts to biological resources due to crude oil released into the environment.

Enhanced Barge Alternative

Under the Enhanced Barge Alternative, a larger barge, multiple barges or a single barge combined with supply boat trips would be used, reducing the number of barge trips needed to and from the POLB. This alternative would be used to access wells that are barge-accessible. Activities under this alternative would be the same as those under the Project, except that additional engineering analysis would be implemented, providing the specifics for a single round trip from the POLB to the Project site for all equipment. This alternative would allow for advantages related to fewer barge trips, reduced air emissions and better scheduling opportunities (related to tides, etc.).

SUMMARY OF ALTERNATIVES EVALUATED FOR OTHER LEGACY WELLS

To address legacy wells, ~~a~~the EIR evaluates an Enhanced Barge and Pier Alternative. A barge would still be used as under the Enhanced Barge Alternative, but for wells that are located farther inland on the beach, a pier would be constructed from the barge. The abandonment rig would access the legacy well from the barge along the new temporary pier. Implementation would be the same as the Enhanced Barge Alternative described above, using either a large barge, multiple barges or a single barge and supply boats. The barge would be placed as close to the legacy well as possible. The barge would hold all the well abandonment equipment, a crane, pier elements and sheet pile materials for the cofferdam (or these would be delivered by supply boats).

ALTERNATIVES NOT CONSIDERED FOR FULL EVALUATION

Alternatives not considered for full evaluation include various configurations that would allow for access of the Becker or legacy wells from the beach by building roads on the beach and installing extensive sheet pile walls. These alternatives include:

- Small Cofferdam and Pier
- Large Cofferdam and Platform
- Small Cofferdam and Barge

Due to the longer construction timeframe and greater impacts on recreational resources, air quality and biological resources, these alternatives were eliminated from further consideration.

COMPARISON OF PROPOSED PROJECT AND ALTERNATIVES AND ENVIRONMENTALLY SUPERIOR ALTERNATIVE

State CEQA Guidelines section 15126.6, subdivision (e)(2), states, in part, that an EIR shall identify an environmentally superior alternative among the other alternatives "if the environmentally superior alternative is the 'No Project' alternative" (emphasis added). Table ES-3 compares the proposed Project impacts with those of the alternatives.

The Enhanced Barge Alternative is similar to the Project in that it would use a barge system to access the wells. However, it would incorporate additional features, including increased transportation of materials by supply boats and use of a different barge configuration to reduce barge trips to and from the POLB. This would reduce the impacts from air emissions associated with the Project and most likely reduce scheduling conflicts with tides and other elements of the marine environment as the barge can only be brought into the beach during specific high tide periods and under calm wave conditions.

Based on the analysis contained within the EIR, the CSLC has determined that the Enhanced Barge Alternative or the Enhanced Barge and Pier Alternative (for legacy wells not accessible by barge) is the environmentally superior alternative.

KNOWN AREAS OF CONTROVERSY OR UNRESOLVED ISSUES

Pursuant to State CEQA Guidelines section 15123, the EIR shall identify "areas of controversy known to the lead agency including issues raised by agencies and the public." There are no known areas of controversy. Concern was expressed during public scoping regarding the CEQA process to use for the Project (EIR, mitigated negative declaration, or negative declaration) because of the urgency to abandon and seal Becker well. One comment indicated that the Project should not move forward, but the reasons were not identified. See Appendix C for the Notice of Preparation (NOP), transcripts from the public meeting, and copies of the NOP comment letters.

ORGANIZATION OF EIR

The EIR is presented in nine sections with appendices as shown below.

- **Section 1 – Introduction** provides background on the Project and CEQA process.
- **Section 2 – Project Description** describes the Project, its location, staging operations, abandonment methodology, and schedule.
- **Section 3 – Cumulative Projects** identifies the projects that are analyzed for their potential cumulative effects and the EIR's approach to cumulative impact analysis.
- **Section 4 – Environmental Impact Analysis** describes existing environmental conditions, Project-specific impacts, mitigation measures, and residual effects for multiple environmental issue areas, and evaluates cumulative project impacts.

- **Section 5 – Project Alternatives Analysis** describes the alternatives screening methodology, alternatives rejected from full consideration, alternatives carried forward for analysis, and analysis of impacts for each alternative carried forward.
- **Section 6 – Other Required CEQA Sections and Environmentally Superior Alternative** addresses other required CEQA elements, including significant and irreversible environmental and growth-inducing impacts, compares the Project and alternatives, and identifies the environmentally superior alternative.
- **Section 7 – Mitigation Monitoring Program (MMP)** presents the MMP.
- **Section 8 – Other Commission Considerations** presents information relevant to the CSLC's consideration of the Project that are in addition to the environmental review required pursuant to CEQA (other considerations may be addressed in the Calendar Item staff report presented at the time of the CSLC's consideration of the Project).
- **Section 9 – Report Preparation Sources and References** lists the persons involved in preparation of the EIR and the reference materials used.

The appendices are listed below.

- **Appendix A** contains Federal and State laws, regulations, and policies, including a summary of each organized by issue area.
- **Appendix B** contains the EIR distribution list.
- **Appendix C** includes a copy of the NOP and comment letters received in response to the NOP.
- **Appendix D** includes the Oil Spill Contingency Plan.
- **Appendix E** includes air quality and greenhouse gas emission calculations.
- **Appendix F** includes a press release (August 21, 2015) of Summerland Beach closure due to oil on the beach and strong petroleum odors.
- **Appendix G** includes a schedule of high tides for years 2017 to 2019.

Table ES-2. Impact and Mitigation Summary (Proposed Project)

Impact	Impact Class [1]	Applicant Proposed Measures / Recommended MMs
SECTION 4.1 HAZARDOUS MATERIALS AND RISK OF UPSET		
HAZ-1: Project Impacts to Public Health and Environment	LTSM	**APM-1.** Abandonment and Contingency Plan **HAZ-1.** Construction Zone Restricted Area
HAZ-2: Construction-Related Oil Spill Risks of Impacts to the Environment	LTSM	**APM-1.** Abandonment and Contingency Plan **APM-2.** Barge System Engineering **APM-3.** Emergency Response Equipment Availability **HAZ-2a.** Removal of Contaminated Sands **HAZ-2b.** Water Handling
HAZ-3: Long-term Oil Spill Impacts to the Environment	B	
SECTION 4.2 AESTHETICS		
AES-1: Visual Impacts from Abandonment Activities	LTS	None recommended
AES-2: Visual Impacts from Accidental Oil Spills During Abandonment Activities	LTSM	**APM-1.** Abandonment and Contingency Plan **APM-2.** Barge System Engineering **APM-3.** Emergency Response Equipment Availability **HAZ-2a.** Removal of Contaminated Sands **HAZ-2b.** Water Handling
AES-3: in Long-term Oil Spill Impacts to the Environment	B	
AES-4: Visual Impacts from Nighttime Illumination during Abandonment Activities	LTSM	**MM AES-4.** Nighttime Illumination Shielding
SECTION 4.3 AIR QUALITY		
AQ-1: Air Emissions from Construction	SU [2]	**AQ-1a.** Prohibit Unnecessary Truck Idling **AQ-1b.** Use of Emission Reduction Measures **AQ-1c.** Compliance with State Portable Air Toxics Control Measure **AQ-1d.** Establish On-Site Equipment Staging Area and Worker Parking Lots
AQ-2: Long-term Air Quality Impacts	B	
AQ-3: Creation of objectionable odors affecting a substantial number of people	LTS	None recommended
AQ-4: Consistency with Regional Air Quality Plan	LTS	None recommended

[1] Impact Class: SU = Significant and Unavoidable (RED); LTSM = Less than Significant with Mitigation; LTS = Less than Significant; B = Beneficial (GREEN)

[2] In SCAQMD only

Table ES-2. Impact and Mitigation Summary (Proposed Project)

Impact	Impact Class [1]	Applicant Proposed Measures / Recommended MMs
SECTION 4.4 BIOLOGICAL RESOURCES		
BIO-1: Impact of Temporary Construction-Related Oil Spill Impacts to Biological Resources	**LTSM**	**APM-1**. Abandonment and Contingency Plan **APM-2**. Barge System Engineering **APM-3**. Emergency Response Equipment Availability **HAZ-2a**. Removal of Contaminated Sands **HAZ-2b**. Water Handling
BIO-2: Long-term Oil Spill Impact to Marine Biological Resources	**B**	
BIO-3: Collision-Related Vessel Traffic Impacts on Marine Mammals and Turtles	**LTSM**	**BIO-3**. Marine Mammal Avoidance and Response Training
BIO-4: Noise Impacts on Marine Mammals, Sea Turtles, Birds, and Fish	**LTSM**	**APM-4**. Use of Vibratory Pile Driver **BIO-4a**. Marine Resources Noise Reduction **BIO-4b**. Soft Start **BIO-4c**. Hydroacoustic and Marine Mammal/Sea Turtle Monitoring
BIO-5: Construction and Lighting Impacts on Kelp, Birds, Fish, and Plankton	**LTSM**	**BIO-5a**. Project Lighting **BIO-5b**. Kelp Avoidance
SECTION 4.5 CULTURAL RESOURCES		
CR-1: Impacts to Onshore or Offshore Archaeological Resources from Well Abandonment and Remediation Activities	**LTSM**	**CR-1**. Pre-Construction Review of Legacy Well Abandonment and Remediation Plans
CR-2: Impacts to Cultural Resources Due to Construction-Related Oil Spill Risks	**LTSM**	**CR-2**. Prepare a Spill Response Plan for Archaeological Resources
CR-3: Disturb Unidentified Human Remains	**LTSM**	**CR-3**. Appropriate Treatment of Human Remains
CR-4: Impacts to Previously Unidentified Paleontological Resources	**LTS**	None recommended
SECTION 4.6 CULTURAL RESOURCES – TRIBAL		
TCR-1: Impacts to Previously Identified or Unidentified Tribal Cultural Resources from Project Implementation	**LTSM**	**CR-1**. Pre-Construction Review of Legacy Well Abandonment and Remediation Plans
TCR-2: Impacts to Tribal Cultural Resources Due to Construction-Related Oil Spill Risks	**LTSM**	**CR-2**. Prepare a Spill Response Plan for Archaeological Resources **TCR-2**. Incorporate Coordination with Native American Tribes into the Spill Response Plan for Archaeological Resources
SECTION 4.7 GEOLOGY AND SOILS		
GEO-1: Potential Increase in Instability in Soils, Seismic Related Activities and Substantial Soil Erosion	**LTS**	None recommended

Table ES-2. Impact and Mitigation Summary (Proposed Project)

Impact	Impact Class [1]	Applicant Proposed Measures / Recommended MMs
SECTION 4.8 GREENHOUSE GAS EMISSIONS		
GHG-1: GHG Emissions from Project Activities	LTS	None recommended
GHG-2: Consistency with Applicable GHG Plan, Policy or Regulation	LTS	None recommended
SECTION 4.9 HYDROLOGY AND WATER QUALITY		
WQ-1: Impacts to Marine Water Quality from Inadvertent Oil Spill During Abandonment Operations	LTSM	**APM-2**. Barge System Engineering **APM-3**. Emergency Response Equipment Availability **HAZ-2a**. Removal of Contaminated Sands **HAZ-2b**. Water Handling
WQ-2: Marine Water Quality from Eliminating Becker Well Oil Releases	B	
SECTION 4.10 NOISE		
NOI-1: Construction Impacts to Sensitive and Recreational Receptors	LTSM	**APM-4**. Use of Vibratory Pile Driver **NOI-1**. Construction Time Limits
NOI-2: Construction Vibration Impacts to Sensitive and Recreational Receptors	LTS	None recommended
SECTION 4.11 RECREATION		
REC-1: Impacts to Recreation and Recreational Access from Abandonment Activities	LTSM	<u>**REC-1**. Repair of Damaged Infrastructure</u> **TRM-1**. Publication of U.S. Coast Guard (USCG) Local Notice to Mariners.
REC-2: Inadvertent Oil Releases Associated with Construction Activities would Impact Surrounding Recreational Resources	LTSM	**APM-1**. Abandonment and Contingency Plan **APM-2**. Barge System Engineering **APM-3**. Emergency Response Equipment Availability **HAZ-2a**. Removal of Contaminated Sands **HAZ-2b**. Water Handling
REC-3: Long-term Oil Spill Impacts to the Environment	B	
SECTION 4.12 TRANSPORTATION (MARINE)		
TRM-1: Marine Vessel Safety	LTSM	**TRM-1**. Publication of U.S. Coast Guard (USCG) Local Notice to Mariners

Table ES-3. Impact Summary (Proposed Project and Alternatives)

Impact	Impact Class[1]		
	Proposed Project	**No Project**	**Enhanced Barge Alternative[3]**
SECTION 4.1 HAZARDOUS MATERIALS AND RISK OF UPSET			
HAZ-1: Impacts to Public Health and Environment	**LTSM**	**NI**	**LTSM**
HAZ-2: Construction-related Spill Impacts To Environment	**LTSM**	**NA**	**LTSM**
HAZ-3: Long-term Oil Spill Impacts to the Environment	**B**	**SU**	**B**
SECTION 4.2 AESTHETICS			
AES-1: Visual Impacts from Abandonment Activities	**LTS**	**NI**	**LTS**
AES-2: Visual Impacts from Accidental Oil Spills During Abandonment Activities	**LTSM**	**NA**	**LTSM**
AES-3: Long-term Oil Spill Impacts to the Environment	**B**	**SU**	**B**
AES-4: Visual Impacts from Nighttime Illumination during Abandonment Activities	**LTSM**	**NA**	**LTSM**
SECTION 4.3 AIR QUALITY			
AQ-1:Air Emissions from Construction	**SU[2]**	**NA**	**SU[2]**
AQ-2: Long-term Air Quality Impacts	**B**	**SU**	**B**
AQ-3: Creation of Objectionable Odors Affecting a Substantial Number of People	**LTS**	**NA**	**LTS**
AQ-4: Consistency with Regional Air Quality Plan	**NI**	**NI**	**NI**
SECTION 4.4 BIOLOGICAL RESOURCES			
BIO-1: Impact of Temporary construction-related Oil Spills to Biological Resources	**LTSM**	**NA**	**LTSM**
BIO-2: Long-term Oil Spill Impact to Marine Biological Resources	**B**	**SU**	**B**
BIO-3: Collision-Related Vessel Traffic Impacts on Marine Mammals and Turtles	**LTSM**	**NA**	**LTSM**
BIO-4: Noise Impacts on Marine Mammals, Sea Turtles, Birds, and Fish	**LTSM**	**NA**	**LTSM**
BIO-5: Construction and Lighting Impacts on Kelp, Birds, Fish, and Plankton	**LTSM**	**NA**	**LTSM**
SECTION 4.5 CULTURAL RESOURCES			
CR-1: Impacts to Onshore or Offshore Archaeological Resources from Well Abandonment and Remediation Activities	**LTSM**	**NA**	**LTSM**
CR-2: Impacts to Cultural Resources Due to Construction-Related Oil Spill Risks	**LTSM**	**NA**	**LTSM**
CR-3: Disturb Unidentified Human Remains	**LTSM**	**NA**	**LTSM**
CR-4: Impacts to Previously Unidentified Paleontological Resources	**LTS**	**NA**	**LTS**
SECTION 4.6 CULTURAL RESOURCES – TRIBAL			
TCR-1: Impacts to Previously Identified or Unidentified Tribal Cultural Resources from Project Implementation	**LTSM**	**NA**	**LTSM**
TCR-2: Impacts to Tribal Cultural Resources Due to Construction-Related Oil Spill Risks	**LTSM**	**NA**	**LTSM**

Table ES-3. Impact Summary (Proposed Project and Alternatives)

Impact	Impact Class[1]		
	Proposed Project	No Project	Enhanced Barge Alternative[3]
SECTION 4.7 GEOLOGY AND SOILS			
GEO-1: Potential Increase in Instability in Soils, Seismic Related Activities and Substantial Soil Erosion	LTS	NA	LTS
SECTION 4.8 GREENHOUSE GAS EMISSIONS			
GHG-1: Increased GHG Emissions from Project Activities	LTS	NA	LTS
GHG-2: Consistency with Applicable GHG Plan, Policy or Regulation	LTS	NA	LTS
SECTION 4.9 HYDROLOGY AND WATER QUALITY			
WQ-1: Impacts to Marine Water Quality from Inadvertent Oil Spill during Abandonment Operations	LTSM	NA	LTSM
WQ-2: Marine Water Quality from Eliminating Becker Well Oil Releases	B	SU	B
SECTION 4.10 NOISE			
NOI-1: Construction Impacts to Sensitive and Recreational Receptors	LTSM	NA	LTSM
NOI-2: Construction Vibration Impacts to Sensitive and Recreational Receptors	LTS	NA	LTS
SECTION 4.11 RECREATION			
REC-1: Impacts to Recreation and Recreational Access from Abandonment Activities	LTSM	NA	LTSM
REC-2: Inadvertent Oil Releases Associated with Construction Activities would Impact Surrounding Recreational Resources	LTSM	NA	LTSM
REC-3: Long-term Oil Spill Impacts to the Environment	B	SU	B
SECTION 4.12 TRANSPORTATION (MARINE)			
TRM-1: Marine Vessel Safety	LTSM	NA	LTSM

[1] Impact Class: SU = Significant and unavoidable; LTSM = Less than significant with mitigation; LTS = Less than significant; NI = No impact; NA = Not Applicable; B = Beneficial

[2] In the SCAQMD only

[3] Also includes the Enhanced Barge with Pier Alternative applicable to legacy wells not directly accessible by barge.

1.1 PROJECT BACKGROUND AND LOCATION

The California State Lands Commission (CSLC), as lead agency under the California Environmental Quality Act (CEQA; Pub. Resources Code, § 21000 et seq.), has prepared this Environmental Impact Report (EIR) for the proposed Becker and Legacy Wells Abandonment and Remediation Project (Project). The Project is located on Summerland Beach in the unincorporated community of Summerland, Santa Barbara County, approximately 6 miles east of the city of Santa Barbara and 5 miles west of the city of Carpinteria. Lookout Park, operated by Santa Barbara County Parks, sits atop bluffs above the Beach. Within the Project area is the inactive Summerland Oil Field, an area of naturally occurring oil and gas seeps, where wells were drilled first from onshore and then from piers that extended into the Pacific Ocean (Figures 1-1 and 1-2). First developed in the 1890s, the Summerland Oil Field produced 3.18 million barrels of oil during its 50-year lifespan, with the last wells produced in 1939-40.[1]

Few records exist regarding the original wells drilled into the Summerland Oil Field. When production became less economical in the early 1900s, many oil wells and piers were left to deteriorate. To the extent operators performed well abandonments, during that time they used procedures that do not meet current regulatory requirements. California Division of Oil, Gas, and Geothermal Resources (DOGGR) databases indicate that there are 445 abandoned wells in the Summerland Oil Field, with 191 of those designated as offshore. The CSLC refers to abandoned wells that do not have a clear ownership history or responsible party designation as "legacy" wells.

Due to natural seeps or leaks from improperly abandoned legacy wells, oil sheens are intermittently observed in the water and on the sand at Summerland Beach. For example, oil seepage occurring from the area around the Becker onshore well (Project) historically becomes visible approximately 10 days every year. Recently, anecdotal evidence indicates that leaks in and around the Becker onshore well have increased in regularity. Abandoned well casings occasionally appear on the beach when they are not buried in sand. (Coastal sand movement can deposit at least 2 feet of sand on the beach in spring and summer that generally is removed by wave action in fall and winter.) For example, the number of wells and presence of oil discovered during inspections of the beach differed greatly between February 2017 (multiple wells exposed) and April 2017 (few wells exposed).

Exposed well casing on beach

[1] Another nearby oil field entirely offshore, the Summerland Offshore Oil Field, was discovered in 1957 and produced from two platforms in the Santa Barbara Channel before being abandoned in 1996.

Figure 1-1. Project ~~Location~~ Area

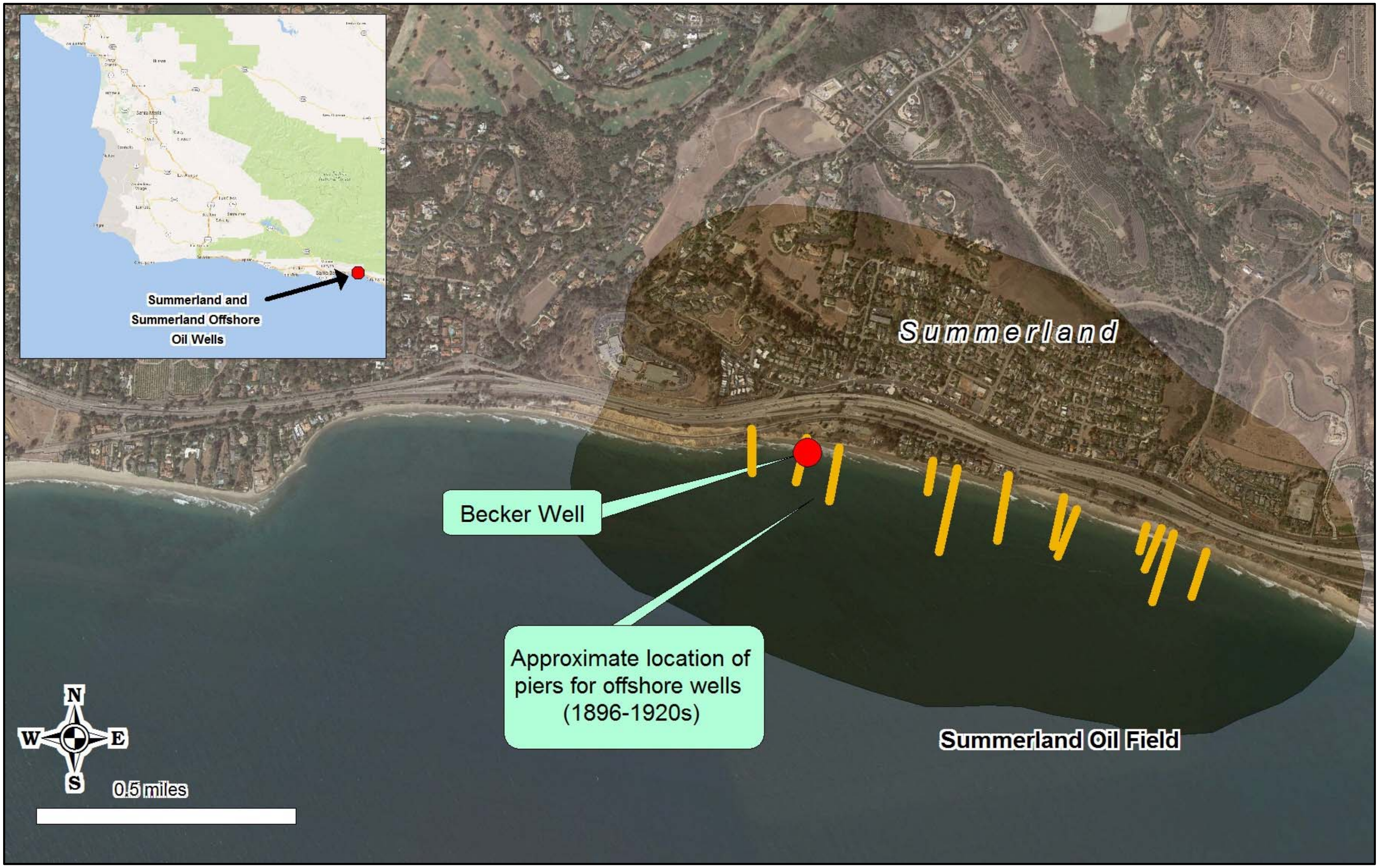
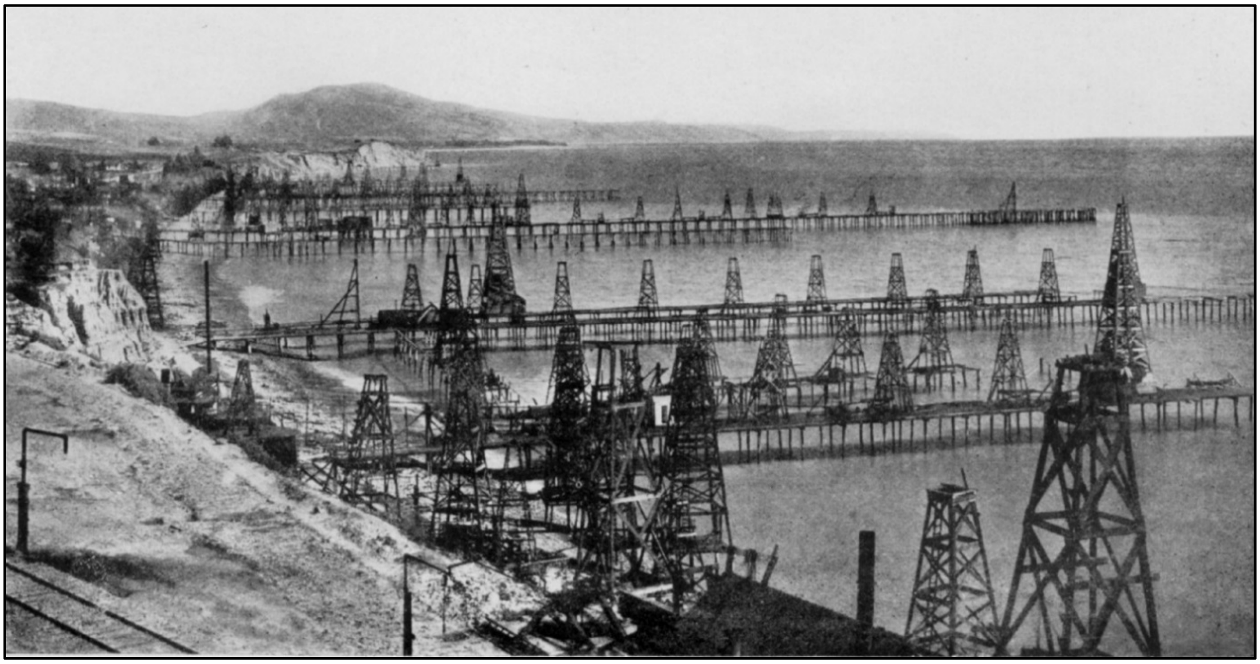


Figure 1-2. Photograph of Historic Summerland Wells and Piers



Source: National Geographic, February 1920. Photograph taken between 1906 and 1915, Becker well most likely in the foreground.

After conducting an assessment of the Becker well in 2015 (Phase 1), the CSLC is now seeking to conduct the following Phase 2 abandonment activities:

- Properly abandon and seal the Becker well to current standards to ensure no future leaks would occur into the environment and any potential hazard is removed from the intertidal area
- Properly seal and abandon other legacy wells, as appropriate, in the surrounding area of the Becker well in the Summerland Beach area

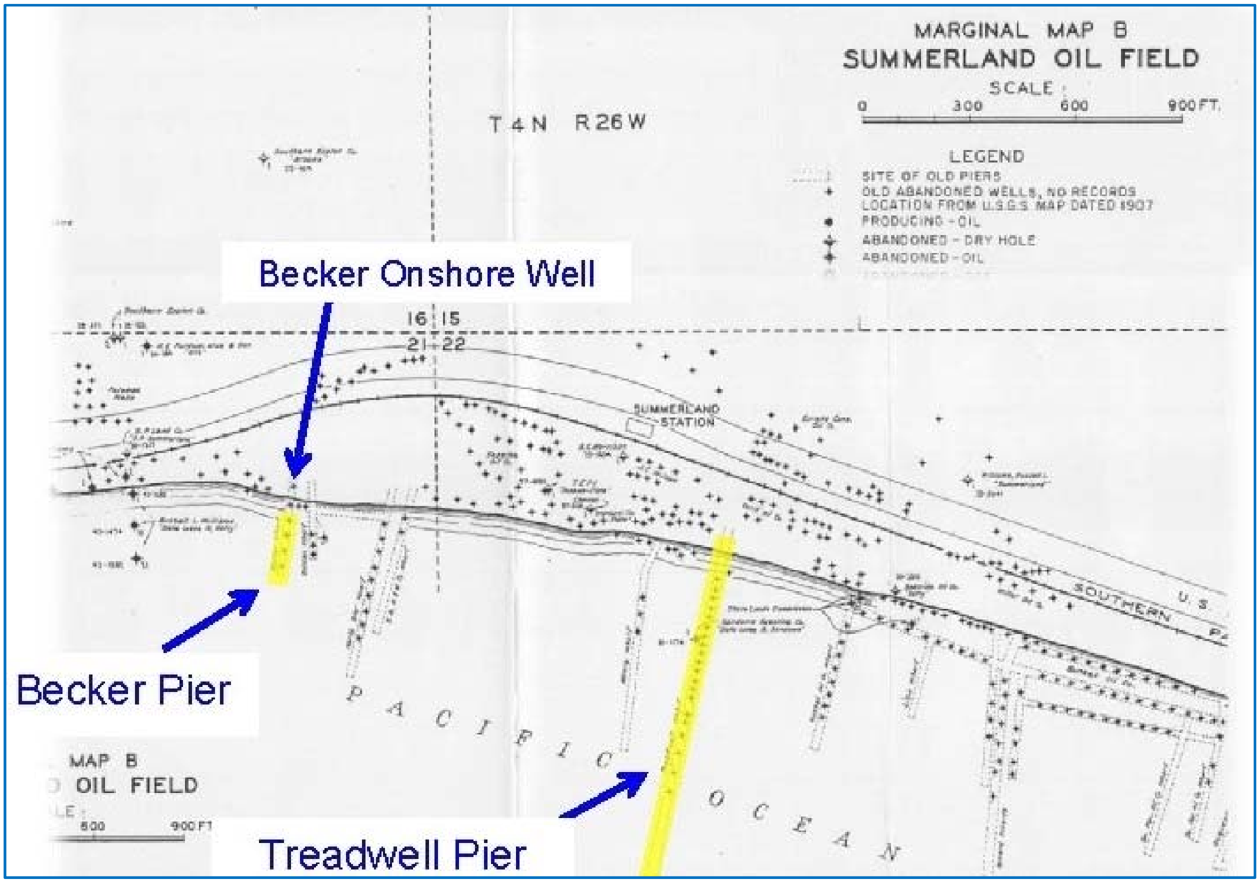
While the Becker well approach and equipment arrangements have been identified and included in this EIR, identification and prioritization of other legacy wells have not been conducted at this time. All Project details in this EIR, such as the Project schedule and impacts, address abandonment of only the Becker well. However, as abandonment of legacy wells, both on the beach and nearshore, would entail similar equipment arrangements and activities as those described in detail in this EIR, this EIR is also applicable to the legacy well projects once those legacy wells have been identified and prioritized.

1.1.1 Historic Overview of Area Oil Production and Well Abandonment

Oil and gas exploration first occurred in the Summerland area in the mid-to-late 1800s. Early wells did not produce oil and gas in satisfactory quantities. Over time, prospectors noted that the wells nearest the ocean were the best producers. In 1894-1895, Henry L.

Williams drilled three wells on the beach. The encouraging results led Williams and others to pursue offshore deposits by constructing piers and drilling wells from the shore seaward. In 1896, the Summerland Oil Field (offshore area) was discovered, becoming the first offshore field developed by drilling offshore wells from piers.

Figure 1-3. Historic Summerland Oil Field Map with Historic Piers and Wells



In 1898, John Treadwell, a mining engineer, built a pier (dubbed the "Treadwell Pier") to produce from the Summerland Oil Field (Figure 1-3). The Treadwell Pier served as a wharf that could anchor oil wells drilled into the ocean floor and as a dock to load or unload vessels to transfer materials to or from shore or the rails of the Southern Pacific railroad. By August 1899, 18 wells had been drilled from the Treadwell Pier, with an average production of each well between 2 and 4 barrels of oil per day. Upon completion, the Treadwell Pier supported 20 wells and extended 1,230 feet from shore.

Before the end of the century, 22 companies built 14 piers; by 1902, approximately 412 wells were drilled from these piers. Owners included C.H. Olsen, California Oil Company, Chevron, Duncan Wharf, Getty Oil, J.C Wilson, North Star Wharf, Potomac Wells, Seaside Oil Co., Sunset Oil Company, and The Summerland Oil Company. In 1903, a severe winter storm destroyed many of the wooden derricks on the wharves and beach, and by 1906 most of the oil production had ended, leaving behind abandoned derricks, many of which stood for decades. By 1920, only a few wells were still active. Because operators abandoned the field long before rules and regulations governing oil company exit strategies were put in place, the result is a legacy of wells on the Santa Barbara County coast, most near Summerland and Coal Oil Point in Goleta, that were abandoned with a wide variety of inadequate techniques such as using logs, trash, telephone poles, and rocks to cap or block up the wells.

The geology of the Summerland field areas, as described by the DOGGR California Oil and Gas Fields Volume 2, is composed of the Casitas, Rincon, Vaqueros and Sespe formations, with the offshore areas primarily composed of the Casitas Main area with an average depth of 140 feet. DOGGR field records indicate that the oil was very heavy (an API of 7). Well head pressures were recorded as high as 265 pounds per square inch (psi) during the production years, with current pressures estimated to be 1 to 20 psi.

1.1.2 State Ownership

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 United States in 1850. In 1921, the Legislature created the first tidelands oil and gas leasing program. Between 1921 and 1929, approximately 100 permits and leases were issued and more than 850 wells were drilled in Santa Barbara and Ventura Counties. In 1929, the Legislature prohibited new leases or permits and, except for a partial lifting of the prohibition in 1933, it wasn’t until 1938 and again in 1955, as discussed below, that the Legislature allowed new offshore oil and gas leasing.

- The State Lands Act of 1938 (Stats. 1938, ch. 5) established the CSLC and assigned exclusive jurisdiction over all State-owned tidelands and submerged lands. On tidal waterways, the State's sovereign fee ownership generally extends seaward from the ordinary high water mark to 3 nautical miles offshore.
- The Cunningham-Shell Tidelands Act (Stats. 1955, ch. 1724) and Cunningham-Shell Tidelands Act Amendments (Stats. 1957, ch. 2166; found in Pub. Resources Code, div. 6) amended the 1938 State Lands Act and further defined the conditions of leasing tide and submerged lands under the CSLC’s jurisdiction. The Cunningham-Shell Tidelands Act excluded several tidelands from oil and gas development for scenic resource protection, including tidelands offshore Santa Barbara County from Summerland Bay to Coal Oil Point.

1.2 OVERVIEW OF THE ENVIRONMENTAL REVIEW PROCESS

The objectives of CEQA are to (State CEQA Guidelines, §§ 15002 and 15083):

- Ensure that the significant environmental effects of proposed activities are disclosed to decision makers and the public
- Identify ways to avoid or reduce environmental damage

- Prevent environmental damage by requiring implementation of feasible alternatives and/or mitigation measures
- Make public the reasons for agency approval of projects with significant environmental effects
- Foster multi-disciplinary interagency coordination in the review of projects
- Enhance public participation in the planning process

With certain limited exceptions, CEQA requires all State and local government agencies to consider the environmental consequences of projects over which they have discretionary authority before taking action on those projects. It establishes both procedural and substantive requirements that agencies must satisfy to meet CEQA's objectives. In accordance with these requirements, the CSLC, as lead agency with decision-making authority over the Project, determined that the Project could result in significant and unavoidable environmental impacts and that an EIR was required to analyze the Project and feasible Project alternatives.

As described in State CEQA Guidelines section 15121, an EIR is an informational document that assesses potential environmental effects of a project and identifies mitigation measures and project alternatives that could reduce or avoid significant environmental impacts. Other key requirements include developing a plan to implement and monitor mitigation measures, and carrying out specific noticing and distribution steps to maximize public involvement in the environmental review process. It is not the purpose of an EIR to recommend either approval or denial of a project. Consistent with CEQA requirements, the CSLC has engaged in a good faith, reasonable effort towards full public disclosure of the potential effects of CSLC's Project.

Prior to any decision on whether and how to approve the Project, the CSLC must certify that:

- The EIR has been completed in compliance with CEQA
- The EIR was presented to the CSLC in a public hearing and the CSLC reviewed and considered the information contained in the Final EIR prior to taking action on approval of the Project
- The EIR reflects the CSLC's independent judgment and analysis (State CEQA Guidelines, § 15090)

This EIR has been prepared in accordance with the decision made by the California Supreme Court in December 2015 in *California Building Industry Association v. Bay Area Air Quality Management District* ((2015) 62 Cal. 4th 369). In that case, the Court held that "CEQA generally does not require an analysis of how existing environmental conditions will impact a project's future users or residents." With limited exceptions, the

Court concluded that the impacts of existing environmental hazards only need to be analyzed if a proposed project risks exacerbating those hazards or conditions. Therefore, this EIR does not identify hazards presented by earthquakes, tsunamis, or other existing hazardous conditions as impacts of the proposed Project, but rather describes these hazards as part of the environmental setting.

CEQA section 21002 states in part that it is the policy of the state that public agencies:

> *should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects, and that the procedures required by this division are intended to assist public agencies in systematically identifying both the significant effects of proposed projects and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects.*

State CEQA Guidelines section 15121, subdivision (b) further requires public agencies to prepare written findings of fact for each significant environmental impact identified in the EIR upon certification and prior to Project approval. Possible findings are (State CEQA Guidelines, § 15091):

- The Project has been changed (including adoption of mitigation measures) to avoid or substantially reduce the magnitude of the impact;
- Changes to the Project are within another agency's jurisdiction and have been or should be required by that agency; or
- Specific economic, legal, social, technological, or other considerations make the mitigation measures or alternatives identified in the EIR infeasible.

Under CEQA, if the CSLC finds that the above-specified considerations make identified mitigation measures or alternatives infeasible, and as a result, implementation of the Project would result in the occurrence of one or more significant effects, the CSLC can only approve the well abandonment if it prepares a written statement that the Project's environmental benefits (including economic, legal, social, technological, or other region- or statewide benefits) outweigh the unavoidable adverse environmental effects. This statement of "overriding considerations" must be supported by the specific reasons and evidence in the record for making such a determination.

State CEQA Guidelines section 15124, subdivision (d), requires that an EIR contain a statement within the project description briefly describing the intended uses of the EIR. The State CEQA Guidelines also indicate that the EIR should identify the ways in which the lead agency and any responsible agencies would use the EIR in their approval or permitting processes. Agency roles and intended uses of the EIR are identified below.

- The CSLC is the CEQA lead agency responsible for preparing this EIR.
- The EIR will be used by the CSLC to consider the environmental impacts associated with the Project and Project alternatives, and to assist the CSLC in making its decision to approve or deny the Project.
- As noted in Section 1.4 below, other State and local agencies will use the EIR in their decision-making processes and to support consideration of issuance of any Project-related permits and approvals.

1.2.1 Public Scoping (2016)

On October 4, 2016, pursuant to CEQA section 21080.4 and State CEQA Guidelines section 15082, subdivision (a), the CSLC issued the Notice of Preparation (NOP) of a Draft EIR for the Project to responsible and trustee agencies and other interested parties. Through the NOP, the CSLC solicited both written and verbal comments on the EIR's scope during a 30-day comment period and provided information on a forthcoming public scoping meeting. The CSLC staff held a public scoping meeting in Carpinteria on October 20, 2016, to solicit verbal comments on the scope of the EIR. Transcripts of the meetings are provided in Appendix C. Table 1-1 lists the commenters that provided written comments in response to the NOP.

Table 1-1. NOP Commenters

Local/Regional Agency	• Santa Barbara County Air Pollution Control District	
State Agency	• California Coastal Commission • Native American Heritage Commission	
Organizations	• Hillary Hauser, Heal the Ocean	
Tribal Members	• Kathleen Pappo, Barbareno/Ventureno Band of Mission Indians	
Individuals	• Frances P. Davis • Andy Neumann	
Scoping Meeting	• Suzy Cawthon • Lee Heller • Senator Hanna Beth Jackson • Jay Parker • Eric Friedman • Hillary Blackerby	• Andy Neumann • Suzanne Perkins • Sharon Burrel • Hillary Hauser • Gilbert Crabbe • Michelle Pasini

1.2.2 EIR Repository Sites and Information Sources

Placing CEQA documents in "repository" sites can be an effective way to provide information about a project. This EIR is available at four repository sites in the Project vicinity and at CSLC offices in Long Beach and Sacramento (Table 1-2).

Table 1-2. EIR Repository Locations

Library:	**Local Government Offices:**	
Santa Barbara Public Library 40 E. Anapamu St. Santa Barbara, CA 93101 (805) 962-7653	City of Carpinteria Attn: Steve Goggia 5775 Carpinteria Ave. Carpinteria, CA 93013 (805) 755-4414	County of Santa Barbara Attn: Peter Cantle 123 E. Anapamu St. Santa Barbara, CA 93101 (805) 568-2519
CSLC Offices:		
California State Lands Commission Attn: Steve Curran 200 Oceangate, 12th Floor Long Beach, CA 90802 (562) 590-5266	California State Lands Commission Attn: Eric Gillies 100 Howe Ave., Suite 100-South Sacramento, CA 95825 (916) 574-1897	

Information sources for baseline environmental conditions for applicable environmental discipline sections are incorporated by reference from numerous sources, including local planning documents, Geographic Information System data, peer-reviewed articles, survey data and other environmental studies and analyses prepared by or for other agencies (e.g., California Coastal Commission, California Department of Fish and Wildlife, Channel Islands National Marine Sanctuary, National Oceanic and Atmospheric Administration Fisheries, U.S. Fish and Wildlife Service, and U.S. Geological Survey).

1.3 PURPOSE AND SCOPE OF EIR

The purpose of this EIR is to identify the significant impacts on the environment of the Project (proposed abandonment and remediation activities), to identify alternatives to the Project, and to indicate the manner in which those significant effects can be mitigated or avoided (Pub. Resources Code, § 21002.1, subd. (a)). This EIR is intended to provide the CSLC with information required to exercise its jurisdictional responsibilities with respect to the Project (to be considered at a noticed public hearing). Responsible agencies use the information in a certified EIR in exercising their respective jurisdictional or regulatory responsibilities.

A fundamental consideration in the identification of significant impacts is to establish the appropriate baseline for the EIR analysis since impacts are identified by comparing changes to the environment caused by a project to existing environmental conditions. Use of an appropriate baseline is also important for establishing alternatives to the proposed activities that can be analyzed in the EIR. The alternatives need to be capable of reducing or avoiding one or more significant impacts of the Project, but do not need to address impacts associated with baseline conditions. The CSLC must identify which components of a project are known or reasonably foreseeable; if it finds that a particular impact is too speculative for evaluation, the CSLC should note its conclusion and terminate discussion of the impact (State CEQA Guidelines, § 15145).

1.3.1 Baseline and Future Conditions

Baseline conditions are defined as the existing physical setting that may be affected by the Project (State CEQA Guidelines, § 15125, subd. (a)). This setting constitutes the baseline physical conditions by which the CSLC will determine whether impacts from the Project and alternatives are significant. Project impacts are defined as changes to the environmental setting that are attributable to Project components or operations.

Potential impacts are often analyzed in the context of the local and regional physical environmental conditions existing at the time the NOP was released for a Project (in this case, October 2016). For the proposed Project, the existing physical setting (baseline) includes the following conditions.

- Many onshore and offshore legacy wells in the Summerland area (Figure 1-3) are not properly abandoned to current well abandonment standards.
- Oil leakage from the Becker well (Figure 1-4) and likely other wells in the area, as well as natural offshore oil and gas seepage, often causes oil sheens in ocean waters, oiling of the beach, and unhealthy air quality due to petroleum odors.
- Summerland Beach has experienced beach closures by the Santa Barbara County Public Health Department due to the presence of oil and petroleum odors (see Appendix F for a beach closure press release).

Figure 1-4. Becker Well Oil Leakage: February 2014 (left) / March 2017 (right)

1.3.2 Potential Impacts and Summary of Alternatives Evaluated

This EIR identifies potential impacts of the Project on the environment and indicates if and how the impacts can be avoided or reduced by mitigation measures or alternatives.

As described in Section 4, *Environmental Impact Analysis*, the following resource areas would not be impacted by the Project: Agriculture and Forestry Resources, Public Services, Land Use and Planning, Transportation/Traffic (onshore), Mineral Resources, Utilities and Service Systems, and Population and Housing. The Project could have a significant impact on the following resource areas:

- Hazardous Materials and Risk of Upset
- Aesthetics
- Air Quality
- Biological Resources
- Cultural and Paleontological Resources
- Cultural Resources – Tribal
- Geology and Soils
- Greenhouse Gas Emissions
- Hydrology and Water Quality
- Noise
- Recreation
- Transportation (Marine)

Pursuant to State CEQA Guidelines section 15126.6, an EIR must describe and evaluate a range of reasonable alternatives that would feasibly attain most of the Project's basic objectives, and would avoid or substantially lessen any of the significant impacts of the Project as proposed. The State CEQA Guidelines also state that the range of alternatives required to be evaluated in an EIR is governed by the "rule of reason" (§ 15126.6, subd. (f))—that is, an EIR needs to describe and evaluate only those alternatives necessary to permit a reasoned choice and to foster informed decision making and public participation. Two alternatives to the Project are fully analyzed in Section 5, *Project Alternatives Analysis*, while three alternatives are analyzed for other legacy wells. One alternative was considered technically infeasible or had no greater environmental benefits over the Project and was eliminated from further consideration. Table 1-3 provides a summary of the alternatives evaluated in this EIR.

Table 1-3. Alternatives Evaluated in this EIR

Role in EIR	Alternative
Alternatives Evaluated in this EIR for the Project Related to the Becker Well	• No Project Alternative
	• Enhanced barge and materials transport
Alternatives Evaluated in this EIR for the Project Related to Legacy Wells	• Small Cofferdam, Pier
	• Large Cofferdam, Platform
	• Enhanced Barge and Pier
Alternatives Eliminated from Further Consideration in this EIR	• Small Cofferdam, Barge

Use of a barge system is feasible for abandonment of the Becker well as the well is located in the surf zone with sufficient depth of water at high tide. However, other legacy wells in Summerland Beach are located where a barge might not be feasible (e.g., more inland). To provide additional information to decision makers, this EIR also provides information on the environmentally preferred method for abandoning legacy wells from locations that are not directly accessible to a barge-type system.

1.3.3 Cumulative Impacts Analysis

An EIR must discuss the cumulative impacts of a project when the project's incremental effect is "cumulatively considerable" (State CEQA Guidelines, § 15130). A cumulative impact is an impact that is created through a combination of the project being analyzed in the EIR and other projects in the area causing related impacts. Section 3, *Cumulative Projects*, defines the applicable geographic scope of the cumulative analysis ("Cumulative Projects Study Area") and lists future planned and approved projects to be included in the cumulative environment.

1.4 AGENCY USE OF EIR / ANTICIPATED APPROVALS

In addition to action by the CSLC, the Project would require permits and approvals from other reviewing agencies. The following agencies have granted permits and approvals for Phase 1 of the Project, or have indicated that a permit is required, and will be reviewing this document in order to issue additional permits for the Project (Table 1-4).

Table 1-4. Other Potential Project Approval Entities

Local	Santa Barbara County Air Pollution Control District (APCD)
	Santa Barbara County Planning and Development Department
	Santa Barbara County Parks Division
State	California Coastal Commission (CCC)
	California Department of Fish and Wildlife (CDFW)
	California Department of Oil, Gas, and Geothermal Resources (DOGGR)
	California State Historic Preservation Officer (SHPO)
	Regional Water Quality Control Board (RWQCB)
	National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NOAA Fisheries or NMFS)
Federal	U.S. Army Corps of Engineers (USACE)
	U.S. Coast Guard (USCG)
	U.S. Fish and Wildlife Service (USFWS)
Tribal	Project activities will be coordinated with local tribes consistent with the CSLC's Tribal Consultation Policy adopted in August 2016 (see www.slc.ca.gov).
Other	Union Pacific Railroad (UPRR)

1.5 ORGANIZATION OF EIR

This EIR is presented in nine sections with appendices as shown below.

- **Section 1 – Introduction** provides background on the Project and CEQA process.
- **Section 2 – Project Description** describes the Project, its location, staging operations, abandonment methodology, and schedule.
- **Section 3 – Cumulative Projects** identifies the projects that are analyzed for their potential cumulative effects and the EIR's approach to cumulative impact analysis.

- **Section 4 – Environmental Impact Analysis** describes existing environmental conditions, project-specific impacts, mitigation measures, and residual effects for multiple environmental issue areas, and evaluates cumulative project impacts.
- **Section 5 – Project Alternatives Analysis** describes the alternatives screening methodology, alternatives rejected from full consideration, alternatives carried forward for analysis, and analysis of impacts for each alternative carried forward.
- **Section 6 – Other Required CEQA Sections and Environmentally Superior Alternative** addresses other required CEQA elements, including significant and irreversible environmental and growth-inducing impacts, compares the Project and alternatives, and identifies the environmentally superior alternative.
- **Section 7 – Mitigation Monitoring Program (MMP)** presents the MMP.
- **Section 8 – Other Commission Considerations** presents information relevant to the CSLC's consideration of the Project that are in addition to the environmental review required pursuant to CEQA (other considerations may be addressed in the Calendar Item staff report presented at the time of the CSLC's consideration of the Project).
- **Section 9 – Report Preparation Sources and References** lists the persons involved in preparation of the EIR and the reference materials used.

The appendices are listed below.

- **Appendix A** contains federal and state laws, regulations, and policies, including a summary of each organized by issue area.
- **Appendix B** contains the EIR distribution list.
- **Appendix C** includes a copy of the NOP and comment letters received in response to the NOP.
- **Appendix D** includes the Oil Spill Contingency Plan.
- **Appendix E** includes air quality and greenhouse gas emission calculations.
- **Appendix F** includes a press release (August 21, 2015) of Summerland Beach closure due to oil on the beach and strong petroleum odors.
- **Appendix G** includes a schedule of high tides for years 2017 to 2019.

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2.0 PROJECT DESCRIPTION

2.1 PROJECT SUMMARY

In October 2015, California State Lands Commission (CSLC) staff conducted an assessment of the Becker onshore well at Summerland Beach, Santa Barbara County (Phase 1), one of several legacy oil wells that were not abandoned pursuant to the regulations and technology in use today, and that are leaking into the marine environment. Based on the assessment, an engineering work plan was prepared to properly abandon and seal the well (Phase 2). The CSLC is both the Project proponent and lead agency under the California Environmental Quality Act (CEQA) for Phase 2, the Becker and Legacy Wells Abandonment and Remediation Project (Project). This section of the Environmental Impact Report (EIR) provides the Project objective and describes the proposed well abandonment work activities.

2.2 PROJECT OBJECTIVE

This Project is intended to address oil releases from one or more legacy Summerland area oil wells. The Project, as evaluated in this EIR, is specific to the abandonment of the Becker well or any well located such that a barge can access it (located far enough into the water at high tide). The CSLC's project objectives are to:

- Abandon and seal the Becker well to current Division of Oil, Gas, and Geothermal Resources (DOGGR) standards to alleviate oil leaking into the environment with minimum impacts to the beach and recreational resources
- Abandon and seal other legacy wells, as appropriate, in the surrounding area of the Becker well in the Summerland Beach area

If abandonment of the well to DOGGR standards is not possible due to issues with the well or access to the entire wellbore, then an abbreviated abandonment, as approved by the CSLC and DOGGR, will be implemented (see Section 2.4.1, *General Well Abandonment Description*).

2.3 PAST ASSESSMENT AND ABANDONMENT ACTIVITIES

Although the State received no revenues from legacy wells, which were drilled without State authority and while trespassing on State property, the CSLC, in coordination with other agencies, has engaged in multiple efforts related to Summerland area oil wells, including surveys of wells and well conditions in 1993, 1994, 2000, 2015, and 2017 to identify leaking wells on the beach and locate where debris from piers, pilings, and old pipelines remains (Table 2-1 provides examples of several activities undertaken since 1956). For information on the CSLC's Coastal Hazards Program, see www.slc.ca.gov/Programs/Coastal_Hazards.html.

Table 2-1. Activities in Historic Summerland Oil Field Area

Date	Activity
1956-1957	Removal of obstructions from approximately 0.5 mile of beach.
1960	Survey to prepare a map (Lindberg Map) of all well casings and pilings that could be located. Ninety targets were identified.
1967-1968	• Beach Clearance Project No. 1. Located, cleaned out and re-cemented two wells on the beach. Removed casing from one offshore well. • Beach Clearance Project No. 2. Located, cleaned out and cemented "A" well. • Beach Clearance Project No. 3. Located, cleaned out, and placed a 5-foot cement plug in and removed casings from at least 60 wells, retrieving a substantial amount of bottom debris. No correlation exists as to which wells were addressed.
1975	Because of oil seepage near the previously abandoned Treadwell Number 10 well, CSLC staff re-abandoned the well using a 6-foot-diameter concrete filled tub to cap the well at the seafloor.
1976	Abandonment of wells Williams Number 1, 2A, 3A, Becker Fee Number 2, and one unidentified well.
1981	Cemented Treadwell Number 17, inspected Freckman Seep Number 1 and inspected Treadwell Number 10.
1985	Extensive abandonment of wells located on the bluffs.
1993	In February, CSLC staff performed surveys of the area at low tide to identify abandoned wells and locations with leakage. In May, CSLC staff used a rig mounted on a 20-foot-high steel structure (“Surf Sled Vehicle”) to abandon three wells on Summerland Beach as part of its Summerland Well Abandonment Project, which sought to abandon wells that were not properly abandoned in 1907. The three wells differed from the Treadwell Number 10 well because they were located on Summerland Beach and were exposed at low tide and submerged about 3 feet at high tide. The project was completed for approximately $863,000. For well Number 13 abandoned at this time, cement was installed from 160 feet to the surface, with perforations at 100 feet. When perforated, the well began to flow and was shut-in. The other wells were also cemented to approximately 145 to 400 feet, but no signs of well flow were recorded.
1994	With natural or artificial oil seepage continuing in the near shore waters at Summerland Beach, the CSLC, Office of Spill Prevention and Response (OSPR), and offices of U.S. Senator Feinstein and State Senator Jack O’Connell requested U.S. Coast Guard (USCG) Oil Spill Liability Trust Fund revenues to re-examine the area and determine if old abandoned wells in the area might be the source of some of the oil. The USCG conducted a two-phase study of the Summerland area seeps. • Phase 1 was a geophysical/hydrographic sight survey that identified 43 potential targets for further investigation and developed a Summerland area map describing oil well casings, oil seeps, and wharf and pier piling type hazards from survey data. • During Phase 2, seven sites requiring excavation to determine seep sources were identified; the other sites were identified to have had a variety of metal-wrapped piles from old piers and other remaining infrastructure that was either below the ~~mudline~~ surface of the sand or did not represent a threat. The USCG determined that only one well, the “Becker well” (originally drilled from the long since removed Becker Pier), could positively be identified as an oil seep source and which, when excavated, leaked approximately ½ barrel (bbl) of oil. Prior surveys also noted that the Becker well may leak up to ½ bbl of oil per day when actively seeping and that the seepage becomes visible approximately 10 days every year.

Table 2-1. Activities in Historic Summerland Oil Field Area

Date	Activity
2000	Summerland Foundation investigations: Conducted documents search and diving activities. Treadwell Number 10 was determined to be still active regarding oil and gas seep activity. Becker well sand contamination and heavy concentration of oil, with oil observed coming up through the sand, were also occurrences identified.
2011	After oil was observed leaking onto Summerland Beach at very low tide, CSLC staff, along with staffs from the Santa Barbara County Office of Emergency Services and Planning and Development Department, Energy Division, visited the beach on the next low tide date (April 12, 2011). Oil was not present at the time of this visit, but the location coincided with the onshore Becker well referenced in the 1994 USCG study.
2013	CSLC staff met in August with staff from the offices of State Senator Hannah-Beth Jackson and Assembly member Das Williams, the Summerland Citizen's Association (mainly comprised of Summerland residents), and agency staffs (USCG, OSPR, Santa Barbara County, and University of California, Santa Barbara). One positive outcome was the development of a user-friendly, online incident reporting form for Summerland residents to report well leakage and seep activity.[1] Residents were trained to collect Global Positioning System (GPS) measurements for site-specific incidents such as fresh oil on the beach from the Becker well. CSLC staff maintains this database and has received 30 incident reports in the last 2 years.
2015	CSLC staff selected a contractor to conduct Phase 1 investigation and assessment of the Becker well. See the Phase 1 discussion below.
2017	As a result of winter storms, the beach at Summerland had severely eroded away that exposed several legacy wells. On February 27, 2017, a surveying crew under contract with CSLC surveyed via GPS these exposed wells.

Notes: [1] See www.slc.ca.gov/Forms/Coastal_Hazards/SummerlandSeepRptFrm.pdf.

2.3.1.1 Summary of October 2015 Phase 1 Activities

In October 2015, CSLC staff obtained permits and approvals to conduct Phase 1 of the Project, which was to excavate the Becker onshore well site and assess the exact location, pipe size, general condition of the casing, and suitability for conventional abandonment. Because the well site is in the surf zone, in 3 to 4 feet of water, the site is only accessible from the beach at extremely low tide. CSLC staff and its contractor completed Phase 1 during one such low tide period on October 28 and 29, 2015. Phase 1 work included the following tasks:

- Stage equipment at Lookout Park, where access to the beach occurred
- Excavate beach sands at low tide to find and uncover the well (see Figure 2-1)
- Inspect the condition of the exposed well casing
- Measure the casing circumference and diameter
- Map the exposed well casing using a commercial-grade Trimble GPS
- Place a buoy adjacent to the well to help locate the well for Phase 2 work (the buoy has since been lost due to wave action)

Figure 2-1. Leaking Becker Well at Low Tide in February 2014 (top) and Exposed Well Casing during Phase 1 Excavation in October 2015 (bottom)

Findings of the well investigation and assessment are summarized below.

- The top of the well casing is 4 feet below the beach surface during the winter months at low tide (see Figure 2-1 above).
- CSLC staff discovered a piece of 2-inch pipe buried alongside the well casing. The purpose of this tubing is unknown (it may be grout piping used to pour cement into the well, or debris left alongside the casing, when the well was initially abandoned).
- The Becker well casing was calipered at 7-3/4 inches.[1]
- The pipe appeared to be of good integrity given its age (more than 100 years old). CSLC engineering staff believes that the pipe should support installation of a riser, which is a key component in facilitating proper abandonment.
- Cement exists at the surface on the inside of the casing; however, since no records exist for the Becker onshore well, the length of the cement plug and information on what lies below the plug are unknown.
- No cement was visibly present on the outside of the exposed casing. Because an excavator could move the casing back and forth, CSLC engineering staff concluded that no cement is anchoring the pipe anywhere near the surface.
- Past oil migration to the surface likely occurred through the un-cemented annular area around the pipe.

2.3.1.2 February 2017 Survey

In February 2017, the CSLC inspected numerous abandoned wells and other historical equipment abandoned on the beach during a very low tide. Figure 2-2 shows photographs and a map of these facilities that are located near the Becker well. Additional items were also surveyed approximately 0.5 to 0.75 mile east of the Becker well.

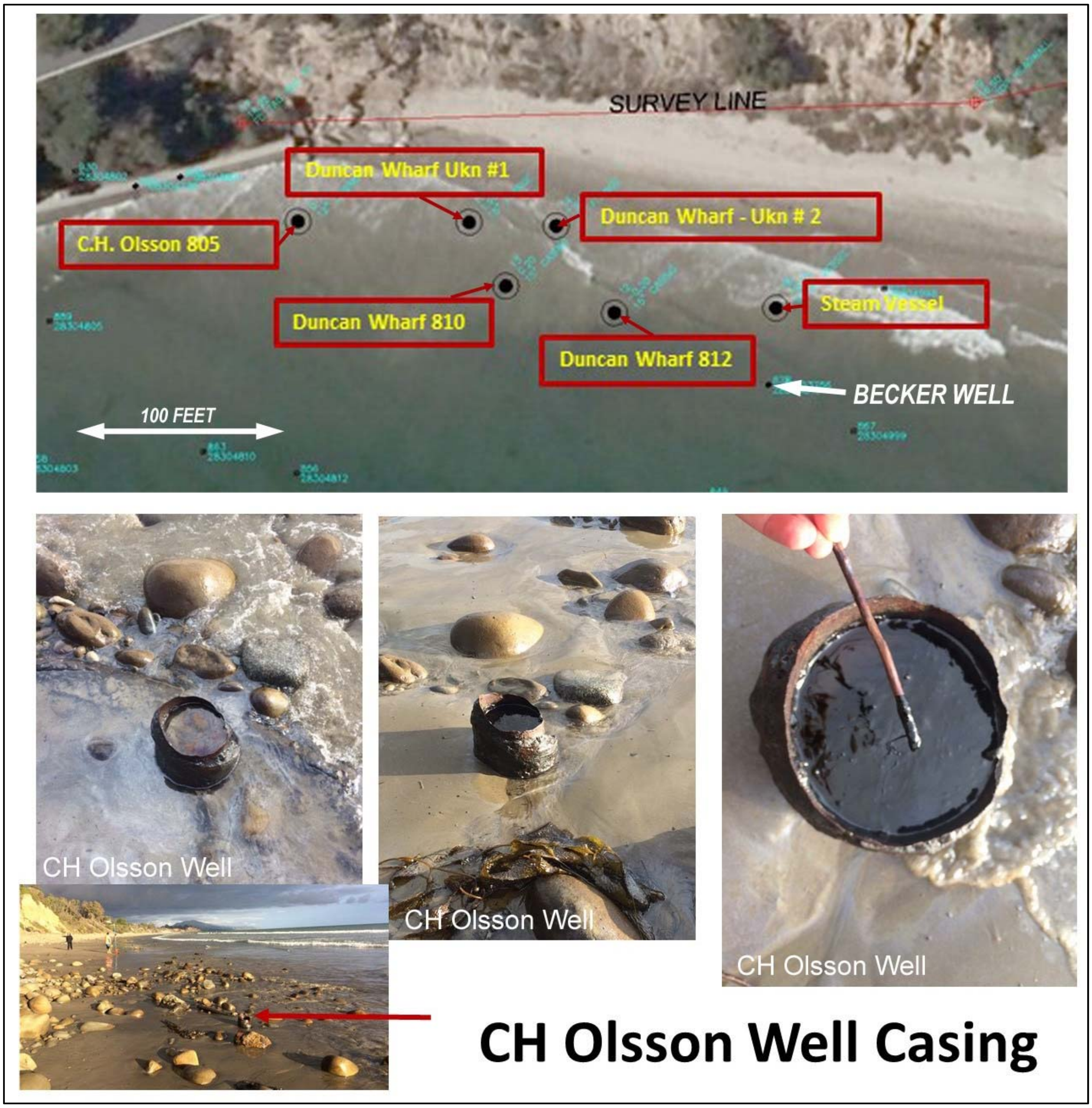
2.4 DESCRIPTION OF PROPOSED WELL ABANDONMENT ACTIVITIES

2.4.1 General Well Abandonment Description

When a well is no longer needed, because the oil or gas reservoir becomes depleted, because no oil or gas was found (called a dry-hole), or due to economic reasons, the well is plugged and abandoned. Current DOGGR regulations require that a well be plugged by placing cement in the well bore or casing at certain intervals. The purpose of the cement is to seal the well bore or casing and prevent fluid from migrating between underground rock layers or from the reservoir to the surface.

[1] The well may in fact be 7-5/8 inches, which is a more common pipe size and one that was cited as being used in historic Summerland records obtained from the California Oil Museum in Santa Paula, California.

Figure 2-2. February 2017 Survey Results



Note: Small blue text in the above figure shows the DOGGR location of wells.

Cement plugs are required to be placed across the oil or gas reservoir (zone plug), across the base-of-fresh-water (BFW plug), and at the surface (surface plug). Generally, a cement plug must be placed to a depth of at least 100 feet. Also, the hole is filled with drilling mud to help prevent migration of fluids. In addition, the casing of the well can be “perforated” at various intervals and cement “squeezed” out of the perforations to allow for sealing of the area outside of the casing (the annulus). Under DOGGR abandonment regulations (Cal. Code Regs., tit. 14, §§ 1723 and 1745) the well must also be cut off 5 feet below the surface and a plate welded onto the top of the casing where it was cut off.

Abandonment of the subject well would be undertaken using a conventional rig equipped with tools to allow drilling out cement inside the well casing. Coordination with DOGGR would occur during the abandonment process if issues with the well or access to the entire wellbore arise and the abandonment process has to deviate from DOGGR abandonment standards. In such cases, an abbreviated abandonment approved by CSLC and DOGGR staffs will be implemented. This contingency is necessary since the downhole conditions of the Becker well are unknown and junk present in the well hole or irregularities with the well casing (e.g., a parted casing) could prevent the well bore from being cleaned out to a 100-foot depth. This is not unusual for a well abandoned to essentially non-existent standards at the time (early 1900s). The following contingencies could include:

- Place a cement plug to the maximum depth possible (if placement to at least a 100-foot depth cannot be achieved)
- Increase the interval of cement squeezes to less than 25-foot intervals
- Use washover pipe to create space for cementing
- Use a coiled tubing unit
- Expand abandonment operations to include removing a portion of the casing and filling the remaining "open" hole with cement

Adding perforations through the well casing would allow cement to be equalized and squeezed (forced outside of the casing using pressure from above) to provide an outside seal. If the well casing cannot be cleaned out, a coiled tubing unit might be used to install multiple coiled tubing sized holes that would be drilled to a shallow depth along the outside of the casing and cemented from the drill point back to the surface to provide a seal outside the casing. Part of the abandonment operations is also to produce circulation to the surface through perforations at a depth of 25 to 30 feet and up to the surface outside of the casing through the annulus spaces, with cement installed outside the casing to the surface from this depth. If this is not possible, perforations would be placed where possible (most likely shallower), including the use of the coiled tubing unit or washover piping. If circulation cannot be generated, a cement plug might be placed over the surface portion of the casing as deep as possible extending outward from the well casing 10 feet.

2.4.2 Becker Well Abandonment

A jack-up barge, 80 feet by 100 feet in size, would provide access to the Project site from the ocean and would be used during all construction activities at the well, including well abandonment. Figure 2-3 shows a typical jack-up barge configuration in the surf zone. In addition to staging and unstaging, Project construction activities would occur in three main phases (Table 2-2 lists the equipment that will likely be needed for staging and unstaging and the three main phases of the Project): (1) construction of a double-walled cofferdam in the surf zone around the well to isolate it from ocean tides and provide access to the well; (2) well abandonment using the jack-up barge; and (3) cofferdam removal.

Figure 2-3. Typical Jack-up Barge Configuration in Nearshore Setting

Table 2-2. Equipment Needed by Project Stage

Staging/ Unstaging	• Jack-up barge • Two tug boats (3,400 horsepower [hp] each) • Loader (to carry and set beach anchors)	
Install Cofferdam	• Crane (128 hp) • Pile driver (348 hp) • Cofferdam materials (sheet piles) • Pump for dewatering	
Abandon Well	• Single rig (425 hp) • Drilling attachments (7-5/8-inch riser and flanges/valves, 2.5 power swivel, 7-inch double gate BOP and accumulator, 10 joints of 3-1/2-inch drill pipe, 6-3/4-inch milled tooth bit & 6-3/4-inch concave mill) • Wireline skid unit • Cement pump truck (302 hp) • Cement bulk truck (405 hp)	• Perforator/logging skid (173 hp) • Welding rig (350 hp) • One 500 barrel (bbl) closed-top fluid storage tank • One 150 bbl poly tank for fresh water • Shaker pit • Solids tank • Pump for dewatering • Cement retainer • Generator
Remove Cofferdam	• Crane • Pile driver	

Three round trips between the Port of Long Beach (POLB) and Project site would be required to deliver and remove the cofferdam and abandonment equipment and materials. On each trip, the barge would be loaded at the POLB with the equipment and materials necessary for that phase of the operation. The barge would then be towed to the Project site and positioned and anchored with small tugboats during high tides. Work activities for the particular phase would then commence. Upon completion, the barge would be towed back to the POLB to prepare for the next Project phase. All construction activities are anticipated to take 3 weeks assuming no weather-related interruptions or delays due to unforeseen issues with the condition of the 100+ year old wellbore.

2.4.3 Staging

The following provides the sequence of staging activities performed by the contractor:

- Offshore bathymetric survey conducted prior to Project implementation to ensure safety of the jack-up barge deployment
- Emergency oil response trailer placed for Project duration in Lookout Park (see Figure 2-4) loaded with equipment as specified in the oil spill contingency plan (see Section 2.5, *Pollution Prevention and Safety*, and Appendix D, *Safety Plans/OSCP*, for additional information on spill response activities)
- Beach exclusion zones established prior to barge arrival
- Barge for well isolation (cofferdam construction), well abandonment activities, and cofferdam removal deployed to location

Figure 2-4. Lookout Park Temporary Staging and Exclusion Area

2.4.3.1 Bathymetric Survey

Prior to barge operations, the contractor would conduct a bathymetric survey of the ocean floor to confirm that a fully loaded barge can be floated into position. The survey would also determine at what levels the tide must be in order to bring the barge in or remove the barge. The bathymetric survey, completed when the water level is sufficiently high, would involve shallow draught vessels fitted with echo sounders. When the water level is low enough to expose the area, survey lines may be walked by a surveyor equipped with a high accuracy GPS system or driven via a GPS equipped all-terrain vehicle.

2.4.3.2 Barge Approach and Departure

The barge would approach and depart the beach three times. The barge approach and departure procedures would include the steps in Table 2-3 (note that these steps would be repeated for each of the three barge trips) and would be dependent on the high tide schedule. Figure 2-5 shows a barge schematic with the barge positioned up against ~~the~~ cofferdam "bumpers" (piles installed deeper than the sheet pile walls to provide greater support than just the sheet piles if sufficient sand cover is not present, and to cushion the barge during its approach). Additional bumper piles may be installed for support as needed. Equipment needed for this phase of the Project is listed in Table 2-3.

Figure 2-5. Preliminary Barge Layout Schematic

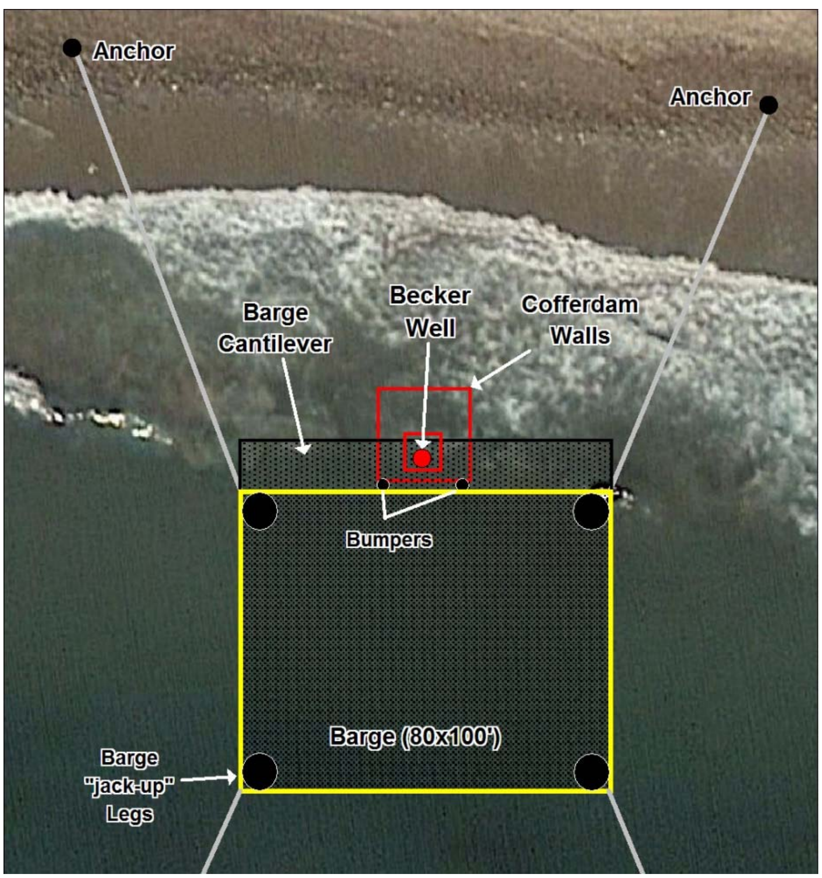


Table 2-3. Anticipated Barge Approach and Departure Steps

Barge Approach	• Barge arrives 600 feet offshore of the well head on an incoming tide • The big tug cuts loose and the small tug takes control • Set two beach and two stern anchors to hold barge in place • Move barge within 300 feet of the beach • Attach beach anchors to barge • Use beach anchors to pull barge into position as tide is reaching its high point of the day at 6 feet or higher • Pull barge against south side of cofferdam (if applicable), using a fender pile or bumpers to prevent damage to the cofferdam, and snug all anchor wires. For the first approach, prior to sheet pile and "bumper" pile installation, this step would not be applicable. • Raise ("jack up") the rig into position above the water (i.e., raise the barge jack-up legs to the appropriate height to allow for a built-in cantilever system on the barge to work over the cofferdam walls and over the well)
Barge Departure	• Drain all water in tanks into the ocean • Retain all oil in tanks • Stow and lash all equipment onboard • At a 6-foot-plus tide and still rising, begin procedure of jacking the barge down • As barge is being lowered, take a strain on the stern anchors • When barge is fully afloat, the tugboat would move in and connect to the barge • When all four spuds are in the final up position and secured, begin moving barge offshore using a combination of stern anchors and the tug • Between 300 and 400 feet off the beach, disconnect beach anchors and recover anchor wires, then recover stern anchors and wires

2.4.3.3 Controlling Factors

Tides and Ocean Conditions

The ability to bring the barge onto the beach or remove the barge from the beach is dependent on ocean conditions and the stage of the tide. Inclement weather, such as storms or large waves, may affect barge maneuvering and delay the schedule. Since ocean conditions are near impossible to predict, Project commencement would depend on ocean conditions. In contrast, tides can be predicted, and advanced planning would minimize problems with scheduling due to tides. Barge arrivals and departures would correlate with a high tide level, which is necessary to allow the barge to float into position.

An estimated high tide of over 6 feet in water depth would likely allow the barge to be floated into place, although a definitive understanding of the exact tide levels needed is unknown until a bathymetric study of the beach is conducted. An unloaded barge would have a draft of about 3 feet. Appendix G provides the high tide levels measuring over 6 feet in depth for the Santa Barbara region from the period of 2017 to 2019. Note that high tides over 6 feet in depth sometimes occur more than 1 month apart, so this consideration must be made during Project scheduling. For example, eight high tides measuring over 6 feet in depth are predicted to occur in January 2018, but only one in March 2018 and none in October 2017 or April 2018. Note also that high tides over 6 feet do not generally occur 1 week apart. Therefore, it is possible that, if issues occur due to well abandonment that require more time and extend the schedule, the barge could be at the Project site for a period of up to 8 weeks awaiting a tide high enough to remove it from the beach.

Construction Area Exclusion Zones

The area on the beach accessed as part of the Project activities would have an exclusion zone established that would prevent the public from coming close to the activities. Approximate exclusion zone locations are shown in Figure 2-4. Exclusion zones would be established approximately 1 day prior to the arrival of the barge and would be in place for the Project duration. Exclusion zones would be designated with signs.

Barge Anchor Placements

The barge would be anchored at four locations: two on the beach and two offshore. Tugs would place conventional anchors offshore and the anchor wires would be tightened. The onshore anchors would need to be placed approximately 1 to 2 days before the arrival of the barge and would be positioned and installed with construction equipment (e.g., a front loader) over a period of 2 to 4 hours. Access to the beach area from the Lookout Park access road would be required to deliver construction equipment (a front loader would be used on the beach) and onshore anchors. ~~and for access by s~~Support trucks would use Lookout Park to deliver the front loader, anchors, and oil response trailer. Access to Lookout Park or Summerland Beach is not anticipated for other Project activities.

Employee Access to the Barge

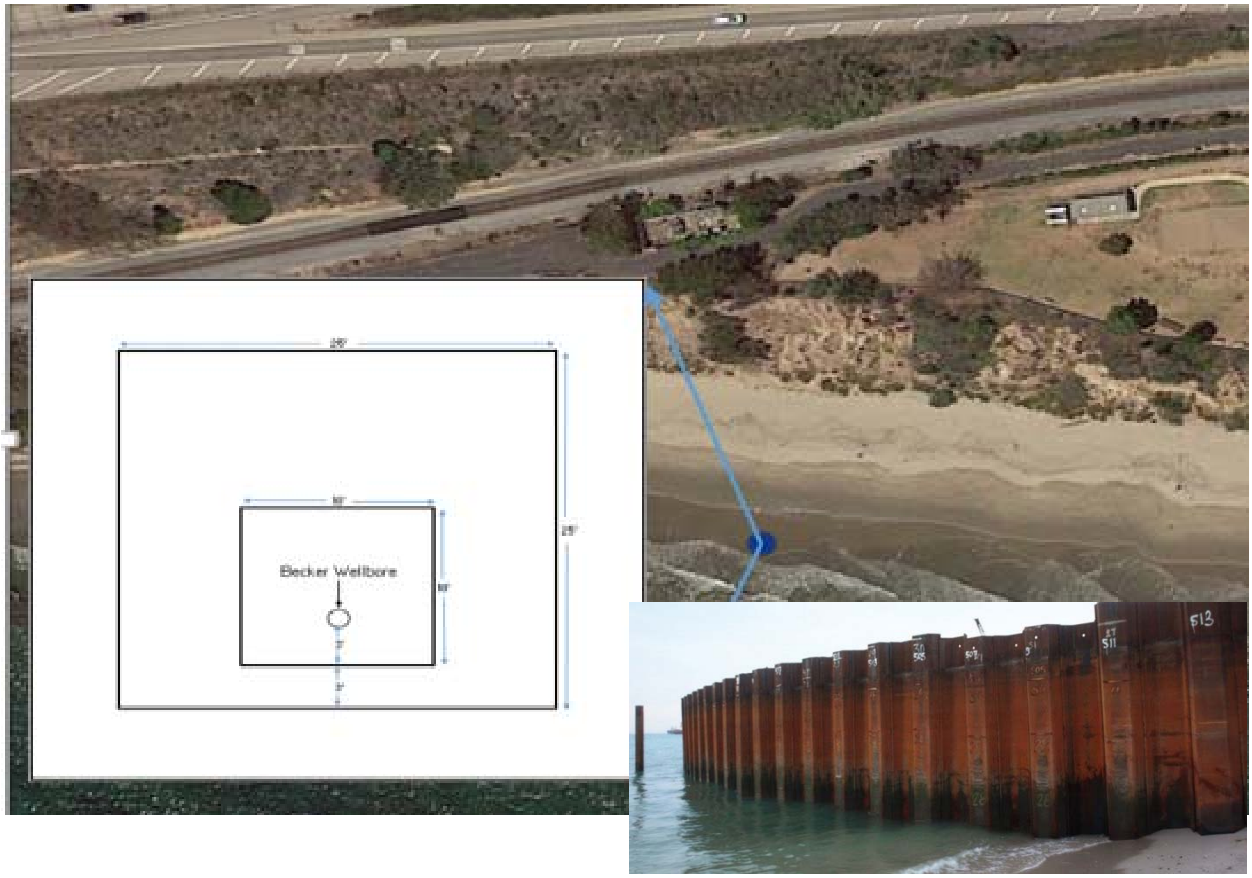
To access the barge from the beach area, if needed, employees would drive along the beach at low tide using the Lookout Park access point. Direct access to the barge would be achieved by way of stairways/ladders. Generally, however, employees would access the barge from the tug boats arriving from the Santa Barbara Harbor.

2.4.4 Cofferdam Installation

Once the barge is positioned for the first time, the first step in the construction phase of the Project would be to install the cofferdam around the well. The cofferdam isolates the well area from the ocean and prevents spills or releases of oily material from entering the ocean. The cofferdam would be double walled, with the inside wall being 10-foot square and the outside wall being 25-foot square (see Figure 2-6). The 25-foot-wide doubled-walled cofferdam would be built around

Typical Sheet Pile and Crane with Pile Driver

Figure 2-6. Cofferdam Layout with Picture of Typical Cofferdam Sheet Pile Wall



the Becker well, fully exposing the well to a depth of 10 feet below the ~~mudline~~ surface of the sand (depending on the depth of sand cover).

The cofferdam would be installed with interlocking sheet piles and would be driven into the sand with a vibratory pile driver system attached to the crane on the barge. A vibratory pile driver is positioned on top of the sheet pile with clamps. It produces a sine-wave vibratory vertical pressure and that, combined with the weight of the pile driver, will drive the sheet pile into the sand. Difficulties with alignment of the sheet piles due to flexing of the sheets when encountering obstructive resistance to advancing the sheet piles may occur and require retracting sheet piles and re-driving them to adjust alignment. Generally, depending on soil types, the period of vibratory “driving” of the sheet pile takes 2 to 4 minutes, while placement and alignment of the sheet pile, takes an additional 2 to 4 minutes. Depending on the obstructions encountered and the challenges with sheet pile alignment, up to 50 feet of sheet pile can be installed in a single day. Figure 2-6 depicts a typical sheet pile wall. The cofferdam would extend approximately 15 to 20 feet above the beach surface and would be driven downward 20 to 30 feet into the sand, depending on the sand cover, or support piles would be installed to ensure the sheet pile walls are stable. Table 2-2 lists the equipment needed to install the cofferdam.

As stated above, additional piles, driven deeper than the sheet piles, would be used as bumpers to absorb impact from the barge positioning during barge arrival, and to provide for additional support of the sheet piles if sufficient sand cover is not available.

All sand removed from inside the cofferdam would be stored onsite between the inner and outer cofferdam walls~~, unprocessed~~ and then filled back into the extraction area when work is completed. All cofferdams typically have some leakage, so seawater would be pumped from inside the well sump area back into the ocean during operations. Extreme hardness of the bedding and/or the discovery of buried remnants of historical operations (metal parts, etc.) could extend the installation schedule of the cofferdam.

2.4.5 Well Abandonment Operations

Abandonment operations would involve barge arrival and anchoring, well abandonment, and barge departure from the beach (barge arrival and departure is discussed above). Abandonment operations (estimated to take 3 days to complete) include the following:

- Conduct pre-job procedures
- De-water the cofferdam
- Install riser, valves, and blowout preventer equipment (BOPE) and test BOPE
- Clean out inside the casing as deep as possible to prepare for cement plugging
- Log and perforate casing every 25 feet below a 100-foot depth
- Cement the lower portion of the well (cement job #1)
- Perforate the casing 50 feet below the surface
- Attempt to establish circulation with fluid (seawater) down casing and up annulus
- Circulate cement down the casing until it returns to the surface on the exterior face of the casing (cement job #2)
- Remove BOPE and riser
- Weld the plate on top of the casing stub

Table 2-2 lists the abandonment operation equipment. Figure 2-7 shows a schematic of the barge layout during well abandonment. Figure 2-8 shows a schematic of the well after abandonment, including the well “plate,” perforations and the cement. Seawater would be used as the wellbore circulation fluid to clean out the well in preparation for placement of abandonment. No muds would be used. Cement pumps would circulate the seawater.

2.4.6 Cofferdam Removal

After the barge is positioned for the third time, cofferdam removal would begin. The pile driver system attached to the crane on the barge that was used to install the cofferdam’s interlocking sheet piles would also be used during plate removal, with each sheet pile being lifted with the vibratory driver and placed on the barge. Once all sheet piles have been removed, the sand removed from inside the cofferdam would be filled back into the ~~exaction~~ excavation area. Table 2-2 lists the equipment needed for cofferdam removal.

Figure 2-7. Anticipated Barge Layout Schematic During Abandonment

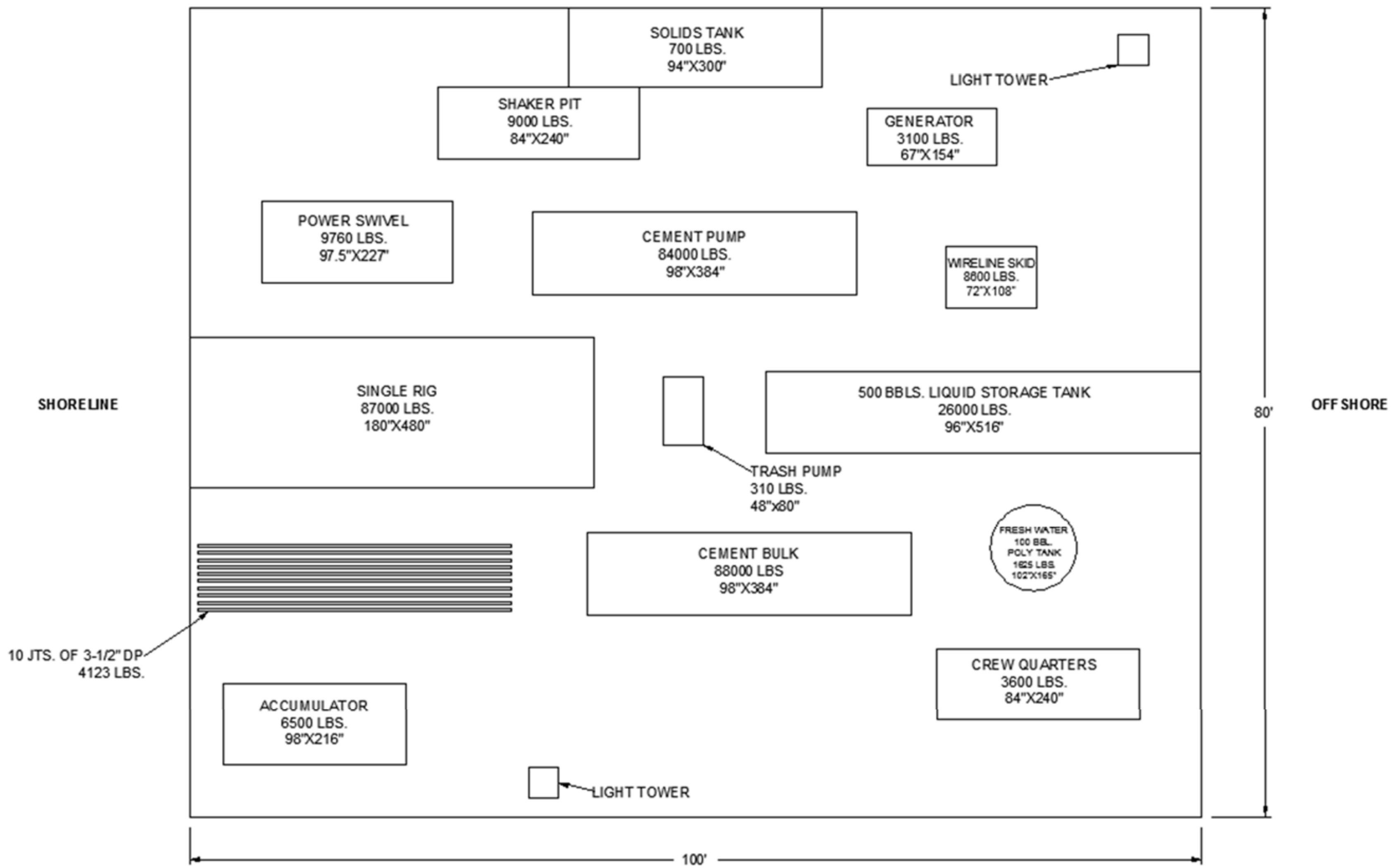
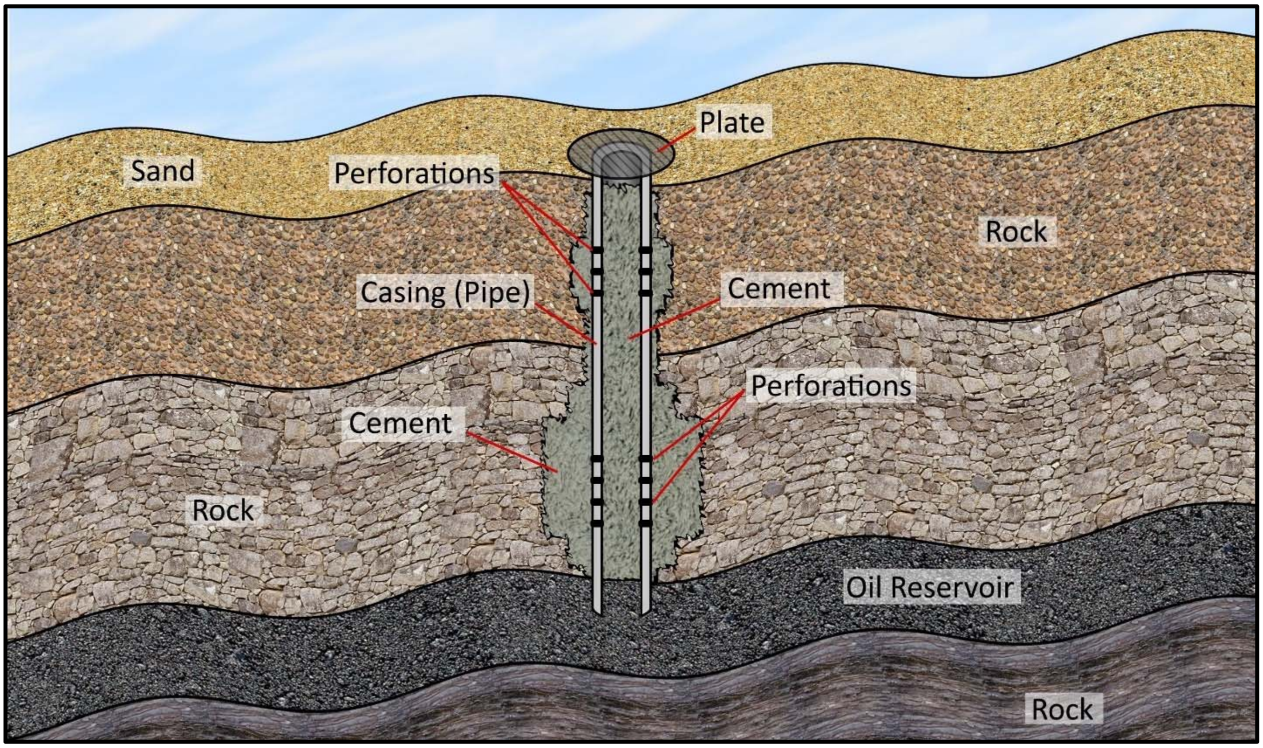


Figure 2-8. Typical Abandoned Well Schematic



*Not to Scale

2.5 POLLUTION PREVENTION AND SAFETY

As part of the October 2015 Phase 1 investigation, an oil spill prevention plan was developed to ensure that the Project would address any potential leakage or spill of oil or materials to the sensitive marine environment. This oil spill prevention plan would be used for the Project as well, as modified for use of the barge and additional equipment. Oil spill procedures would include holding pre-job contractor meetings to review the abandonment procedures and to discuss responsibilities and job/oil spill contingencies as well as conducting daily safety meetings with all workers present. The main portions of the oil spill contingency plan are outlined below.

- Onsite absorbent pads would be used as necessary to capture the seep oil in the containment area.
- The contractor would maintain an onsite spill response team to handle small spills (less than 5 bbls) and to provide immediate response to large spills during well abandonment operations.
- In the unlikely event of a release into the water beyond the capabilities of the onsite team, Clean Seas, or another equivalent organization, would be notified, providing for additional spill response personnel and equipment.
- Refueling would occur in a designated area on the barge with spill containment. No refueling will occur in Lookout Park.

- All items stored on site would be placed in double containment areas to prevent leakage or spills.
- Equipment onsite would include five bales of sorbent pads, 600 feet of sorbent boom, portable spill prevention kit (for fuel or hydraulic oil leak) and four plastic pans/tubs. A boom tender vessel will be available and notified as needed (not onsite).

Solid wastes, including sanitary wastes, rubbish, debris, waste materials, garbage and other discarded materials, would be placed in containers and disposed of on a regular schedule through the Project duration. The contractor would transport all solid waste off the Project site on the barge and away from staging areas and dispose of it in compliance with local, state and federal requirements for solid waste disposal.

Drainage systems on the barge have not been specified. Liquid storage on the barge would include a 500-bbl liquids storage tank, used primarily to store circulating liquids from well drilling/cleanout, a 100-bbl fresh water tank, a bulk cement tank and the shaker pit. Fluids that accumulate in the cofferdam area are planned to be pumped from the cofferdam area to the ocean using a trash pump system from the barge.

2.6 PROJECT SCHEDULE AND EMPLOYEES

The overall Project schedule is anticipated take a total of 3 weeks operating on a 24/7 schedule assuming no weather or site condition related delays. Table 2-4 shows the anticipated Project schedule along with the employee requirements to complete the project. Table 2-5 shows the major equipment requirements. Note that fluctuating tides and/or inclement weather conditions (e.g., storms or high surf) may be cause for an extended schedule so that the barge may be safely delivered and removed, potentially extending the schedule to 8 weeks.

Table 2-4. Anticipated Schedule and Employee Requirements

Phase		Onsite Week 1 Build Cofferdam							Onsite Week 2 Abandon Well							Onsite Week 3 Remove Cofferdam							
Equipment																							
Barge In-Transit																							
Crane																							
Pile Driver																							
Workover Rig																							
Oil Spill Trailer																							
Logging Skid																							
Cement Pump																							
Cement Bulk																							
Welding Rig																							
Labor – 24 hours per day		18	18	18	18	18	20	18			25	25	25			18	18	18	18	18	18	18	

Table 2-5. Anticipated Major Equipment Requirements

Equipment	Origin	Days	Location	HP
Crane	Santa Barbara	14	Well	128
Pile Driving Rig	Santa Barbara	14	Beach	348
Jack-up Barge/ two Tugs	Long Beach	20	Well	3,200
Rig	Bakersfield	3	Well	425
Cement Pump Truck	Bakersfield	3	Well	302
Cement Bulk Truck	Bakersfield	3	Well	405
Perf/Logging Skid	Long Beach	3	Well	173
Welding Rig	Ventura	3	Well	350

Up to 25 employees per day would be required to complete work activities. Work activities would be performed 24 hours per day. Workers and equipment would be conveyed to and from the barge by the tug boats from Santa Barbara Harbor. No employee parking would be used at Lookout Park.

2.7 APPLICANT PROPOSED MEASURES

The Project includes the following Applicant Proposed Measures (APMs) to address Project construction activities. The APMs will be monitored by CSLC staff or CSLC contracted monitors along with the Project's overall Mitigation Monitoring Program (see Section 7, *Mitigation Monitoring Program*).

APM-1. Abandonment and Contingency Plan. Before the commencement of construction activities, the CSLC staff shall prepare, or shall write into any contracts that the contractor shall prepare, a plan detailing the abandonment procedures, including: 1) the use of appropriate circulation fluids and/or drilling muds; 2) the type and sizing of circulation fluid pumps; 3) details of all abandonment contingencies, including contingencies for the failure to meet Division of Oil, Gas, and Geothermal Resources (DOGGR) abandonment standards, such as not reaching the DOGGR prescribed depth, failure to circulate to the surface, and including procedures such as removing of casing, variation in perforation depths, cement top caps, etc. The plan shall be designed to ensure that the abandonment operations would be capable of handling any loss of well control or change in abandonment procedures encountered during the abandonment activities. The Plan shall include equipment requirements, equipment availability and procedures for delivering the equipment associated with all contingency scenarios.

APM-2. Barge System Engineering. Before the commencement of construction activities, the CSLC staff shall prepare, or shall write into any contracts that the contractor shall prepare, a plan detailing measures to reduce the potential for releases to the environment, and to ensure that the shortest scheduling associated with the Project is achieved. An engineering study shall be conducted prior to mobilization, which shall address at least 1) Barge configuration and optimization with regards to tides and scheduling, including the use of supply boats and additional barges if needed and the use of offloading of equipment (including pumps, tanks, materials, etc.) to reduce the barge draft, allow for removal of the barge at lower high tides, and thereby reduce the potential for an extended schedule. This analysis shall be coordinated with the bathymetric survey to determine barge scheduling under different scenarios, including an extended schedule due to well abandonment complications; 2) Equipment needs for the barge, including the need for pier equipment, sheet pile installation materials and equipment, and installation capabilities; 3) Fluids containment and handling, including oil-water separation requirements, oily water storage and transport, and barge containment of spilled construction materials through the use of a barge sump and barge-edge spill containment walls, with the containment volume being greater than the largest tank on the barge; 4) Barge weight and draft fully loaded as well as the capacity for fluids handling and storage, and a determination along with the bathymetric study, of the scheduling for tides; 5) Equipment arrangement on the barge to allow for equipment movement and use between tasks; 6) Refueling procedures and spill containment measures and equipment to prevent spills of fuel from reaching the marine environment.

APM-3. Emergency Response Equipment Availability. During the installation of the cofferdam and the well abandonment activities, a tender boat with sufficient boom shall be placed immediately offshore of the operations to ensure that any spills which occur and enter the marine environment are immediately contained. Contracting with Clean Seas, or another equivalent organization experienced in on-sea oil spill containment and recovery operations, shall be established before construction commences. In addition, the barge shall be equipped with<u>, and deploy in advance within or around the cofferdam area as feasible,</u> sufficient sorbent pads and booms<u>, or snare or pom-pom fencing or other effective strategies,</u> to provide immediate containment of oil released into the cofferdam areas. These would be in addition to the response trailer located at Lookout Park.

APM-4. Use of Vibratory Pile Driver. Preliminary information obtained from contractors indicated that the use of a vibratory pile driver would be feasible, but that it was not proposed by all of the contractors contacted. Generally, a geotechnical assessment is needed in order to ensure that high-force methods (impact pile drivers) are not needed. However, due to the beach location and the presence of sand, a geotechnical analysis is not considered necessary. The use of a vibratory pile driver would substantially lower the noise levels, both in-air and in-water, and would reduce impacts, both to humans and to biological resources.

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3.0 CUMULATIVE PROJECTS

This section provides a listing and map identifying projects near the location of the proposed Becker and Legacy Well Abandonment and Remediation Project (Project). This Project involves short-term onshore construction work at Summerland Beach in Santa Barbara County and marine transportation to and from southern California ports. State California Environmental Quality Act (CEQA) Guidelines section 15130 requires that an Environmental Impact Report (EIR) discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable (as defined in State CEQA Guidelines, § 15065, subd. (a)(3)). An EIR, however, should not discuss impacts which do not result in part from the project evaluated in the EIR. Where a lead agency is examining a project with an incremental effect that is not "cumulatively considerable," a lead agency need not consider that effect significant, but shall briefly describe its basis for concluding that the incremental effect is not cumulatively considerable. As defined in State CEQA Guidelines section 15355:

> *"Cumulative impacts" refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. (a) The individual effects may be changes resulting from a single project or a number of separate projects. (b) The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.*

3.1 METHODOLOGY

The geographic area where cumulative effect can occur varies by resource or issue. For example, air quality impacts tend to disperse over a large area, while noise impacts are typically more localized. For this reason, the appropriate geographic scope for the analysis of cumulative impacts must be identified for each issue area (see Table 3-1). The cumulative projects study area for this EIR includes projects located in the immediate onshore, nearshore, and offshore areas of the Summerland coast or Project-related areas of travel. The project list for the cumulative impacts analysis includes projects that are either reasonably foreseeable or are expected to be constructed or operated during the short-term life of the proposed Project. See Table 3-2 for a list of these projects.

Figure 3-1 shows locations of three "industrial" projects. Figure 3-2 identifies the locations of residential, institutional, recreational, and commercial projects are located in onshore locations in the Summerland area, near the proposed Project. The projects are numbered in accordance with Table 3-2.

Table 3-1. Scope of Cumulative Analysis by Resource/Issue Area

Resource/Issue Area	Geographic Scope for Cumulative Analysis
Hazards and Risk of Upset	Localized (Summerland Area) and Regional (Santa Barbara County)
Aesthetics	Localized (Summerland Area)
Air Quality	Regional (Santa Barbara and Ventura County Air Pollution Control Districts [APCDs] and South Coast Air Quality Management District)
Biological Resources	Localized (Summerland Area) and Regional (Santa Barbara County)
Cultural and Paleontological Resources	Localized (Summerland Area) and Regional (Santa Barbara County)
Cultural Resources - Tribal	Localized (Summerland Area)
Geology and Soils	Localized (Summerland Area)
Greenhouse Gases	Regional (Santa Barbara and Ventura County APCDs; South Coast Air Quality Management District) and Global
Hydrology and Water Quality	Localized (Summerland Area) and Regional (Santa Barbara County)
Noise	Localized (Summerland Area)
Recreation	Localized (Summerland Area) and Regional (Santa Barbara, Ventura, and Los Angeles counties)
Transportation (Marine)	Regional (Santa Barbara, Ventura, and Los Angeles counties)

Table 3-2. Relevant Cumulative Projects in the General Project Area

Project Name	Brief Description	Status
Industrial Projects[1]		
1. Carpinteria Offshore Field Redevelopment Project	Redevelop State Oil and Gas Leases PRC 4000, PRC 7911, and PRC 3133	Environmental review on hold
2. Paredon Project	Development of offshore oil and gas reserves from onshore facilities near Carpinteria	Unknown due to Venoco bankruptcy
3. Ellwood Marine Terminal Demolition and Reclamation Project	Decommissioning of onshore and offshore components of the former marine oil terminal.	Environmental review in progress
Residential, Commercial, Institutional, and Recreational Projects		
4. Beach Club Drive Family Trust Lot Split	A two-way lot split, Coastal Development Permit (CDP) for new single family dwelling, and zoning resolution	Focused EIR in progress
5. Cate School Master Plan Update	Amendments to Conditional Use Permit (CUP) for new development and changes to operations	Draft FEIR completed January 2017
6. Casa Dorinda Master Plan Update	Amendments to the CUP to allow for new development	Open Space Management Plan in review

Table 3-2. Relevant Cumulative Projects in the General Project Area

Project Name	Brief Description	Status
7. Light Lot-Split	A two-way lot split	Draft Mitigated Negative Declaration
8. Miramar Hotel Reconstruction	Redevelopment of all existing buildings	Approved; In progress
9. Van Wingerden Greenhouses	Zoning Map Amendment and Development Plan/CDP to construct a 264,500 ft^2 greenhouse	Approved; awaiting Zoning Amendment approval from California Coastal Commission
10. South Coast 101 High Occupancy Vehicle (HOV) Lanes Project *	Addition of one HOV lane in each direction on U.S. Highway 101	Approved
Marine Transportation Projects[2]		
Berth Deepening and Wharf Improvement Project	Port Hueneme	In progress
Berth Improvement Projects	Construction in Port of Los Angeles	Varies
Middle Harbor Redevelopment Project and Pier G Modernization	Construction n Port of Long Beach	In progress
Poseidon Seawater Desalination at Huntington Beach Project (offshore lease conduit modifications)	Marine transport of construction equipment round trips between Port of Long Beach and Huntington Beach (southward)	Supplemental Draft EIR in progress
San Onofre Nuclear Generating Station Units 2 and 3 Decommissioning	Marine transport of construction equipment round trips between Port of Long Beach and southward	Draft EIR in progress

Notes:
* Caltrans 2016.
[1] Two Venoco oil and gas projects, PRC 421 Recommissioning and South Ellwood Field Development, were suspended after Venoco quitclaimed to the State their oil and gas leases associated with these projects in April 2017.
[2] Marine Transportation Projects would extend outwards from the Ports and are therefore not shown on Figures 3-1 or 3-2.

Figure 3-1. Cumulative Oil Production and Infrastructure Projects

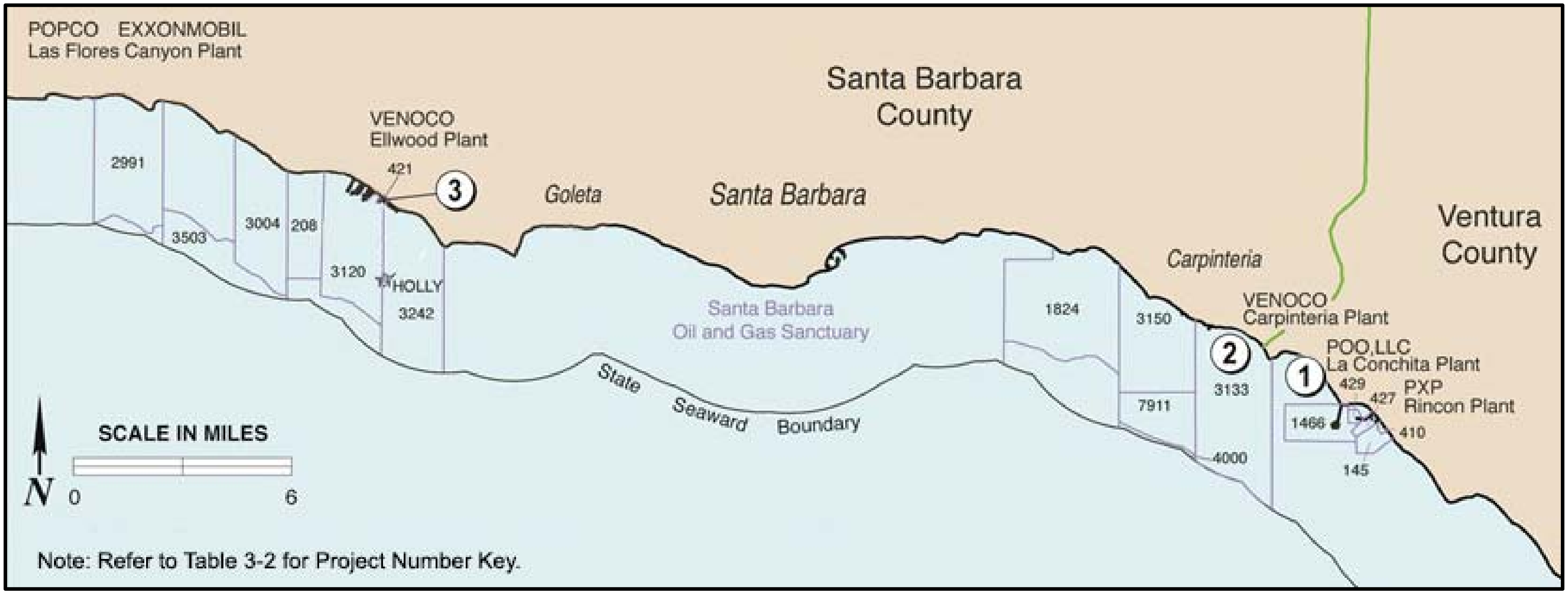

Figure 3-2. Other Cumulative Projects in Summerland Onshore Area

The analysis of cumulative effects considers variables such as geographic (spatial) limits, time (temporal) limits, and the characteristics of the resource being evaluated. The geographic scope of each analysis is based on the topography surrounding the Project and the natural boundaries of the resource affected, rather than jurisdictional boundaries. The geographic scope of cumulative effects will often extend beyond the scope of the direct Project effects, but generally not beyond the scope of the indirect effects of the Project. In addition, each project has its own implementation schedule that may or may not coincide or overlap with the Project's schedule.

Cumulative impacts evaluated in this EIR would likely represent a "worst-case" scenario for the following reasons:

- Not all of the cumulative projects will be approved and built. Construction of some projects may not coincide with Project activities producing similar impacts.
- Other projects would likely be, or have been, subject to unspecified mitigation measures that would reduce their impacts and thereby reduce the potential for contributing to cumulative impacts.

3.2 INDUSTRIAL PROJECTS

Several industrial or marine transportation projects in the Project vicinity may contribute to cumulative impacts. Projects near the Summerland area that could affect the same resources as the Project are listed in Table 3-2 and summarized below; however, due to the uncertainty of these projects moving forward in the foreseeable future, they are not likely to occur at the same time as Becker well abandonment activities.

1. Carpinteria Field Redevelopment Project

The Applicant submitted a Plan of Development to the California State Lands Commission (CSLC), and a revised Development and Production Plan application was submitted to the Bureau of Ocean Energy Management (BOEM) to develop and produce existing State Oil and Gas Leases PRC 4000, PRC 7911, and PRC 3133 within the Carpinteria Field by drilling new wells from Federal Platform Hogan. Oil and gas production from the State leases would be commingled on Federal Platform Hogan with existing production from the Federal lease and sent via pipelines to the La Conchita Facility in Ventura County.

2. Paredon Project

Venoco submitted applications in 2013 to the city of Carpinteria and CSLC to develop existing State Oil and Gas Lease PRC 3150.1 from an onshore site located within the existing Carpinteria Oil and Gas Processing Facility in the City of Carpinteria. The applications, which are currently on hold, proposed fewer wells and a reduced drilling duration compared to prior applications that were also placed on hold after City of

Carpinteria residents defeated a ballot initiative to directly approve the project. Venoco estimated that the original project could produce up to 10,000 barrels of oil per day (BOPD) of crude oil and 10 million standard cubic feet per day (MMSCFD) of gas.

3. Ellwood Marine Terminal (EMT) Demolition and Reclamation Project

In 2013, Venoco submitted applications to applicable agencies to decommission the onshore and offshore portions of the EMT, which is no longer used following completion of the Line 96 Modification Project in 2012.

3.3 PROJECTS IN THE SUMMERLAND ONSHORE AREA

Several residential, institutional, recreational, and commercial projects are located in onshore locations in the Summerland area, near the proposed Project. These projects could directly contribute to cumulative impacts in the Project area of the onshore areas. These projects, which are under the jurisdiction of the County of Santa Barbara and the California Department of Transportation (Caltrans), are listed by corresponding number in Table 3-2, beginning with 4. Cumulative project information in the Summerland onshore area was gathered from the County’s website (County of Santa Barbara 2017).

4. Beach Club Drive Family Trust Lot Split

The project is located at 2825 Padaro Lane in the Summerland Community Plan Area, on Assessor’s Parcel Number 005-260-018. The project has three elements: (1) a two-way lot split (Tentative Parcel Map), (2) a Coastal Development Permit (CDP) for a new single family dwelling; and (3) a CDP to resolve a zoning violation and install a new fence.

5. Cate School Master Plan Update

The project would revise the existing Conditional Use Permit (CUP) for Cate School to allow for: (1) expansion and renovation of existing educational and administrative facilities over the life of the Master Plan, including 26,582 square feet (ft^2) of demolition, 180,861 ft^2 of new construction, and 41,402 ft^2 of renovation; (2) an enrollment increase from 280 students to 300 students; (3) revisions to the existing onsite childcare center operation to open enrollment to the local community, as long as 60 percent of enrolled children are affiliated with Cate School; and (4) authorization to use the existing portable Public Address (PA) system for sporting events and school functions. The project would not alter the existing permitted campus use as a private high school and boarding facility.

6. Casa Dorinda Master Plan Update

Casa Dorinda is requesting County approval of a revised CUP which encompasses the "Master Plan" of this retirement community for the foreseeable future. Approval of the

Revised CUP is anticipated to provide for build-out of the Master Plan in phases over approximately the next 7 to 10 years. The applicant also requests approval for a Minor CUP to accommodate pilasters and gates for the new entrance within the front setback, and sound attenuating walls along portions of the property line.

Casa Dorinda consists of 30 buildings comprising independent living, personal and memory care units and various support buildings. The County capped number of residential units at 286 and occupancy at 360 residents as part of the approval of 90-CP-091. While the project would add 31 net new residential units, Casa Dorinda would continue to operate below those limits, which would not change as a result of the project.

Overall, the Master Plan proposes 97,235 ft^2 of net new development on the project site. With buildout of the project, overall structural development on the site would total approximately 492,425 ft^2 of floor area (gross) across the 48-acre property. In exchange for the 1.10 acres that would be removed from the open space to accommodate new development, 4.23 acres (a 3.8 to 1 ratio), would be added to the open space.

7. Light Lot Split

The project is a request to consider Case Nos. 12TPM-00000-00002 and 12CDP-00000-00080 for approval of a Tentative Parcel Map in compliance with County Code Chapter 21 to divide a parcel of approximately 2.77 acres gross/net into two parcels of approximately 1.77 acres gross/net (proposed parcel one) and 1.0 acres gross/net (proposed parcel two) on property zoned 1-E-1.

8. Miramar Hotel Reconstruction

The applicant proposed to demolish all existing buildings and redevelop the Miramar Hotel with all new buildings of approximately 385,296 gross (164,849 net) ft^2, including a main building with a lobby, meeting rooms and conference facilities, back-of-house areas, and underground parking; a ballroom; a spa; a Beach and Tennis Club; 192 guest rooms; two restaurants and a beach bar; two pools and two tennis courts; new landscaping; new 10-foot high sound wall; four employee dwellings; and abandonment of the north-south segment of Miramar Avenue.

In 2015, a number of reductions were made to the project including elimination of the spa building previously located in the northwestern portion of the site, elimination of all underground parking and creation of a new surface parking lot in the previous location of the spa building, reduction in the number of guest rooms from 186 to 170, a reduction in the maximum allowable attendance for events from 500 persons to 400 persons, a reduction in the available retail space and a redesign of the architectural style of the hotel consistent with the “Cottage Type Hotel” tradition within the Montecito Community.

Commensurate with the reduction in physical development and use levels, the number of parking spaces to be provided has also been reduced from 494 to 438.

9. Van Wingerden Greenhouses

The applicants request approval of a Zoning Map Amendment (11RZN-00000-00001) to remove a Carpinteria Agricultural (CA) Overlay view corridor designation from the subject parcel. In addition, the project includes a Development Plan (10DVP-00000-00010) and Coastal Development Permit (11CDP-00000-00009) to validate the unpermitted construction of a 264,500 ft^2 greenhouse; three existing, permitted greenhouses of 122,200 ft^2 would be incorporated into the Development Plan.

A Revised Final EIR was prepared and certified for the adoption of the CA Overlay. An Addendum has been prepared to assess the environmental impacts of the current proposal. The CA Overlay is a component of the County's certified Local Coastal Program; therefore, the Zoning Map Amendment requires certification by the California Coastal Commission before it may be approved.

10. South Coast 101 High Occupancy Vehicle (HOV) Lanes Project

This project would add one HOV lane in each direction on U.S. Highway 101 from 0.2 mile south of Bailard Avenue in the City of Carpinteria to Sycamore Creek in the City of Santa Barbara. The project is 10.9 miles in length. The added lanes are proposed part-time HOV lanes, meaning that they would operate as general-purpose lanes during off-peak periods of weekdays and on weekends. Caltrans District 5 is the lead agency for the project. Santa Barbara County Association of Governments (SBCAG) is the primary project sponsor. Project partners include the City of Santa Barbara, County of Santa Barbara, City of Carpinteria, SBCAG and Caltrans. The project is funded with Measure A regional sales tax funds and other state and federal funds. Project design and permitting is currently underway and will be ongoing through the fall of 2018. Construction is scheduled to begin between late 2018 and early 2019 and will continue until the project has been completed.

3.4 MARINE TRANSPORTATION PROJECTS IN THE REGIONAL AREA

Projects planned for area Ports (Hueneme, Los Angeles, and Long Beach) could cause an increase in marine traffic that could affect the Project area. Most of these projects involve increased capacity of the ports and subsequent increases in shipping. These are listed below.

3.4.1 Port Hueneme

Berth Deepening and Warf Improvement Project: This project would allow for increased efficiencies for vessel entry and exit and reduced reliance on vessel arrival/departures timing with the tides.

3.4.2 Port of Los Angeles

Berth Improvement Projects: Multiple berths undergoing planned improvement projects, including optimization of operations and regulatory compliance, some of which could produce increases in shipping.

3.4.3 Port of Long Beach

Middle Harbor Redevelopment Project: A modernization project within the Port of Long Beach to combine two shipping terminals into one state-of-the-art container terminal. The program is adding on-dock rail capacity, shore power hookups and a new longer wharf to move twice the cargo with half the air pollution. The first phase of the $1.3 billion project was started in March 2016. The project will be completed in 2019.

Pier G modernization: A multi-year renovation of the ITS container terminal. The Port has added a new terminal Administration and Operations Complex, new Maintenance and Repair Facility and a new West Arrivals. A new on-dock rail yard has also been completed, nearly doubling the terminal's capacity for on-dock rail.

Seawater Desalination at Huntington Beach Project (offshore conduit modifications): Proposed offshore modifications at the Huntington Beach Desalination Plant that would be located adjacent to the AES Huntington Beach Generating Station would use the Port of Long Beach facilities for an offshore construction barge and equipment transportation to the south. Permitting is continuing.

San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 Decommissioning: Proposed decommissioning of the SONGS intake and outfall pipelines would involve extensive use of the Port of Long Beach facilities for mobilizing offshore construction barges and equipment and transportation to the south.

4.0 ENVIRONMENTAL IMPACT ANALYSIS

INTRODUCTION

Section 4 of this Environmental Impact Report (EIR) examines the potential significant environmental impacts of the proposed Becker and Legacy Wells Abandonment and Remediation Project (Project) identified by the California State Lands Commission (CSLC) as lead agency under the California Environmental Quality Act (CEQA). This section includes analyses of the environmental issue areas listed in Table 4-1.

Table 4-1. Environmental Issue Areas for Project EIR

Analyzed in this EIR (by Section number)	
4.1 Hazardous Materials and Risk of Upset	4.7 Geology and Soils
4.2 Aesthetics	4.8 Greenhouse Gas Emissions
4.3 Air Quality	4.9 Hydrology and Water Quality
4.4 Biological Resources	4.10 Noise
4.5 Cultural and Paleontological Resources	4.11 Recreation
4.6 Cultural Resources – Tribal	4.12 Transportation (Marine)
Not Analyzed (see discussion below)	
• Agriculture and Forestry Resources	• Population and Housing
• Land Use and Planning	• Transportation/Traffic
• Mineral Resources	• Utilities and Public Service Systems

Each environmental issue area analyzed in Section 4 of this EIR provides necessary background information, describes the existing environmental setting (i.e., baseline conditions prior to Project implementation), and defines the relationship between baseline conditions and potential Project-related impacts. Information sources may include Geographic Information System data, peer-reviewed journal articles, and environmental reports, studies or planning documents prepared by or for other agencies (e.g., Santa Barbara County, County Air Pollution Control District, CSLC, California Coastal Commission, California Department of Fish and Wildlife, California Department of Transportation [Caltrans], National Oceanic and Atmospheric Administration, U.S. Fish and Wildlife Service, and U.S. Geological Survey).

Each section also describes the approach used to analyze impacts, determines whether each identified impact is significant or not, and recommends mitigation measures (MMs) if applicable to reduce or avoid the Project's significant impacts. Throughout Section 4, numbered statements are used to identify impacts and MMs are numbered to correspond to the impacts they address (e.g., Impact AQ-1; MMs AQ-1a, AQ-1b).

TIMING OF PROJECT ELEMENTS

This EIR addresses the impacts of the Project, which includes the plugging and abandonment of the Becker well and any other legacy wells within the general

Summerland Beach area. Abandonment of the Becker well and other legacy wells is expected to occur in Fall 2017 and between 2017 and 2019, respectively.

NO IMPACTS/SIGNIFICANT IMPACTS

Based on an initial review and analysis, the Project would have no impact or a less than significant impact on certain environmental issue areas. Reasons why no significant impacts are expected related to these issue areas, which are not reviewed in this EIR, are discussed below as required pursuant to State CEQA Guidelines section 15128.

- **Agriculture and Forestry Resources**. Activities for the Project would primarily be located on or offshore the beach in Summerland, in sandy areas that are partly or completely covered by seawater during high tide and exposed during low tide. Soils at this location are not considered to be of prime statewide importance for agricultural purposes. Staging would occur on paved areas. The Project would have no impact on agriculture or forestry resources because the Project is temporary in nature and would not:
    a) convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (to non- agricultural use);
    b) conflict with existing zoning for agricultural use, or a Williamson Act contract;
    c) conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production;
    d) result in the loss of forest land or conversion of forest land to non-forest use; or
    e) involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.
- **Land Use and Planning**. The Project site is located within the CSLC's jurisdiction in Santa Barbara County in an area characterized by a sandy beach that lies between the Project site and upland areas. A steep coastal bluff separates the beach from these upland areas, abruptly rising 80 to 100 feet above the beach in some areas. The upland area is considered open space and is occupied by Lookout Park on 4 acres on the cliffs of Summerland. The Project site is located within the Coastal Zone, and is therefore subject to provisions of the California Coastal Act. The existing land uses are open space and recreational in nature, while surrounding land uses are dominated by residential areas and U.S. Highway 101. The Project is also temporary in nature, with no new permanent structures or new uses, although it may affect some recreational uses for a short period as analyzed in this document in Section 4.11, *Recreation*. Through the plugging and abandonment of the Becker well and other legacy

wells, the Project site will be enhanced beyond its present condition and for its present uses. The Project would have no impact on land use and planning because it would not:

a) physically divide an established community;

b) conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect; or

c) conflict with any applicable habitat conservation plan or natural community conservation plan.

- **Mineral Resources**. Project activities are associated with the plugging and abandonment of the leaking Becker well and potentially other legacy wells on Summerland Beach. The Project site is not located near any known mineral resources that may be affected by Project activities, nor will Project activities involve the removal or extraction of mineral resources. Consequently, the Project would have no impact on mineral resources because it would not:

  a) result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State; or

  b) result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

- **Population and Housing**. The Summerland Beach area is fully developed and the Project site is open space and not the subject of any potential additional development. The proposed Project would have no impact on population and housing because it would not:

  a) induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure);

  b) displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or

  c) displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

- **Transportation/Traffic**. The Project site is located along the Santa Barbara County coast at Summerland Beach and accessible through U.S. Highway 101 and the entrance to Lookout Park through Lookout Park Road. U.S. Highway 101 is maintained by Caltrans Region 5. The access roads to Lookout Park are maintained by the County of Santa Barbara Public Works Department, and beach access is maintained by County Parks. The majority of equipment and personnel would travel to and from the Project site by way of waterborne transportation (e.g., barge, vessels) coming from the Port of Long Beach and Santa Barbara Harbor. The Project would generate very little onshore traffic, and roads directly associated with the site are public roads with acceptable volumes of local traffic. The Project would have a designated area within Lookout Park at which to place an emergency oil response trailer in the event of an oil spill during the 3-week Project duration. The temporary traffic related to staging the oil spill response trailer is not expected to conflict with the Santa Barbara County Congestion Management Plan. In summary, the Project would not cause significant transportation or traffic impacts or would have no transportation or traffic impacts because it would not:

a) conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;

b) conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;

c) result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;

d) substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);

e) result in inadequate emergency access; or

f) conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Information on impacts of the Project related to vessel traffic is discussed in Section 4.12, *Transportation (Marine)*.

- **Utilities and Public Service Systems**. The Project would not change the demand for utilities (e.g., solid waste, potable water, or wastewater) and would not generate new requirements for infrastructure, electricity, or wastewater in the Project area during or after plugging and abandonment of the Becker well or other area legacy wells. Ocean water that may enter the cofferdam during the Project would be pumped back to the barge or ocean pursuant to any discharge permit requirements. All solid waste would be recycled or sent to an approved disposal site. The Project as proposed would occupy only a small area of Lookout Park for temporary staging of oil spill response equipment during Project implementation. Activities in the Project area would be short term and would not require an increase in fire or police protection services, result in a need for new facilities, or alter acceptable service ratios for fire protection, schools or parks. In summary, the Project would have no impacts to utilities and public service systems because it would not:

a) exceed wastewater treatment requirements of the Central Coast Regional Water Quality Control Board;

b) require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; or

c) require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

In addition, the Project would:

d) have sufficient water supplies available to serve the Project from existing entitlements and resources (no new or expanded water supplies or entitlements are needed);

e) have adequate capacity to serve the Project's projected wastewater demand in addition to the provider's existing commitments;

f) be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs; and

g) comply with federal, state, and local statutes and regulations related to solid waste.

Significance Criteria

Significance criteria are identified for each environmental issue area. These criteria serve as benchmarks for determining if a Project component or activity would result in significant adverse environmental impacts when evaluated against baseline conditions. According to State CEQA Guidelines section 15382, a significant effect on the environment means "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project…."

Although guidance provided by CEQA is used to help determine the significance of impacts, the determination of impact significance is based on the independent judgment of the CEQA lead agency. The establishment of any criteria used to evaluate the significance of impacts is also the responsibility of the CEQA lead agency. Some impact categories in this document lend themselves to scientific or mathematical analysis and therefore, to quantification, while others are more qualitative. Some issues, such as air quality, have significance thresholds that are established by agencies with regulatory authority for that resource and have been determined by the CEQA lead agency to be applicable to the analysis. Significance criteria relevant to each section are based on Appendix G of the State CEQA Guidelines, Santa Barbara County Environmental Thresholds and Guidelines Manual, and applicable CSLC and local agency standards.

Impact Analysis

The terms "effect" and "impact" used in this document are synonymous and can refer to effects that are either adverse or beneficial.

- **Direct effects** are caused by the Project and occur at the same time and place as the Project.
- **Indirect effects** are caused by the Project and occur later in time or further in distance, but are still reasonably foreseeable.
- **Residual impacts** are impacts that still meet or exceed significance criteria after application of mitigation and, therefore, remain significant.
- **Cumulative impacts** are those effects resulting from the Project when combined with similar effects of other past, present, and reasonably foreseeable future projects (regardless of which agency or person undertakes such projects). Cumulative impacts could result from individually insignificant but collectively significant actions taking place over a period of time.
- **Short-term impacts** are those expected to occur during decommissioning that do not have lingering effects for an extended period after decommissioning is completed.
- **Long-term impacts** are those that would persist for an extended period, including after completion of decommissioning.

A determination will be made, based on the analysis of any impact within each affected environmental issue area and compliance with any recommended mitigation, of the level of impact remaining in comparison to pertinent significance criteria. Impacts are classified as according to one of the five categories listed below.

Significant and Unavoidable	A substantial or potentially substantial adverse change from the environmental baseline that meets or exceeds significance criteria, where either no feasible mitigation can be implemented or the impact remains significant after implementation of mitigation measures
Less than Significant with Mitigation	A substantial or potentially substantial adverse change from the environmental baseline that can be avoided or reduced to below applicable significance thresholds

Less than Significant	An adverse impact that does not meet or exceed the significance criteria of a particular resource area and, therefore, does not require mitigation
Beneficial	An impact that would result an improvement to the physical environment relative to baseline conditions
No Impact	A change associated with the Project that would not result in an impact to the physical environment relative to baseline conditions

Assumptions

The analysis in this EIR was prepared using the following general assumptions.

- The laws, regulations, and standards applicable to legacy well abandonment would be applied consistently to the proposed Project.
- The CSLC will obtain all required permits and approvals from other agencies and comply with all legally applicable terms and conditions associated with those permits and approvals.
- Implementation of the Project, which is described in Section 2, *Project Description*, including implementation of MMs identified to reduce or avoid significant adverse impacts, will be monitored in accordance with a Mitigation Monitoring Program (summarized below).

MITIGATION MEASURES AND MITIGATION MONITORING PROGRAM

When significant impacts are identified, feasible MMs are formulated to eliminate or reduce the severity of those impacts. The effectiveness of a MM is subsequently determined by evaluating the impact remaining after its application. Implementation of multiple MMs may be needed to reduce an impact to a less-than-significant level. As noted above, impacts that still meet or exceed significance criteria after application of mitigation are considered residual impacts that remain significant.

The MMs recommended in this document are identified in the impact sections and presented in a Mitigation Monitoring Program in Section 7. If any MMs are ultimately incorporated as part of the Project's design, they are no longer considered mitigation under CEQA. If they eliminate or reduce a potentially significant impact to a level below significance criteria, they eliminate the potential for that significant impact since the "measure" is now a component of the action. Such measures incorporated into the Project design have the same weight as any "applicant proposed measures." The CSLC's standard practice is to include all measures to eliminate or reduce environmental impacts of a proposed Project, whether applicant-proposed or recommended mitigation, in the Mitigation Monitoring Program.

CUMULATIVE IMPACTS ANALYSIS

CEQA requires an EIR to discuss the cumulative impacts of a project (see description above under *Impact Analysis*) when that project's incremental effect is "cumulatively considerable" (State CEQA Guidelines, § 15130). Section 3, *Cumulative Projects*, defines the applicable geographic scope of the cumulative analysis, and lists future planned and approved projects to be included in the cumulative environment.

IMPACTS OF ALTERNATIVES

Pursuant to State CEQA Guidelines section 15126.6, an EIR must describe and evaluate a range of reasonable alternatives that would feasibly attain most of the project's basic objectives, and would avoid or substantially lessen any of the significant impacts of the project as proposed. The State CEQA Guidelines also state that the range of alternatives required to be evaluated in an EIR is governed by the "rule of reason" (§ 15126.6, subd. (f)); that is, an EIR needs to describe and evaluate only those alternatives necessary to permit a reasoned choice and to foster informed decision making and public participation. Section 5 of this EIR describes the alternatives to the Project and includes the impact analysis for each alternative considered. A summary of impacts of each alternative in comparison with the impacts of the Project is included within the Executive Summary and Section 6 of this EIR.

FEDERAL AND STATE REGULATIONS

Each of the issue areas is considered in terms of the federal, state, regional, and local laws, regulations, and policies that apply to the issue area (Appendix A summarizes applicable federal and state laws, regulations and policies; applicable regional and local laws, regulations, and policies are identified in each environmental resource section).

4.1 HAZARDOUS MATERIALS AND RISK OF UPSET

This section discusses the potential for an upset causing a release of hazardous materials, levels of public safety and spill risk that may be associated with the proposed Becker and Legacy Well Abandonment and Remediation Project (Project), including those issues that could adversely affect public health. The section describes the environmental setting, evaluates the type and significance of impacts that may occur as a result of the Project, and identifies measures to avoid or substantially lessen any impacts found to be potentially significant. Potential impacts are evaluated based on anticipated changes to existing conditions. Project-related physical improvements and associated required permits would be limited to the Summerland Beach areas, including the Becker well and any other legacy wells that may be abandoned by the California State Lands Commission (CSLC) in the future.

4.1.1 Environmental Setting

Environmental setting or baseline conditions reflect the present environment conditions that could be affected by the Project. Safety and risk issues are associated with existing facilities, including existing abandoned wells located on Summerland Beach that are currently leaking or may leak in the future. CSLC staff estimates of current leakage from the Becker well range from a few pints to a barrel of oil per day. Leak rates seem to vary over time based on reports of oil on the beach, although no long-term assessment of leak rates has been conducted.

The activity in the reservoir area in the nearshore environment such as the Becker well is influenced by the amount of sand cover and hydrostatic head caused by tidal influence and by water aquifer replenishment caused by yearly rainfall activity. Oil from the Becker well, for example, surfaces on the beach and the well is most active during periods of heavy storm season (causing scouring of the beach), when there is minimum sand accumulation, and during the time of year when tides are lowest. For offshore legacy wells, the level of kelp cover can also affect the extent of oil on the beach.

Several oil and gas fields lie along California's central coast. Division of Oil, Gas, and Geothermal Resources (DOGGR) data identify 122 oil and gas fields in Districts 2 and 3, covering Ventura, Santa Barbara, San Luis Obispo, Monterey, Santa Cruz, and Santa Clara counties. CSLC (2014) data indicate that 26 oil and gas leases (18 producing) in State tidelands produce a total average crude oil level of 11,047 barrels of oil per day (BOPD). In addition, 23 federal platforms are present on the Outer Continental Shelf.

The nature of the materials leaked by these facilities poses risks to people and the environment in the vicinity. Risks may include exposing the population and environment to accidental spills of hazardous materials, which can subsequently lead to biological or hydrological damage, exposure to toxic materials, and odors, fires, and explosions.

4.1.1.1 Sensitive Receptors

Potential sensitive receptors in the vicinity of the Project are those that could be affected by a release of hazardous materials, including Summerland Beach, Lookout Park, the areas offshore Summerland Beach, U.S. Highway 101 and residences located along the coast in Summerland. Sensitive environments in these areas are described in Section 4.4, *Biological Resources*, and Section 4.9, *Hydrology and Water Quality*.

4.1.1.2 Historical Activities

Summerland was extensively used for oil well drilling and production from offshore and onshore areas in the late 1800s and early 1900s. Many of the wells drilled were not abandoned pursuant to the regulations and technology in use today, and there is substantial evidence that some of these wells have leaked into the marine environment, impacting the beach and recreational areas. In Section 2, *Project Description*, the historical efforts to abandon and clean up the remains of this historical oil development are described.

4.1.1.3 Prevention and Response Capabilities

The oil spill prevention plan, used in October 2015 to guide assessment during the Phase 1 investigation of the leaking Becker well, and other pollution prevention and safety topics are discussed in Section 2.5, *Pollution Prevention and Safety*. The October 2015 oil spill prevention plan requires the use of oil spill procedures including the use of absorbent pads, the use of an onsite spill response team during well abandonment, the use of an emergency response trailer located at Lookout Park, the implementation of refueling requirements, the storage of hazardous materials requirements, and the availability of boom boats and response boats to react to a spill that enters the marine environment. All of these elements would be applicable to the Project and are anticipated to be included in the oil spill prevention plan that would be developed before Project construction activities commence.

The emergency response trailer located at Lookout Park would contain various response equipment, including personal protective equipment (PPE) (e.g., gloves, eye protection, etc.), sorbent pads, shovels, cat litter, plastic bags, and drums.

4.1.1.4 Existing Conditions

Risk of upset has historically been adversely affected by the ongoing leakage of crude oil and associated gases and odors at the Becker and legacy wells. As detailed in Section 1, *Introduction*, reports have included “strong odor, causing headache and nausea,” and “very, very strong gas odor on beach” and closure of the Summerland Beach in August 2015 for 4 days due to health concerns over the oil on the beach and odors. Leakage from wells causes biological, ~~and~~ hydrological, air quality and recreational impacts and has been ongoing for years at the Project location.

4.1.2 Regulatory Setting

Federal and state laws that may be relevant to the Project are identified in Appendix A. At the local level, Santa Barbara County has jurisdiction over the area.

The Santa Barbara County Planning and Development Department would have jurisdiction over areas above the high tide mark.

The Santa Barbara County Air Pollution Control District (APCD) may require permits for the storage and processing of crude oil-contaminated sands and waste water generated from construction activities, under Rule 303 (nuisance), Rule 310 (odorous organic sulfides), Rule 324 (disposal and evaporation of solvents), Rule 343 (petroleum storage tank degassing), and Rule 344 (petroleum sumps, pits, and well cellars).

The Santa Barbara County Parks Division would have jurisdiction over the Lookout Park area and would regulate the closing of any areas of Lookout Park or the use of portions of the park for storage of the emergency response trailer.

4.1.3 Significance Criteria

A hazardous materials or risk of upset impact is considered significant if any of the following apply:

- The Project creates a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials
- There is a potential for fire, explosion, releases of flammable/toxic materials and/or oil, or other accidents resulting from Project operations that could cause injury or death to members of the public
- Project activities would increase the probability or volume of oil spills into the environment, and existing or proposed emergency response capabilities are not adequate to effectively mitigate Project spills and other accidents
- The Project is located on a site included on a list of hazardous materials sites compiled pursuant to Government Code section 65962.5 and, as a result, would create a significant hazard to the public or the environment

4.1.4 Environmental Impact Analysis and Mitigation

Potential direct and indirect construction-related impacts of hazardous materials and risk of upset are evaluated below. Hazardous materials utilized or encountered as part of the Project include crude oil and produced gas originating from the well bore.

Additional hazardous materials used during the construction activities, including diesel fuel oil, lubricating oils, drilling muds, concrete waste and other miscellaneous construction materials, could also result in spill impacts or impacts to construction employees, but generally not impacts to the public. Generally, risks are divided into two sections: risks to the public from upset and accidental releases of hazardous materials resulting in injuries or fatalities, and risks of spills of crude oil or other materials related to construction that could cause harm to biological or hydrological resources.

ENVIRONMENTAL IMPACTS ANALYSIS

Impact HAZ-1: Project Impacts to Public Health and Environment

Project activities could increase risk above existing baseline operations and could produce a significant hazard to the public through the use or disposal of hazardous materials **(Less than Significant with Mitigation)**.

Impact Discussion

Abandonment operations always carry a risk of loss of well control with the potential to produce impacts to public health, through fires or explosions from the release of produced gas, or releases of crude oil to the environment causing spill impacts. For this reason, DOGGR requires the use of blow out prevention measures and equipment on all well activities that involve exposing the well bore and downhole reservoir to the surface. Historical operations of oil wells in the Summerland area have involved surface pressures that have potentially reached as high as 265 pounds per square inch atmosphere (psia) (Penco 1994). Reservoir pressures were most likely substantially depleted by the time the wells were abandoned, and Penco (1994) indicates that pressures most likely currently range from 0 to 20 psia.

However, there is some uncertainty with these estimates as, over time, reservoirs are known to re-pressurize, and the sloping of the geological formation from inland Summerland field towards the coast could cause water to re-pressurize the reservoir. There is some pressure on the wells as reservoir fluids are currently migrating to and leaking on the surface; for example, during the abandonment of well number 13 in 1993, reservoir fluids flowed to the surface (pressure levels were not identified). Therefore, as a conservative assumption, the well abandonment activities could encounter pressures as high as 265 psia. If a loss of well control were to occur, this pressure would be sufficient to allow crude oil and gas to reach the surface.

Use of a circulation fluid during abandonment operations would contain reservoir fluids within the well hole and prevent loss of containment or loss of well control (reservoir fluids coming to the surface). Use of Blow Out Preventer Equipment (BOPE) would also be required during abandonment operations under DOGGR rules; the BOPE could be closed if there was a loss of well control and would effectively seal off the well and prevent a release. Although there would be a very low probability of the BOPE failing, a failure of the BOPE would allow reservoir fluids to be released to the environment.

Other pathways might allow reservoir fluids to travel to the surface outside of the casing, which would not be stopped by a BOPE since a BOPE is connected to the top of the well casing. Most likely, this type of release would be limited to leakage, as is currently the case with the existing surface leakage believed to be occurring from outside the Becker well casing. A large release of reservoir fluids (more than 50 barrels and through the annulus spacing outside of the well) would be a very low probability event as the pathways for the movement of reservoir fluids to the surface are generally constricted enough so that only leakage occurs. However, vibration during installation of sheet pile near the old casings, could increase leaks to the surface through the annulus spacing.

Blowout databases indicate a range of frequencies for well blowouts, ranging from 0.04 per 1,000 wells for wells being worked-over, to 1.7 wells per 1,000 wells associated with offshore wells being drilled. For this Project, the frequency of a loss of well control and subsequent release to the environment would be very low, most likely in the low end of this range, due to the low level of reservoir pressure.

If a release of well fluids were to occur, the release could be composed of both gas and crude oil and water. If an ignition source were encountered, it could ignite. This would be a significant impact. By ensuring that members of the public are kept separated from the construction and abandonment operations, this impact would be reduced to less than significant. Use of appropriate abandonment measures and contingency planning, such as the appropriate circulation fluids and abandonment methods, would also reduce the probability of a release. The CSLC has identified an Applicant Proposed Measure (APM) requiring preparation of an Abandonment and Contingency Plan. In addition to implementation of this APM, implementation of mitigation measure (MM) HAZ-1 below would reduce the potential for a release of material causing injuries or fatalities to the public to less than significant.

Applicant Proposed Measure

APM-1. Abandonment and Contingency Plan. Before the commencement of construction activities, the CSLC staff shall prepare, or shall write into any contracts that the contractor shall prepare, a plan detailing the abandonment procedures, including: 1) the use of appropriate circulation fluids and/or drilling muds; 2) the type and sizing of circulation fluid pumps; 3) details of all abandonment contingencies, including contingencies for the failure to meet Division of Oil, Gas, and Geothermal Resources (DOGGR) abandonment standards, such as not reaching the DOGGR prescribed depth, failure to circulate to the surface, and including procedures such as removing of casing, variation in perforation depths, cement top caps, etc. The plan shall be designed to ensure that the abandonment operations would be capable of handling any loss of well control or change in abandonment procedures encountered during the abandonment activities. The Plan shall include equipment requirements, equipment availability and procedures for delivering the equipment associated with all contingency scenarios.

Mitigation Measures

MM HAZ-1. Construction Zone Restricted Area. Before commencement of construction or abandonment activities, the construction contractor shall ensure that all areas within 300 feet of the construction and abandonment activities are marked as closed to the public with appropriate fencing or “no entry” barrier tape or equivalent. Personnel shall be stationed to prevent entrance by members of the public into the restricted area. The CSLC staff shall provide noticing to Summerland residences at least 2 weeks prior to the beginning of beach closure. The notice shall indicate the location of the beach closure, the estimated timeline of Project activities and the estimated dates of beach closure, as well as contact information for the public to request additional information. Posting of beach closures shall also be installed at least 2 weeks prior to activities at major beach access point locations, including Lookout Park, Wallace Avenue and Loon Point. A notice shall also be provided in a local newspaper, such as the Coastal View, describing the beach access interruptions, closures, safety concerns and Project duration.

Impact HAZ-2: Construction-Related Oil Spill Risks of Impacts to the Environment

Project activities could temporarily increase spill volumes of crude oil given a release during the construction or well abandonment activities **(Less than Significant with Mitigation)**.

Impact Discussion

There are a number of scenarios that could cause releases of crude oil or construction materials to the environment. These include the following:

- A loss of well control and subsequent failure of the BOPE, allowing for a release to the environment of reservoir fluids with impacts to biological resources or the marine environment (discussed under Impact HAZ-1 above)
- Increased leakage of crude oil through the annulus spacing due to nearby construction activities (vibratory installation of sheet pile) or abandonment activities impacting the well casing, subsequently allowing for a release to the environment with impacts to biological resources or the marine environment
- Discharges of cofferdam water contaminated with crude oil to the marine environment

- Releases from disturbed contaminated sands and/or subsoils associated with sands/soils taken from the cofferdam area
- Leakage or releases from construction equipment (diesel fuel, hydraulic oil, drilling muds, concrete wastes, etc.) that reach the marine environment

All of these potential spill scenarios would be short-term as they would only be associated with the construction-related activities lasting 3 weeks.

Once the cofferdams are installed, the sand would be excavated within the inner cofferdam to a depth of approximately 10 feet to allow for the well to be exposed and for a riser to be installed on the well casing. The sand excavated during this period would most likely be contaminated with crude oil. Dispersing this sand on the beach would contaminate the hydrological and biological resources of the area and would be considered a significant impact. A mitigation measures discussed below includes removal of any contaminated sands, through the use of bins hauled away by supply boats or stored on the barge. The volume of sand would be approximately 13 to 40 cubic yards, depending on the exact size of the inner cofferdam and assuming that all of the sand is contaminated. This measure would reduce impacts to less than significant.

During the initial period of excavation, once the cofferdams are in place, some de-watering of the area inside the cofferdam would need to be conducted to allow for the installation of the riser and periodic activities within the cofferdam. Most likely, once the riser is installed, de-watering would not be necessary as the cofferdam would not require constant de-watering. The water removed during the de-watering activities would be pumped to the marine environment. Most likely, due to the current crude leakage and contaminated sands/soils, this water would be contaminated with crude oil, and subsequent discharge to the environment could cause impacts to hydrological and biological resources and would be considered a significant impact. A mitigation measure discussed below includes the use of water handling procedures and equipment, such as capturing the water in tanks and hauling the water back to the Port of Long Beach for appropriate disposal. If water volumes are too great for hauling, water separation facilities may be required to allow for removal of oil before discharge to the marine environment. This measure would reduce impacts to less than significant.

Construction equipment located on the barge would be diesel-fired equipment, with tanks of diesel fuel. Equipment refueling would also most likely need to be conducted with diesel tanks on supply boats or a diesel tank located on the barge. Spills of diesel fuel, or other oils, such as hydraulic oil, or drilling muds or concrete wastes associated with well abandonment, could drain to the ocean and cause impacts to the marine environment. This would be a significant impact that would be reduced by implementation of an APM requiring the fueling of equipment to be within a contained area and requiring that the entire barge be a contained area with a sump and barge-edge containment walls.

Accidental well-related releases to the environment could impact biological or hydrological resources in the marine environment (see Section 4.4, *Biological Resources* and Section 4.9, *Hydrology and Water Quality*). The volumes of oil spilled from most of the spill scenarios would be in the order of a few barrels, with the low probability loss of well control and subsequent release scenario totaling maybe up to 10 barrels. The exact volumes are difficult to predict as the characteristics of the downhole reservoir conditions are not completely known. However, the Becker well is one of the shallower wells drilled in the Summerland Field using pre-rotary tools, with a cable tool type drilling rig. Although there are no detailed records, cable tool drilling limits the depth of a well to a few thousand feet. The reservoir was historically normally pressurized and peak production rates at the turn of the century (1900's) for the average individual well production from this reservoir was only 2 to 4 barrels per day (Grosbard 2001). Some evidence exists that some wells exhibited greater flows for short periods, such as the Treadwell #10 well that flowed “4 bpd after its initial flow”, or a “flow so strong it could not be controlled until it was capped” (another well on the Treadwell Wharf) (Grosbard 2001).

The fate of oil spilled into the marine environment depends on multiple variables, primarily wind speed and direction, ocean currents, ocean conditions, the presence of dense kelp forest canopy and oil characteristics. Direct oiling and impacts of a spill would be limited to the immediate Summerland Beach area.

As discussed in Section 2, *Project Description*, if issues occur during well abandonment that extend the schedule, a possibility exists, although unlikely, that the barge could be at the Project site for a period of up to 8 weeks awaiting a tide high enough to remove it from the beach. This could extend the period that equipment is located onsite, increasing the risk of leaks or spills, and causing an aesthetic impact. Appropriate planning could reduce the potential for an extended schedule; for example, by providing a contingency for the offloading of equipment located on the barge to supply boats, including cement pumps, tanks, sheet pile, shaker equipment and other materials located on the barge. This would allow for a reduction in the barge “draft,” or the depth at which the barge sits in the water, thereby allowing for removal of the barge at a lower high tide. A lower high tide would occur more often than a “high” high (greater than +6 feet) tide and would therefore reduce the potential for an extended schedule. These measures are included in APM-2 below.

Accidental well-related releases to the environment, including a loss of well control and subsequent equipment failure, or increased annulus leakage around the well, could be minimized and controlled through the use of contingency planning procedures and equipment (see APM-1 above), as well as ensuring the immediate availability of response equipment (see MM APM-3 below). In addition, the use of the cofferdam systems would provide for a level of containment, with the use of cofferdam sealant systems (see MM HAZ-2b below) to minimize the infiltration of water and the releases of any spills to the marine environment outside of the cofferdam area. With the relatively low flows or short duration of higher flow, thereby limiting total volumes of release associated with a loss of well control scenario, implementation of APM-2, APM-3, and MMs HAZ-2a and HAZ-2b would reduce the impacts of oil releases from the Project to less than significant.

Applicant Proposed Measures

APM-1. Abandonment and Contingency Plan. See above.

APM-2. Barge System Engineering. Before the commencement of construction activities, the CSLC staff shall prepare, or shall write into any contracts that the contractor shall prepare, a plan detailing measures to reduce the potential for releases to the environment, and to ensure that the shortest scheduling associated with the Project is achieved. An engineering study shall be conducted prior to mobilization, which shall address at least 1) Barge configuration and optimization with regards to tides and scheduling, including the use of supply boats and additional barges if needed and the use of offloading of equipment (including pumps, tanks, materials, etc.) to reduce the barge draft, allow for removal of the barge at lower high tides, and thereby reduce the potential for an extended schedule. This analysis shall be coordinated with the bathymetric survey to determine barge scheduling under different scenarios, including an extended schedule due to well abandonment complications; 2) Equipment needs for the barge, including the need for pier equipment, sheet pile installation materials and equipment, and installation capabilities; 3) Fluids containment and handling, including oil-water separation requirements, oily water storage and transport, and barge containment of spilled construction materials or storm water through the use of a barge sump and barge-edge spill containment walls, with the containment volume being greater than the largest tank on the barge; 4) Barge weight and draft fully loaded as well as the capacity for fluids handling and storage, and a determination along with the bathymetric study, of the scheduling for tides; 5) Equipment arrangement on the barge to allow for equipment movement and use between tasks; 6) Refueling procedures and spill containment measures and equipment to prevent spills of fuel from reaching the marine environment.

APM-3. Emergency Response Equipment Availability. During the installation of the cofferdam and the well abandonment activities, a tender boat with sufficient boom shall be placed immediately offshore of the operations to ensure that any spills which occur and enter the marine environment are immediately contained. Contracting with Clean Seas, or another equivalent organization experienced in on-sea oil spill containment and recovery operations, shall be established before construction commences. In addition, the barge shall be equipped with, and deploy in advance within or around the cofferdam area as feasible, sufficient sorbent pads and booms, or snare or pom-pom fencing or other effective strategies, to provide immediate containment of oil released into the cofferdam areas. These would be in addition to the response trailer located at Lookout Park.

Mitigation Measures

MM HAZ-2a. Removal of Contaminated Sands. All contaminated sands and/or soils encountered during the excavation around the well shall be removed from the site and disposed of at an appropriate facility.

MM HAZ-2b. Water Handling. All contaminated water encountered during the construction and abandonment shall be removed from the site and disposed of at an appropriate facility. Either tanks shall be used, which could be hauled away by supply boats or stored on the barge, or, if larger volumes of contaminated water are anticipated, the use of oil-water separation equipment, such as separation tanks or skimmers, or equivalent, shall be used before discharging the water to the marine environment. Use of a sheet pile sealant system such as Decaseal, as approved by the California State Lands Commission (CSLC), shall be utilized during the installation of the cofferdam walls to minimize the water intrusion and/or contaminated water releases to the marine environment.

Impact HAZ-3: Long-term Oil Spill Impacts to the Environment

Project activities would reduce the long-term leakage and releases of hazardous materials to the environment **(Beneficial)**.

Impact Discussion

During the construction and abandonment phase of the Project, there could be an increased risk of spills to the environment (discussed above under impact HAZ-2). However, once the abandonment is completed, the Project would reduce the leakage rate of crude oil from the well into the environment with long-term beneficial impacts. If the abandonment is successful, and the well is able to be abandoned to DOGGR standards, the leakage from the well would be eliminated. However, if issues arise related to abandonment activities, and the well is not able to be abandoned appropriately, leakage might still continue, but most likely at a reduced rate, resulting in a beneficial impact as well. Note that there have been unsuccessful attempts to abandon Treadwell Number 10 well, and some leakage still continues at that location.

Mitigation Measures

This impact is a beneficial; therefore, no mitigation measures are recommended.

4.1.5 Summary of Proposed Mitigation Measures

Table 4.1-1 summarizes the mitigation measures proposed for potential Project impacts.

Table 4.1-1. Hazard Impact/Mitigation Summary

Impact	Mitigation Measures
HAZ-1: Project Impacts to Public Health and Environment	**APM-1.** Abandonment and Contingency Plan **HAZ-1.** Construction Zone Restricted Area
HAZ-2: Construction-Related Oil Spill Risks of Impacts to the Environment	**APM-1.** Abandonment and Contingency Plan **APM-2.** Barge System Engineering **APM-3.** Emergency Response Equipment Availability **HAZ-2a.** Removal of Contaminated Sands **HAZ-2b.** Water Handling
HAZ-3: Long-term Oil Spill Impacts to the Environment	None recommended

4.1.6 Cumulative Impacts

Cumulative projects that could exacerbate Project impacts include any projects that could increase the risks of immediate acute public health impacts from the proposed Project due to increased population density or proximity to the proposed Project, or any projects that could increase the risks of oil spills, impacting the same areas of coastline or the same receptors as the proposed Project.

Of the cumulative projects listed in Section 3.0, *Cumulative Projects*, none of the onshore non-industrial projects would introduce additional populations into the area. Industrial projects that would increase oil spill risks to the marine environment. The Ellwood Marine Terminal Demolition and Reclamation Project would involve construction activities in the marine environment, but spills of fuel or construction related hydraulic oils would most likely impact a short segment of the beach areas and not extent to the Summerland area. Other projects include the Carpinteria Offshore Field Redevelopment and Paredon projects. Each of these projects, individually, would involve oil development and transportation of increased oil volumes within the marine environment and would increase the cumulative spill risk to the same marine environment that could be impacted by the Project. Individually and cumulatively, these projects would produce significant and unavoidable impacts due to oil spill risks. However, as the Project analyzed in this EIR would be temporary, after which the historical leakage of crude oil to the environment would be reduced or eliminated, and due to the relatively small spill size potential and the ready availability of response equipment, cumulative impacts from oil spills would be beneficial.

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4.2 AESTHETICS

This section describes the aesthetic qualities of the proposed Project vicinity, both onshore and offshore, evaluates the type and significance of impacts that may occur as a result of the Project, and identifies measures to avoid or substantially lessen any impacts found to be potentially significant. Potential impacts to visual resources are evaluated based on anticipated changes to existing conditions. Information included in this section incorporates by reference data from the Summerland Community Plan and the County of Santa Barbara Coastal Land Use Plan (CLUP).

4.2.1 Environmental Setting

In the following analysis, the environmental setting for aesthetics is determined by the Project's Area of Visual Effect (AVE), which is the area in which the Project would be visible. Two components of the AVE are: (1) the sensitivity of critical public views that would be most affected by Project actions (e.g., views with the greatest intensity of potential impact due to viewer proximity to the Project, Project visibility, and duration of the affected view); and (2) the Visual Modification Class (VMC), which is a measure of the existing visual conditions of the AVE and the extent to which alterations within the AVE would be noticeable to the public.

4.2.1.1 Sensitivity of Critical Public Views

Identifying critical public views relies on the concept that sensitivity is a function of the viewer's expectations, activities, awareness, values, and goals. Public sensitivity is not always related to obvious aesthetic appeal. For example, the Federal Highway Administration has determined visual quality to be the favorable or unfavorable response that viewers have to their environment (U.S. Department of Transportation [DOT] Federal Highway Administration [FHWA] 2015). In order to define the visual quality for an AVE, it is necessary to identify what viewers like or dislike about the visual character of that AVE (FHWA 2015). The importance of the affected landscape is inferred from the following indicators of sensitivity:

High Sensitivity suggests that at least some part of the public is likely to react strongly to a threat to visual quality. Concern is expected to be great because the affected views are rare, unique, or in other ways are special to the region or locale. A highly-concerned public is assumed to be more aware of any given level of adverse change and less tolerant than a public that has little concern. A small modification of the existing landscape may be visually distracting to a highly sensitive public and represents a substantial reduction in visual quality.

Moderate Sensitivity suggests that the public would probably voice some concern over substantial visual impacts. Often the affected views are secondary in importance or are similar to others commonly available to the public. Noticeably adverse changes would probably be tolerated if the essential character of the views remains dominant.

Low Sensitivity is considered to prevail where the public is expected to have little or no concern about changes in the landscape. This may be because the affected views are not “public” (not accessible to the public) or because there are no indications that the affected views are valued by the public. For instance, little public concern for aesthetics is assumed to pertain to views from industrial, commercial, and purely agricultural areas. There are exceptions: some agricultural areas are prized for their open space value, and views of such are highly sensitive. Visual sensitivity is low for views from all sites, areas, travel routes, and sections of travel routes not identified as moderate or high in sensitivity.

4.2.1.2 Visual Modification Class

The VMC is a measure of the existing quality of the affected setting, which is determined by how noticeable incongruous features may be within public views. Table 4.1-1 defines the four VMCs used to determine aesthetic impacts in the AVE.

Table 4.2-1. Visual Modification Class (VMC) Definitions

VMC	Definition
1	**Not Noticeable**. Changes in the landscape are within the field of view but generally would be overlooked by all but the most concerned and interested viewers; they generally would not be noticed unless pointed out (inconspicuous because of such factors as distance, screening, low contrast with context, or other features in view, including the adverse impacts of past activities).
2	**Noticeable, Visually Subordinate**. Changes in the landscape would not be overlooked (noticeable to most without being pointed out); they may attract some attention but do not compete for it with other features in the field of view, including the adverse impacts of past activities. Such changes often are perceived as being in the background.
3	**Distracting, Visually Co-Dominant**. Changes in the landscape compete for attention with other features in view, including the adverse impacts of past activities (attention is drawn to the change about as frequently as to other features in the landscape).
4	**Visually Dominant, Demands Attention**. Changes in the landscape are the focus of attention and tend to become the subject of the view; such changes often cause a lasting impression on the affected landscape.

Source: Port of Los Angeles 2011.

4.2.1.3 Determining the Area of Visual Effect

Offshore Visual Environment

Across the Santa Barbara Channel, the Channel Islands are visible from shore on a clear day, the nearest of which, Santa Cruz Island, is approximately 25 miles directly out from Summerland Beach. A number of offshore oil and gas facilities are visible from shore, most notably platforms. Views of these platforms from the shoreline are generally distant, but unobscured. These platforms are night lit from sundown to sunrise.

Due to natural seeps or leaks from improperly abandoned legacy wells, oil sheens are intermittently observed in the water and the beaches near Summerland. For example, oil seepage occurring from the area around the Project well, the “Becker onshore well,” becomes visible approximately 10 days every year (see Figure 2-4 and Figure 2-5). Recently, anecdotal evidence indicates that leaks in and around the Becker onshore well have increased in regularity.

Onshore Visual Environment

The onshore visual environment (see Figure 4.2-1) includes a dry sandy beach at the base of vegetated south-facing bluffs with expansive ocean, island and mountain views.

Figure 4.2-1. Existing Onshore Visual Environment

Public beach access is provided via a pedestrian roadway from Lookout Park, which sits atop the bluffs and is open from 8:00 a.m. to sundown. Summerland Beach stretches between Loon Point to the east and the Baka property (Assessor’s Parcel Number [APN] 5-250-1) to the west. The beach and the park are dog friendly (on-leash only) and are used for both passive and active recreation, offering amenities such as free public parking, restrooms, grass lawns, picnic tables, barbeques, benches, a playground, and a volleyball court. Powerlines traverse the park; an electrical substation is screened from the park by trees and other vegetation. U.S. Highway 101 runs parallel to the ocean on the north side of the park. The Santa Barbara County portion of the highway is traversed with an annual average daily traffic load of 67,200 vehicles per day (vpd) (California Department of Transportation (Caltrans 2008, Caltrans 2011). Existing signs along the highway are subordinate to human-made and natural features; there are no billboards along the highway as they are prohibited by the County (CLUP 2014). Lookout Park is immediately south off the Summerland exit, with 89 parking spaces (including 1 handicap-accessible space and 1 electric vehicle space) in a public parking lot. Trains travel on the east/west Southern Pacific Railroad; tracks are laid between the park and U.S. Highway 101. The Summerland community is built on elevated, rolling terrain to the north of the highway.

Critical Public Views. In order to determine the visual quality of the Project area, a range of public views has been identified that may be affected by the Project. The viewpoints (areas from which the Project would be visible) discussed below represent areas that are accessible to the public and/or are recognized for their aesthetic values.

Lookout Park. This recreational area within the community of Summerland is recognized for its sweeping ocean and island views and its free public amenities.

High Sensitivity: Views from Lookout Park belong to the high sensitivity classification because of the site's specific nature as a designated area for aesthetic and recreational purposes with scenic vistas; its high aesthetic value which is protected in laws, public regulations and policies, and public planning documents (e.g., the County has directed policy to ensure that "the area shall be kept in its natural state as much as possible" (County of Santa Barbara 2014); and because a threat to visual quality would most likely be met with a strong reaction from the public.

VMC-2: There are several elements visible from Lookout Park that must be looked at cumulatively when analyzing visual quality, and these existing elements are "Noticeable, Visually Subordinate" within the Project area's environmental setting (VMC-2). Built features visible from the park include residences and businesses in the hills of the Summerland community, oil platforms in the Santa Barbara Channel, power lines that traverse the park, and built recreational features within the park, which are congruous with the park's public use. Project elements to be remediated (e.g., debris from pier remains, exposed leaking wells) are not visible from Lookout Park, but would be noticed by someone walking along Summerland Beach.

U.S. Highway 101. U.S. Highway 101 in this area is among the most scenic coastal highways in the country, running concurrent with State Route 1, or Pacific Coast Highway (PCH), along the 54-mile stretch in Ventura and Santa Barbara counties. The beach area and Project site can be seen by highway travelers.

High Sensitivity: Views from U.S. Highway 101 belong to the high sensitivity classification because of the highway's designation as a View Corridor and as an Eligible State Scenic Highway and because a threat to visual quality would most likely be met with a strong reaction from the public.

VMC-2: Similar to Lookout Park above. Project elements to be remediated (e.g., debris from pier remains, exposed leaking wells) are not visible from the highway.

Southern Pacific Railroad*.* The Southern Pacific Railroad is an east/west railway route primarily traversed by Amtrak's Coast Starlight and Pacific Surfliner trains. The portion through Summerland is positioned between U.S. Highway 101 and Lookout Park and the beach area and the Project site are visible by railroad passengers.

High Sensitivity: Views from the railroad belong to the high sensitivity classification. Although partially screened from Lookout Park by fencing, trees and vegetation, views of the ocean from the railroad are completely unobscured on approach to Lookout Park, and the adjacent beach-front housing just east of Lookout Park, in both directions. A threat to visual quality would most likely be met with a strong reaction from the public.

VMC-2: Similar to Lookout Park above. Project elements to be remediated (e.g., debris from pier remains, exposed leaking wells) are not visible from the railroad.

4.2.1.4 Existing Conditions

Aesthetic resources have historically been adversely affected by the ongoing leakage of crude oil at the Becker and legacy wells. As detailed in Section 2, *Project Description*, reports have included oil sheens in ocean waters, oiling of the beach, and unhealthy air quality due to petroleum odors and closure of the Summerland Beach in August 2015 for 4 days due to health concerns over the oil on the beach and odors.

4.2.2 Regulatory Setting

The primary federal and state laws, regulations, and policies that pertain to the Project are summarized in Appendix A. Local policies are summarized below.

4.2.2.1 Coastal Land Use Plan (GP/CLUP)

The Coastal Land Use Plan establishes policies designed to protect visual resources, all of which are specific to coastal development. These land use policies are as follows:

Summerland Beach is designated a Beach Development (BD) Zone. The designation extends inland only to the bluff line. The Recreational District, a zoning policy, protects and enhances areas which have both active and passive recreation potential because of their beauty and natural features. It establishes a bluff setback of 50 feet when a bluff is more than 50 feet in height. Specific policies relative to visual resources are outlined as follows:

Policy 2-8 regulates land uses in Summerland, giving priority to public recreational uses, visitor-serving commercial uses, low and moderate income housing, and agricultural expansion.

Policy 4-5 establishes bluff setbacks for oceanfront structures to minimize or avoid impacts on public views from the beach.

Policy 4-6 directs that signs shall be of size, location, and appearance so as not to detract from scenic areas or views from public roads and other viewing points.

Policy 4-9 directs that structures shall be sited and designed to preserve unobstructed broad views of the ocean from U.S. Highway 101, and shall be clustered to the maximum extent feasible.

Policy 4-11 indicates that building height shall not exceed one story or 15 feet above average finished grade, unless an increase in height would facilitate clustering of development and result in greater view protection, or a height in excess of 15 feet would not impact public views to the ocean.

Policy 7-9 states that additional opportunities for coastal access and recreation shall be provided in the Summerland planning area, directing implementing actions that would allow for the acquisition of easements, enhance landscaping, minimize erosion, define pathways, and keep the park in its natural state to the extent possible.

4.2.2.2 Summerland Community Plan

Action VIS-S-2.1 incorporates language to promote the protection of the scenic character of Summerland, promote visual relief throughout the community by preservation of scenic ocean and mountain views, and encourage the protection of public views.

Policy VIS-S-3 directs that public views from Summerland to the ocean and from the highway to the foothills shall be protected and enhanced.

4.2.3 Significance Criteria

State CEQA Guidelines Appendix G (b) states: "A project will normally have a significant effect on the environment if it will have a substantial, demonstrable negative aesthetic effect." Pursuant to the State CEQA Guidelines, potentially significant impacts would occur if development of the project site would:

- Have a substantial adverse effect on a scenic vista;
- Substantially damages scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway;
- Substantially degrades the existing visual character or quality of the site and its surroundings; and/or
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

The County has also adopted Visual Aesthetic Impact Guidelines as part of its CEQA thresholds manual, Environmental Thresholds and Guidelines Manual. The guidelines do "not constitute a formal significance threshold, but instead [they] direct the evaluator to the questions which predict the adversity of impacts to visual resources." The questions are as follows:

1a. Does the project site have significant visual resources by virtue of surface waters, vegetation, elevation, slope, or other natural or man-made features which are publicly visible?

1b. If so, does the proposed project have the potential to degrade or significantly interfere with the public's enjoyment of the site's existing visual resources?

2a. Does the project have the potential to impact visual resources of the Coastal Zone or other visually important area (i.e., mountainous area, public park, urban fringe, or scenic travel corridor)?

2b. If so, does the project have the potential to conflict with the policies set forth in the Local Coastal Plan, the Comprehensive Plan or any applicable community plan to protect identified views?

3. Does the project have the potential to create a significantly adverse aesthetic impact through obstruction of public views, incompatibility with surrounding uses, structures, or intensity of development, removal of significant amounts of vegetation, loss of important open space, substantial alteration of natural character, lack of adequate landscaping, or extensive grading visible from public areas?

Affirmative answers to the above questions indicate potentially significant impacts to visual resources.

Since Project implementation involves abandoning a leaking oil well in a beach environment, the release of oil to the ocean is an additional potential aesthetic impact analyzed in this EIR. Because of the time factor involved in oil dispersion, visual impacts from spills are considered to be significant (i.e., a significant impact that remains significant after mitigation) if first response efforts do not contain or clean up the spill, resulting in residual impacts that are visible to the general public on shoreline or water areas.

4.2.4 Environmental Impact Analysis and Mitigation

The visual resources assessment focuses on identifying potentially significant impacts, with the analysis directed toward public views where the Project would be most visible.

ENVIRONMENTAL IMPACT ANALYSIS

Impact AES-1. Visual Impacts from Abandonment Activities

Use of a jack-up barge for abandonment activities and staging of equipment at Lookout Park would create temporary visually negative impacts **(Less than Significant)**.

Impact Discussion

The abandonment and remediation of the Becker and Legacy wells would consist of short-term decommissioning activities that would take approximately 3 weeks operating on a 24/7 schedule assuming no delays due to weather or site conditions. The decommissioning work could create short-term visual impacts to public and private viewsheds from Lookout Park, U.S. Highway 101 and the Summerland community due to the use of heavy equipment (see Figure 2-5), vehicles, and personnel in these areas. For example, from the Summerland community on Lillie Avenue, approximately the top third of the workover rig would be visible over the bluff, although vegetation helps to screen the rig from most public viewsheds in the community (see Figure 4.2-2). The electrical substation is similar in scale from this particular vantage point, blending the rig with the existing infrastructure. Though heavy equipment, vehicles and personnel would be visible during abandonment and remediation activities, impacts to aesthetic resources at the Project site are considered less than significant because of their short-term nature.

Mitigation Measures

No mitigation measures are recommended.

Figure 4.2-2. Workover Rig Simulation from Lillie Avenue

Impact AES-2: Visual Impacts from Accidental Oil Spills during Abandonment Activities

A spill of crude oil during construction or well abandonment activities could cause temporary adverse visual impacts from the oil spill and cleanup efforts **(Less than Significant with Mitigation)**.

Impact Discussion

Several scenarios could cause releases of crude oil or construction materials to the environment (see Section 4.1, *Hazardous Materials and Risk of Upset*). All of these potential spill scenarios would be short-term as they would only be associated with the construction-related activities lasting approximately 3 weeks. In general, potential impacts resulting from such an occurrence would degrade the visual quality of the water and shoreline. The degree of impact would be influenced by factors including, but not limited to, location, spill size, type of material spilled, prevailing wind and current conditions, the vulnerability and sensitivity of the shoreline, and effectiveness of early containment and cleanup efforts.

Visually, oiling conditions could range from light oiling, which appears as a surface sheen similar to periodic existing conditions from natural oil seeps, to heavy oiling, including floating lumps of tar, though both may occur with any form of oil spill. Heavy crude oil may dissipate over a period of several days, with remaining heavy fractions floating at or near the surface in the form of mousse, tar balls, or mats, and lasting from several weeks to several months. Therefore, the presence of oil on the water from an oil spill would change the color and, in heavier oiling, textural appearance of the water surface. Oil on shoreline surfaces or nearshore marsh areas would cover these surfaces with a brownish-blackish, gooey substance. Such oiling would result in a negative impression of the highly sensitive viewshed (e.g., from Lookout Park and U.S. Highway 101).

During Project activities, the potential exists for accidental spills to occur during the Project's well abandonment and remediation activities. All of the potential spill scenarios would be short-term and relatively small volumes as they would only be associated with the construction-related activities lasting 3 weeks, and historical crude oil production levels from the well have been low. Any release into the environment resulting from impacts to the well or surrounding existing facilities is not expected to exceed this relatively manageable quantity. Therefore, impacts to aesthetics resulting from potential release of petroleum hydrocarbons would be less than significant with mitigation.

Mitigation Measures

Mitigation measures related to an oil release are included in Section 4.1, *Hazardous Materials and Risk of Upset*. The following mitigation measures would apply.

- **APM-1. Abandonment and Contingency Plan.**

- **APM-2. Barge System Engineering.**
- **APM-3. Emergency Response Equipment Availability.**
- **MM HAZ-1. Construction Zone Restricted Area.**
- **MM HAZ-2a. Removal of Contaminated Sands.**
- **MM HAZ-2b. Water Handling.**

Impact AES-3: Long-term Oil Spill Impacts to the Environment

Project activities would reduce the long-term leakage and releases of hazardous materials to the environment **(Beneficial)**.

Impact Discussion

Once abandonment is completed, the Project would eliminate or reduce the leakage rate of crude oil from the well into the environment with long-term beneficial impacts. If the abandonment is successful, and the well is abandoned to Division of Oil, Gas, and Geothermal Resources standards, leakage from the well would be eliminated. If the well is not able to be abandoned to current regulatory standards, the potential for leakage may still exist, but at a reduced rate; therefore, the Project impact would remain beneficial.

Mitigation Measures

No mitigation measures are recommended.

Impact AES-4: Visual Impacts from Nighttime Illumination during Abandonment Activities

Nighttime illumination could cause temporary adverse visual impacts **(Less than Significant with Mitigation)**.

Impact Discussion

The level of light that is projected into the environment by proposed operations during nighttime hours, and the additional light that would be generated by the proposed Project, are important in determining the Project's impacts. If an area is relatively dark, with minimal night lighting, then the addition of even a single strong light could produce impacts on receptors, particularly if those receptors are a residential area. However, if the area already has substantial lighting, and some additional lighting is added, then the impacts would be considered minimal.

Currently, there is no night lighting whatsoever emanating from Lookout Park and Summerland Beach. Because these recreational areas are closed to the public past sunset (e.g., gates are locked, barring entry to the parking lot), there is no need to light the public spaces. The Santa Barbara Channel drilling platforms are night lit in the distance, beach-front homes along Summerland Beach introduce minimal night lighting, and distant city lights may be seen along the coast. Above the bluffs, the freeway is night lit by street lamps, and the community of Summerland is night lit by typical residential and business uses. A particularly high amount of glare registers from a pole sign outside a liquor store on Ortega Hill Road adjacent to the freeway. Bright night lighting of the Becker well and legacy wells at Summerland Beach would be necessary to ensure safe operations during nighttime hours. The jack-up barge and associated equipment would temporarily introduce additional lighting and glare to the area which could adversely affect residences and biological resources (see Section 4.4, *Biological Resources*) if it is not properly shielded. With proper shielding and control of the directional nature of the installed lighting as provided in MM AES-4, illumination impacts on the Project area would be less than significant.

Mitigation Measures

AES-4. Nighttime Illumination Shielding. Project lighting shall be as low an intensity as allowed by safety requirements and located, designed and equipped so as to provide shielding and minimize glare from light sources and diffusers, and to minimize halo and spillover effects.

4.2.5 Summary of Proposed Mitigation Measures

Table 4.2-2 provides a summary of the mitigation measures proposed for potential Project impacts.

Table 4.2-2. Visual Resources Impact/Mitigation Summary

Impact	Mitigation Measures
AES-1: Visual Impacts from Abandonment Activities	None recommended
AES-2: Visual Impacts from Accidental Oil Spills During Abandonment Activities	**APM-1.** Abandonment and Contingency Plan **APM-2.** Barge System Engineering **APM-3.** Emergency Response Equipment Availability **HAZ-1.** Construction Zone Restricted Area **HAZ-2a.** Removal of Contaminated Sands **HAZ-2b.** Water Handling
AES-3: Long-term Oil Spill Impacts to the Environment	None recommended
AES-4: Visual Impacts from Nighttime Illumination during Abandonment Activities	**AES-4.** Nighttime Illumination Shielding

4.2.6 Cumulative Impacts

Cumulative projects that could exacerbate Project impacts include any projects that could result in a perceptible reduction in visual quality due to increased population density or proximity to the proposed Project, or any projects that could increase the risks of oil spills, impacting the same areas of coastline or the same receptors as the proposed Project.

Of the cumulative projects listed in Section 3, *Cumulative Projects*, none would introduce permanent additional visual impacts to the area. Industrial projects that would increase oil spill risks to the marine environment include the Carpinteria Offshore Field Redevelopment and Paredon Projects. Each project, individually, would involve oil development and transportation of increased oil volumes within the marine environment and would increase the cumulative spill risk to the same marine environment that could be impacted by the Project. Individually and cumulatively, these projects would produce significant and unavoidable impacts due to oil spill risks. However, as the Project analyzed in this EIR would be temporary, after which the historical leakage of crude oil to the environment would be reduced or eliminated, and due to the relatively small spill size potential and the ready availability of response equipment during the temporary and short-term construction phase of the project, cumulative impacts to recreational resources from oil spills would be beneficial.

4.3 AIR QUALITY

This section summarizes the environmental setting related to air quality in the proposed Project vicinity, both onshore and offshore, evaluates the type and significance of impacts that may occur as a result of the Project, and identifies measures to avoid or substantially lessen any impacts found to be potentially significant. Potential impacts are evaluated based on anticipated changes to existing conditions. Greenhouse gas (GHG) emissions are discussed in Section 4.6, *Greenhouse Gas Emissions*. Reports from the Santa Barbara County Air Pollution Control District (SBCAPCD), and data and conclusions from other Environmental Impact Reports (EIRs) prepared in the region, are incorporated by reference and summarized where appropriate.

4.3.1 Environmental Setting

The climate of Santa Barbara County is classified as Mediterranean, characterized by warm, dry summers and mild winters with moderate precipitation. Temperatures are milder near the coastline than inland, with average daily summer highs of 70 degrees Fahrenheit (°F) and average daily winter lows of 40°F. Inland areas range from 80°F to 90°F (average summer high) to 30°F (average winter low). Most precipitation occurs during November through April, with an annual rainfall range of 10 to 18 inches along the coast and slightly more in higher elevations. Prevailing winds in the coastal region are from the west/northwest during the day, with an average speed of 7 to 12 miles per hour. Evening winds blow from the east, as the air over the Pacific Ocean cools and creates a low-pressure zone. Topography plays a significant role in affecting wind speed and direction and regional air quality. Year round, light onshore winds hamper the dispersion of primary air pollutants, and the orientation of the inland mountain ranges interrupts air circulation patterns. Pollutants become trapped, creating ideal conditions for the production of secondary pollutants in the coastal zones. In spring and summer, marine inversions occur when cool air from over the ocean intrudes under warmer air that lies over land. In summer, high pressure systems can cause the air mass to sink, creating a subsidence inversion. In winter, weak surface inversions occur, caused by cooling of air in contact with the cold surface of the earth.

4.3.1.1 Air Quality

Air quality at a given location can be described by the ambient air concentrations of specific pollutants that affect the health and welfare of the general public. The significance of a pollutant concentration is determined by comparing the concentration to an appropriate national or state ambient air quality standard. Criteria air pollutants are defined as pollutants for which ambient air quality standards, or criteria, have been established for outdoor concentrations to protect public health.

Criteria air pollutants of concern are: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM_{10} and $PM_{2.5}$), lead (Pb), sulfates, hydrogen sulfide (H_2S), vinyl chloride, and visibility reducing particles. The U.S. Environmental Protection Agency (USEPA) and California Air Resources Board (CARB) have established ambient air quality standards for many criteria air pollutants (see Table 4.3-1). These National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) are set at levels above concentrations (generally expressed in parts per million [ppm]) that could be harmful to human health and welfare. The standards are designed to protect the most sensitive persons from illness or discomfort, with a margin of safety.

Monitoring is performed to demonstrate attainment or nonattainment of the standards. Emissions within the County are estimated annually by the SBCAPCD. Santa Barbara County's attainment status for criteria air pollutants of concern is discussed below (see also Table 4.3-2). Table 4.3-3 lists estimated regional emissions by source category. Individual criteria air pollutants are described below.

- **Ozone (O_3).** O_3, is a colorless gas with a pungent, irritating odor. O_3 is not emitted directly into the atmosphere. It is formed primarily when reactive organic compounds (ROCs) and nitrous oxide (NOx; a mixture of nitrogen oxide [NO] and nitrogen dioxide [NO_2]) react in the presence of sunlight. O_3 may pose its worst health threat to those who suffer from respiratory diseases; however, it also harms healthy people. Health effects of O_3 can include reduced lung function, aggravated existing respiratory illness, and irritated eye, nose, and throat tissues. Chronic exposure can cause permanent damage to the alveoli of the lungs. Santa Barbara County was designated unclassifiable/attainment for the 2008 federal 8-hour O_3 standard in 2012. (The 1-hour federal O_3 standard was revoked for Santa Barbara County). The California 8-hour O_3 standard was implemented in 2006. The County violates the state 8-hour O_3 standard.
- **Carbon Monoxide (CO)**. Motor vehicles are the main source of CO pollution in Santa Barbara County. CO gas is colorless and odorless, which adds to its danger. CO concentrations typically peak nearest a source, such as roadways, and decrease rapidly as distance from the source increases. In high concentrations, CO can cause physiological and pathological changes or death by interfering with the ability of red blood cells to carry oxygen to body tissues. Healthy people may also experience symptoms of excessive exposure, which include headaches, fatigue, slow reflexes, and dizziness. Santa Barbara County is in attainment of state and national 1-hour and 8-hour CO standards.

Table 4.3-1. Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	California Standards	National Standards	
			Primary	Secondary
O_3	1-hour 8-hour	0.09 ppm 0.07 ppm	NS 0.070 ppm	NS 0.070 ppm
CO	1-hour 8-hour	20.0 ppm 9.0 ppm	35 ppm 9.0 ppm	NS NS
NO_2	1-hour Annual Average	0.18 ppm 0.030 ppm	0.10 ppm 0.053 ppm	NS 0.053 ppm (100 µg/m^3)
Sulfur Dioxide (SO_2)	1-hour 3-hour 24-hour Annual Average	0.25 ppm NS 0.04 ppm NS	0.075 ppm NS 0.14 ppm 0.03 ppm	NS 0.5 ppm NS NS
PM_{10}	24-hour Ann. Arith. Mean	50 µg/m^3 20 µg/m^3	150 µg/m^3 NS	150 µg/m^3 NS
$PM_{2.5}$	24-hour Ann. Arith. Mean	NS 12 µg/m^3	35 µg/m^3 12 µg/m^3	35 µg/m^3 15 µg/m^3
Pb	30-day Average Calendar Qtr. 3-month Average	1.5 µg/m^3 NS NS	NS 1.5 µg/m^3 0.15 µg/m^3	NS 1.5 µg/m^3 0.15 µg/m^3
Sulfates (SO_4[b])	24-hour	25 µg/m^3	NS	NS
H_2S	1-hour	0.03 ppm	NS	NS
Vinyl Chloride	24-hour	0.010 ppm	NS	NS
Visibility Reducing Particles	1 Observation	"extinction of 0.23 per kilometer" "extinction of 0.07 per kilometer" (California only).		

Source: CARB 2017a. USEPA 2016.

Notes: µg/m^3=microgram/cubic meter; Ann. Arith. Mean=Annual Arithmetic Mean; mm=millimeter; NS=No Standard; ppm=parts per million by volume (micromoles of pollutant per mole of gas)

Table 4.3-2. Monitoring Data/Attainment Status (Santa Barbara County)

Pollutant		Maximum Observed Concentration (# days standard exceeded)[a]					
		Carpinteria Station			Santa Barbara Station		
		2013	2014	2015	2013	2014	2015
O_3, ppm	1-hour 8-hour	0.081(0) 0.072(1)	0.112(3) 0.089(7)	0.084(0) 0.064(0)	0.072(0) 0.062(0)	0.099(1) 0.077(3)	0.078(0) 0.063(0)
CO, ppm	8-hour	-	-	-	-	-	-
NO_2, ppm	1-hour Annual Average	37(0) -	17(0) -	25(0) -	50(0) -	51(0) -	43(0) -
$PM_{2.5}$, µg/m^3	24-hour Ann. Arith. Mean	-	-	-	-(0) 19.8	8.9(0) 24.1	21.7(-) -
PM_{10}, µg/m^3	24-hour Ann. Arith. Mean	-	-	-	61.0 -	55.8 -	48.3(-) 23.0(-)
SO_2	No data available (monitoring station does not monitor this pollutant)						

Attainment Status (as of 2015)													
1-hour O_3		8-hour O_3		CO		NO_2		$PM_{2.5}$		PM_{10}		SO_2	
CA	Fed	CA	Fed	CA	Fed	CA	Fed	CA	Fed	CA	Fed	CA	Fed
A	N/A	**N**	U/A	A	U/A	A	U/A	U	U/A	**N**	U/A	A	U/A

Source: CARB 2017b; SBCAPCD 2015a.

Notes: A = Attainment of Standards; Ann. Arith. Mean = Annual Arithmetic Mean CA = California State Standards; N = Nonattainment; N/A = not applicable; U = Unclassified; U/A = Unclassified/Attainment

[a] Number or percent of exceedances of the most restrictive standard (usually, the state Standard)

- Insufficient data available to determine value

Table 4.3-3. Emission Inventory for Santa Barbara County

Emission Sources [a]		CO (MT/yr)	ROC (MT/yr)	NO_x (MT/yr)	SO_2 (MT/yr)	PM_{10} (MT/yr)
Onshore	Stationary	1,551	4,040	2,245	552	554
	Area-Wide	9,433	3,402	391	8	10,584
	Mobile [b]	82,532	3,532	7,606	305	572
	Natural	11,404	---	---	0	1,843
	Total Onshore	**103,369**	**10,974**	**10,242**	**865**	**13,553**
Offshore	Stationary	N/A	---	---	N/A	N/A
	Mobile [c]	N/A	827	15,927	N/A	N/A
	Natural	N/A	---	---	N/A	N/A
	Total Offshore	N/A	**827**	**15,927**	---	---
Natural [d]		---	**35,372**	**985**	---	---
All Sources		---	**47,173**	**27,154**	---	---

Source: SBCAPCD 2002, 2015a.

Notes: MT/yr = metric tons per year. ROC and NOx from 2013 Clean Air Plan (SBCAPCD 2015a) (Table 3-3) and reflect the year 2008; CO, SO_2 and PM10 are no longer included in the Clean Air Plan inventory and are from the 2001 Clean Air Plan (SBCAPCD 2002) Update Emissions Inventory representing 1999

[a] Petroleum activities are a part of Stationary Sources

[b] Mobile onshore sources derived from on-road, aircraft, trains, off-road recreational vehicles, off-road equipment, farm equipment and fuel storage and handling

[c] Mobile offshore sources derived from ships and commercial boats, ocean going vessels, commercial harbor craft, and recreational boats

[d] Natural sources reported in 2013 Clean Air Plan as totals for 2008

- **Sulfur Dioxide (SO_2).** SO_2 is a colorless gas with a pungent, irritating odor at high concentrations. In the atmosphere, it reacts with oxidants or particles to form sulfates and sulfuric acid particles, which are more hazardous than the original SO_2. The main sources of SO_2, which is an impurity in coal and other fossil fuels and many ores, are fuel burning and metal ore processing. Santa Barbara County is in attainment with state and national SO_2 standards.

- **Nitrogen Dioxide (NO_2).** NO_2 is a by-product of fuel combustion that absorbs blue light, resulting in a brownish-red cast to the atmosphere and reduced visibility, and that contributes to the formation of PM_{10}. NO_2 acts as an acute irritant, but is only potentially irritating at atmospheric concentrations. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis, while some increase in bronchitis in children (2 to 3 years old) has been observed at concentrations below 0.3 ppm. Santa Barbara County is in attainment of state and national 1-hour and 8-hour NO_2 standards.

- **Fine Particulate Matter (PM_{10}, $PM_{2.5}$).** PM_{10} and $PM_{2.5}$ consist of extremely small suspended particles or droplets that are 10 and 2.5 micrometers or smaller respectively in diameter that can lodge in the lungs and contribute to respiratory problems. PM_{10} and $PM_{2.5}$ arise from such sources as road dust, diesel soot, combustion products, abrasion of tires and brakes, demolition operations, and windstorms. They also are formed in the atmosphere from NO_2 and SO_2 reactions with ammonia. PM_{10} and $PM_{2.5}$ scatter light and significantly reduce visibility. PM_{10} and $PM_{2.5}$ pose a serious health hazard, whether alone or in combination with other pollutants. More than half of the smallest particles inhaled would be deposited in the lungs and can cause permanent lung damage. Fine particulates also can have a damaging effect on health by interfering with the body's mechanism for clearing the respiratory tract or by acting as a carrier of an absorbed toxic substance. Santa Barbara County is in exceedance of the state annual arithmetic mean and 24-hour PM_{10} standards and Unclassified for the recently added state $PM_{2.5}$ Standard.

- **Lead (Pb)**. Combustion of leaded gasoline is the primary source of Pb emissions in the South Coast Air Basin. The phase-out of leaded gasoline has led to secondary Pb smelters, battery recycling, and manufacturing facilities (for batteries, paint, ink, ceramics, and ammunition) becoming Pb emission sources of greater concern. Prolonged exposure to atmospheric Pb poses a serious threat to human health. Health effects associated with exposure to Pb include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level Pb exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance (including intelligence quotient performance, psychomotor performance, and reaction time) and growth. The County is in attainment with the NAAQS and the CAAQS for Pb.

- **Hydrogen Sulfide (H_2S)**. H_2S is an odorous, toxic, gaseous compound produced during the decay of organic material and also found naturally in petroleum and natural gas. Humans can detect H_2S at very low concentrations, from 0.5 parts per billion (ppb), detected by 2 percent of the population, to 40 ppb, qualified as annoying by half the population. Concentrations detectable by smell are lower than concentrations that can affect human health. For example, the Office of Environmental Health Hazard Assessment (OEHHA) acute reference exposure level (REL) is 30 ppb; 2 ppm [2,000 ppb] can cause headaches and increased airway resistance in asthmatics. Inhalation of 600 ppm [600,000 ppb] is lethal). The County is in attainment of the H_2S standard.

- **Toxic Air Contaminants (TACs)**. TACs such as diesel particulate matter (DPM) (a byproduct of diesel fuel combustion emitted in exhaust from trucks, marine vessels and construction equipment and other sources) are compounds known or suspected to cause short-term (acute) or long-term (chronic non-carcinogenic or carcinogenic) adverse health effects. People with preexisting respiratory or cardiovascular disease, especially the elderly, are particularly vulnerable to TACS. Sources of TACs in Santa Barbara County include industrial processes, gasoline stations, paint/solvent operations, and fossil fuel combustion.

Ventura County is designated (1) in nonattainment for the federal and state O_3 standards, (2) unclassified or in nonattainment for the federal and state PM_{10} standards, respectively, and (3) unclassified or in attainment for the federal and state $PM_{2.5}$ standards, respectively, as well as for the remaining criteria air pollutants.

The SCAQMD is designated (1) in nonattainment for the federal and state O_3 standards, (2) attainment and in nonattainment for the federal and state PM_{10} standards, respectively, and (3) nonattainment for the federal and state $PM_{2.5}$ standards and in attainment for the remaining criteria air pollutants.

4.3.1.2 Existing Conditions

Air quality has historically been adversely affected by the ongoing leakage of crude oil and associated gasses and odors at the Becker and legacy wells. As detailed in Section 1, *Introduction*, reports have included “strong odor, causing headache and nausea,” and “very very strong gas odor on beach” and closure of the Summerland Beach in August 2015 for 4 days due to health concerns over the oil on the beach and odors. Odor impacts, as well as possible longer-term impacts from low level exposure to pollutants, has been ongoing for years at the Project location.

4.3.2 Regulatory Setting

Federal and state laws and regulations that guide management and protection of air quality and that may be relevant to the Project are identified in Appendix A. Regional plans and regulations are discussed below.

4.3.2.1 Santa Barbara County APCD

The SBCAPCD has jurisdiction over air quality attainment and stationary sources in the Santa Barbara County portion of the South Central Coast Air Basin, including Outer Continental Shelf sources located within 25 miles of the seaward boundaries of the state. The SBCAPCD issues Authority to Construct (ATC) permits or Permits to Construct (PTO) for projects within its jurisdiction. All aspects of the proposed Project and Alternatives occurring in Santa Barbara County must comply with existing or new SBCAPCD permits. Increases in emissions of any non-attainment pollutant or its precursor from a new or modified project that exceed the thresholds identified in the SBCAPCD Regulation VIII are required to be mitigated. Other applicable rules are summarized below.

- **Rule 201, Permits Required** – Specifies the permits required for construction or operation of equipment that emits air contaminants
- **Rule 202, Exemptions to Rule 201** – Lists equipment categories that are exempt from the requirements to obtain an SBCAPCD permit

- **Rule 303, Nuisance, and Rule 310, Odorous Sulfates** – Prohibit air emissions that cause a nuisance, e.g., odorous sulfates
- **Rule 331, Fugitive Emissions Inspection and Maintenance** – Requires quarterly monitoring of gaseous and liquid components and repair of components leaking above a given threshold
- **Rule 370, Potential to Emit** – Specifies actual emission level criteria below which Part 70 sources are exempt from Part 70 permit requirements
- **Rule 801, New Source Review** – Applies to any applicant for a new or modified stationary source which emits or may emit any affected pollutant
- **Rule 802, Non-Attainment Review** – Specifies emission limits for new or modified emission sources, that would trigger emission offsets (80 pounds [lbs]/day for PM_{10}, 55 lbs/day for any non-attainment pollutant and 150 lbs/day for CO) or trigger Best Available Control Technology (BACT) requirements (25 lbs/day for any non-attainment pollutant and 150 lbs/day for CO)
- **Rule 804, Offsets** – Applies to any applicant required to obtain offsets under New Source Review, and to any applicant who creates emission reduction credits
- **Regulation XIII** – Defines criteria for Part 70 source applicability, and permit content and requirements for part 70 sources

Project-related activities may require permits from the SBCAPCD due to the handling of oily water and contaminated soils.

4.3.3 Significance Criteria

Thresholds are based on SBCAPCD and are related to construction and operations.

4.3.3.1 Construction Thresholds

Emissions from construction activities are generally short-term and temporary. The County of Santa Barbara and SBCAPCD have not adopted daily or quarterly quantifiable emission thresholds for short-term construction emissions. Pursuant to SBCAPCD Rule 202, construction emissions of any criteria pollutant (except CO) that has the potential to exceed 25 tons per year in a 12-month period would require the owner of the stationary source to provide offsets, per Rule 804. In the absence of adopted thresholds, 25 tons per year is used as the significance threshold for construction emissions of ROC and NOx. PM_{10} emissions should be estimated and mitigated, as required in the SBCAPCD Air Quality Attainment Plan (SBCAPCD 2015a).

For Ventura County APCD, temporary construction emissions (including portable engines and portable engine-driven equipment subject to CARB's Statewide Portable

Equipment Registration Program, and used for construction, repair, and maintenance activities) of ROC and NOx are not counted towards a significance determination. However, construction emissions should be mitigated if ROC and NOx emissions from heavy-duty construction equipment would exceed 25 pounds per day. Ventura County APCD Rule 26 thresholds associated with offset requirements are: NOx and ROC: 5 tons per year and PM10/sulfur oxides (SOx): 15 tons per year.

For the South Coast Air Quality Management District (SCAQMD), construction emissions thresholds are based on a pounds per day level for each pollutant (NOx 100 lbs/day, VOC 75 lbs/day, PM10 150 lbs/day, PM2.5 55 lbs/day, SOx 150 lbs/day, CO 550 lbs/day and lead 3 lbs/day).

Operational thresholds are not applicable to the Project as the only activities would be related to construction.

4.3.4 Environmental Impact Analysis and Mitigation

The analysis of air quality impacts follows guidance provided by the SBCAPCD Scope and Content of Air Quality Sections in Environmental Documents (2015b) and the State CEQA Guidelines. The Project would increase emissions of criteria pollutants due to construction activities related to barge transportation (tug engines), sheet pile installation related to installation of the cofferdam (crane and pile driver engines), well abandonment activities (well rig, cement engines, etc.), removal of the cofferdam, crew boat engine emissions and employee and equipment delivery on-road emissions. Emissions spreadsheets are included in Appendix E.

Table 4.3-5 provides a summary of the potential Project-related impacts and mitigation measures.

ENVIRONMENTAL IMPACT ANALYSIS

Impact AQ-1: Air Emissions from Construction

Construction would increase emissions in offshore areas, and from onshore vehicular traffic **(Less than Significant in Santa Barbara and Ventura Counties and Significant and Unavoidable in the SCAQMD)**.

Impact Discussion

Construction emissions would be generated by the following Project components.

- Equipment located at the Project site (crane, well abandonment equipment, anchor placement loaders, etc.)
- Barge transportation (tug boat engines)

- Crew/supply boats traveling to Santa Barbara Harbor and to the Port of Los Angeles
- On-road vehicles transporting supplies and employees

A summary of the construction emissions is shown in Table 4.3-4 with detailed spreadsheets included in Appendix E.

Table 4.3-4. Construction Emissions Summary by County

	Total Emissions, Tons					
Activity	**NOx**	**ROC**	**CO**	**SO2**	**PM10**	**PM2.5**
Santa Barbara County						
At Site and Emissions	0.804	0.063	0.426	0.001	0.030	0.028
Barge Tugboat and Crew/Supply Boat Emissions	0.154	0.012	0.086	0.000	0.006	0.005
On-road Emissions	0.004	0.000	0.011	0.000	0.000	0.000
Total SBC	*0.961*	*0.075*	*0.524*	*0.001*	*0.036*	*0.033*
Ventura County Total	0.67	0.05	0.38	0.00	0.02	0.02
SCAQMD Total	0.90	0.07	0.51	0.00	0.03	0.03
All Counties Total	2.54	0.20	1.41	0.00	0.09	0.09
	Peak Day Emissions, Pounds/day					
Location	**NOx**	**ROC**	**CO**	**SO2**	**PM10**	**PM2.5**
Ventura County Total	320.86	21.39	237.68	0.32	9.49	9.49
SCAQMD Total	430.87	28.72	319.16	0.43	12.74	12.74

Note: As peak day emissions are only a threshold for Ventura County and the SCAQMD, only those Counties are shown. Ventura County and the SCAQMD totals are for boats emissions only as no other activities occur in those Counties.

As stated above, the SBCAPCD does not have established thresholds of significance for construction emissions, but the SBCAPCD generally considers emissions of any criteria pollutant that exceed 25 tons per year to be significant. Project-related construction emissions would be below this level; therefore, impacts to air quality from construction emissions would be less than significant. Nevertheless, SBCAPCD policies require mitigation if applicable for all construction activities to minimize emissions of O_3 precursors, particulate emissions from diesel exhaust, and fugitive dust.

As potential emissions within Ventura County APCD from barge and supply boat activities would exceed 25 pounds/day during the peak day, but not the offset Rule 26 requirements, mitigation should be used (as per the Ventura County APCD Air Quality Assessment Guidelines). Recommended mitigation measures below address these mitigation requirements.

For the SCAQMD, tugboat emissions would exceed the construction thresholds. Mitigation measures below related to the use of cleaner tugboats would reduce these emissions, but emissions levels would remain above the thresholds and therefore would be significant.

Emissions of cancer-causing pollutants, such as diesel particulate matter, would not generate significant cancer risks as the construction activity would be short term and public receptors would be located more than 300 feet from the construction activities, ensuring that acute impacts from construction activities would be minimized.

Odor emissions could occur due to off-gassing from hydrocarbon-contaminated water or drilling muds, if used. Most likely, odors would not exceed the historical level of odors experienced in the area due to the leaking wells. Measures to control odors from the construction activities are discussed in the mitigation measures.

Implementation of the mitigation measures below would reduce emissions from construction equipment. In Santa Barbara and Ventura counties, emissions would be below the thresholds, mitigation measures would be applied and impacts would be less than significant. In the SCAQMD, emissions from the tugboats would exceed the SCAQMD construction peak day thresholds even with the use of Tier 3 Commercial Harbor Craft requirements (see Appendix E), which would reduce emissions by 23 percent. Impacts would remain significant and unavoidable.

Mitigation Measures

Although construction-related emissions would be less than significant in Santa Barbara County, mitigation measures (MMs) AQ-1a through AQ-1d are recommended to be incorporated into the construction phase of the Project to reduce impacts to the maximum feasible, as required by the SBCAPCD.

MM AQ-1a. Prohibit Unnecessary Truck Idling. The construction contractor should limit unnecessary truck idling on site in excess of 5 minutes.

MM AQ-1b. Use of Emission Reduction Measures. The construction contractor shall implement the following measures, unless determined to be infeasible by California State Lands Commission (CSLC) staff in consultation with the applicable Air Pollution Control District.

- Diesel construction equipment meeting the California Air Resources Board (CARB) Tier 3 or the CARB Commercial Harbor Craft Tier 3 (17 CCR § 93118.5) emission standards shall be used.
- Diesel powered equipment shall be replaced by electric equipment whenever feasible.
- If feasible, diesel construction equipment shall be equipped with selective catalytic reduction systems, diesel oxidation catalysts and diesel particulate filters as certified or verified by the U.S. Environmental Protection Agency or CARB.

- Catalytic converters shall be installed on gasoline-powered equipment, if feasible.
- All construction equipment shall be maintained in tune per the manufacturer's specifications.
- The engine size of construction equipment shall be the minimum practical size.
- The number of construction equipment operating simultaneously shall be minimized through efficient management practices to ensure that the smallest practical number is operating at any one time.
- Construction worker trips shall be minimized by requiring carpooling and by providing for lunch onsite.
- Tanks used to store hydrocarbon contaminated water shall be vented through carbon canister or other equivalent odor reduction devices.
- Drilling muds potentially contaminated with hydrocarbons shall be passed through degassing or other equivalent odor control mechanisms.
- Containers used to store contaminated sands/soils shall be covered when not in use.
- All applicable provisions of SBCAPCD Regulation III shall be implemented to the extent feasible.

MM AQ-1c. Compliance with State Portable Air Toxics Control Measure. Any portable diesel engines greater than 50 horsepower used in construction shall comply with the State Portable Air Toxics Control Measure and be certified to CARB Tier ~~1, 2, or~~ 3 non-road engine standards or higher to the maximum extent feasible.

MM AQ-1d. Establish On-Site Equipment Staging Area and Worker Parking Lots. The staging area and worker parking lots shall be restricted to either paved surfaces or soil stabilized unpaved surfaces only.

Impact AQ-2: Long-term Air Quality Impacts

Project activities would reduce the long-term leakage and releases of materials **(Beneficial)**.

Impact Discussion

Once abandonment is completed, the Project would reduce the leakage rate of crude oil from the well into the environment with long-term beneficial impacts to odors and air quality. As discussed in Section 2, *Project Description*, the leaking wells have produced consistent releases of odorous pollutants to the environment over the years, generating odor complaints and concerns from the community. If the abandonment is successful, and the well is abandoned to DOGGR standards, the leakage from the well and the associated odors would be eliminated. However, if issues arise related to abandonment activities, and the well is not able to be abandoned appropriately, leakage might still continue, but most likely at a reduced rate, also resulting in a beneficial impact.

Impact AQ-3: Creation of Objectionable Odors Affecting a Substantial Number of People

Project activities would create emissions offshore and would not affect a substantial number of people **(Less than Significant).**

Impact Discussion

The Project could ~~would not~~ include sources of objectionable odors due to off-gassing of hydrocarbons in water or drilling mud. ~~Mitigation~~Emission reduction measures included in MM AQ-1b related to carbon canisters and degassing vessels would reduce these impacts to less than significant. Any odors associated with diesel use by construction equipment on the barge or operation of boats during construction or maintenance would be short-term, intermittent, dissipate quickly, and be localized to the work area.

Mitigation Measures

No mitigation measures were adopted in 2010 for odor control during onshore construction, and none are recommended for the Project beyond MM AQ-1b.

Impact AQ-4: Consistency with Regional Air Quality Plan

The Project would be consistent with the Clean Air Plan (CAP) **(No Impact)**.

Impact Discussion

As per the SBCAPCD Scope and Content of EIRs document (SBCAPCD 2015b), by definition, consistency with the CAP for the projects subject to the SBCAPCD (2015c) Guidelines means that direct and indirect emissions associated with the Project are accounted for in the CAP's emissions growth assumptions, and the Project is consistent with policies adopted in the CAP. The CAP relies primarily on land use and population projections provided by the Santa Barbara County Association of Governments (SBCAG) and CARB on-road emissions forecast as a basis for vehicle emission forecasting. The 2013 CAP used SBCAG's Regional Growth Forecast 2010-2040, adopted December 2012, to project population growth and associated air pollutant emissions for all of the Santa Barbara County incorporated and unincorporated areas.

Commercial and industrial projects (square footage and gross acreage) must also be tracked pursuant to the Congestion Management Plan. Commercial or industrial projects are judged consistent with the CAP if they are consistent with SBCAPCD rules and regulations.

As the Project would not involve residential development and would not provide for increased population growth, the Project would be consistent with the CAP for the population growth component. The Project would comply with all applicable SBCAPCD Rules and Regulations. The proposed Project would be consistent with the CAP; therefore, there would be no impact.

4.3.5 Summary of Proposed Mitigation Measures

Table 4.3-5 provides a summary of the mitigation measures proposed for potential Project impacts.

Table 4.3-5. Air Quality Impact/Mitigation Summary

Impact	Mitigation Measures
AQ-1: Increase in Emissions from Construction Emissions	**AQ-1a.** Prohibit Unnecessary Truck Idling **AQ-1b.** Use of Emission Reduction Measures **AQ-1c.** Compliance with State Portable Air Toxics Control Measure **AQ-1d.** Establish On-Site Equipment Staging Area and Worker Parking Lots
AQ-2: Potential Decreases in Long-term Operational Air Quality Impacts	None recommended
AQ-3: Creation of Objectionable Odors Affecting a Substantial Number of People	None recommended
AQ-4: Consistency with Clean Air Plan	None recommended

4.3.6 Cumulative Impacts

The Project would contribute to the short-term cumulative increase in emissions in Santa Barbara County, which is currently in non-attainment with California O_3 and PM standards. However, because the mitigated Project construction emissions would be less than the SBCAPCD thresholds, the Project contribution to cumulative impacts would not be significant. Cumulative projects including energy, residential, commercial, institutional, or recreational projects in the Project area (see Section 3, Cumulative Projects) are individually likely to have significant air quality impacts. For example, residential projects could have significant air quality impacts associated with new vehicle trips and additions of wood-burning (rather than gas-burning) fireplaces. Because the Project would have only a short-term construction related contribution to these cumulative impacts, this impact is less than significant.

In the SCAQMD, as the emissions levels would be above the SCAQMD thresholds, cumulative impacts in combination with other projects proposed in the SCAQMD could be significant and unavoidable.

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4.4 BIOLOGICAL RESOURCES

This section describes the biological resources in the Project area and Santa Barbara Channel (Channel), evaluates the type and significance of potential direct and indirect impacts to marine and terrestrial biological resources from the Project, and identifies measures to avoid or substantially lessen any impacts found to be potentially significant.

Environmental Setting

The Project ~~area~~ site is located on Summerland Beach to the south of Lookout Park, a Santa Barbara County park (see Figure 2-7) in Summerland. The Summerland Beach area is located north of and adjacent to the Channel, which occupies the northwest corner of the Southern California Bight (SCB). Figures 4.4-1 and 4.4-2 show the South Coast Marine Protected Areas (MPAs) and biological resources ~~in~~ near the Project area. The Project is not located within any MPAs or Marine Sanctuaries.

Biological resources at Summerland Beach have historically been adversely affected by the Becker well and other legacy wells due to the leakage of crude oil and associated gases. As detailed in Section 1, *Introduction*, reports have included oil sheens in ocean waters, oiling of the beach, and closure of the Summerland Beach in August 2015.

Terrestrial Biological Resources

The terrestrial shoreline adjacent to the Project ~~area~~ site supports a variety of coastal habitats, including sandy beach, coastal dune scrub, disturbed/recreational beach, coastal marsh, and estuaries. These habitats support several protected natural resources and threatened and endangered shorebird species.

Sandy Beach

Exposed sandy beach represents an important intertidal habitat in the Channel. A high proportion of the mainland coast–74 and 93 percent of the Santa Barbara Ventura County coastlines, respectively–consists of sandy beach, much of which is heavily used by humans (Dugan et al. 2000). Sandy beaches are generally inhabited by an abundant invertebrate macrofaunal community, which serves as an important food source for vertebrate predators, such as shorebirds, seabirds, marine mammals, and fishes (Straughan 1982, 1983). ~~Some of these dependent~~ The abundant invertebrate population in the Project area supports numerous shorebird species including~~e~~ willet (*Catoptrophorus semipalmatus*), long-billed curlew (*Numenius americanus*), marbled godwit (*Limosa fedoa*), whimbrel (*Numenius phaeopus*), sanderling (*Calidris alba*), least sandpiper (*Calidris minutilla*), western sandpiper (*Caladris mauri*), and black-bellied plover (*Pluvialis squatarola*). In addition, the western snowy plover *(Charadrius alexandrinus nivosus)*, which is listed as federally threatened, ~~and~~ uses this habitat for foraging. Also, the California grunion (*Leuresthes tenuis*) deposits eggs for incubation in

Figure 4.4-1. Marine Habitats in the Regional Vicinity

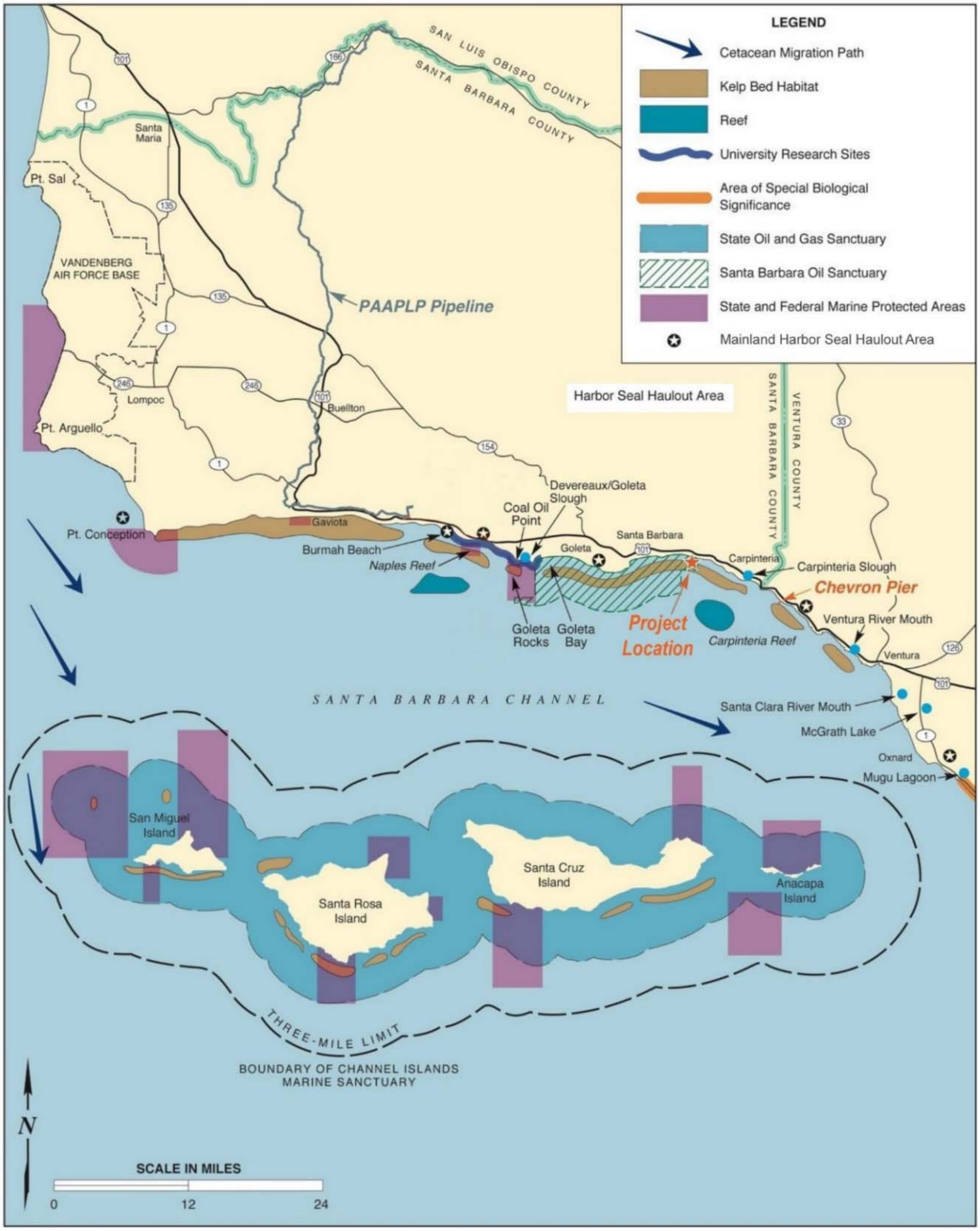
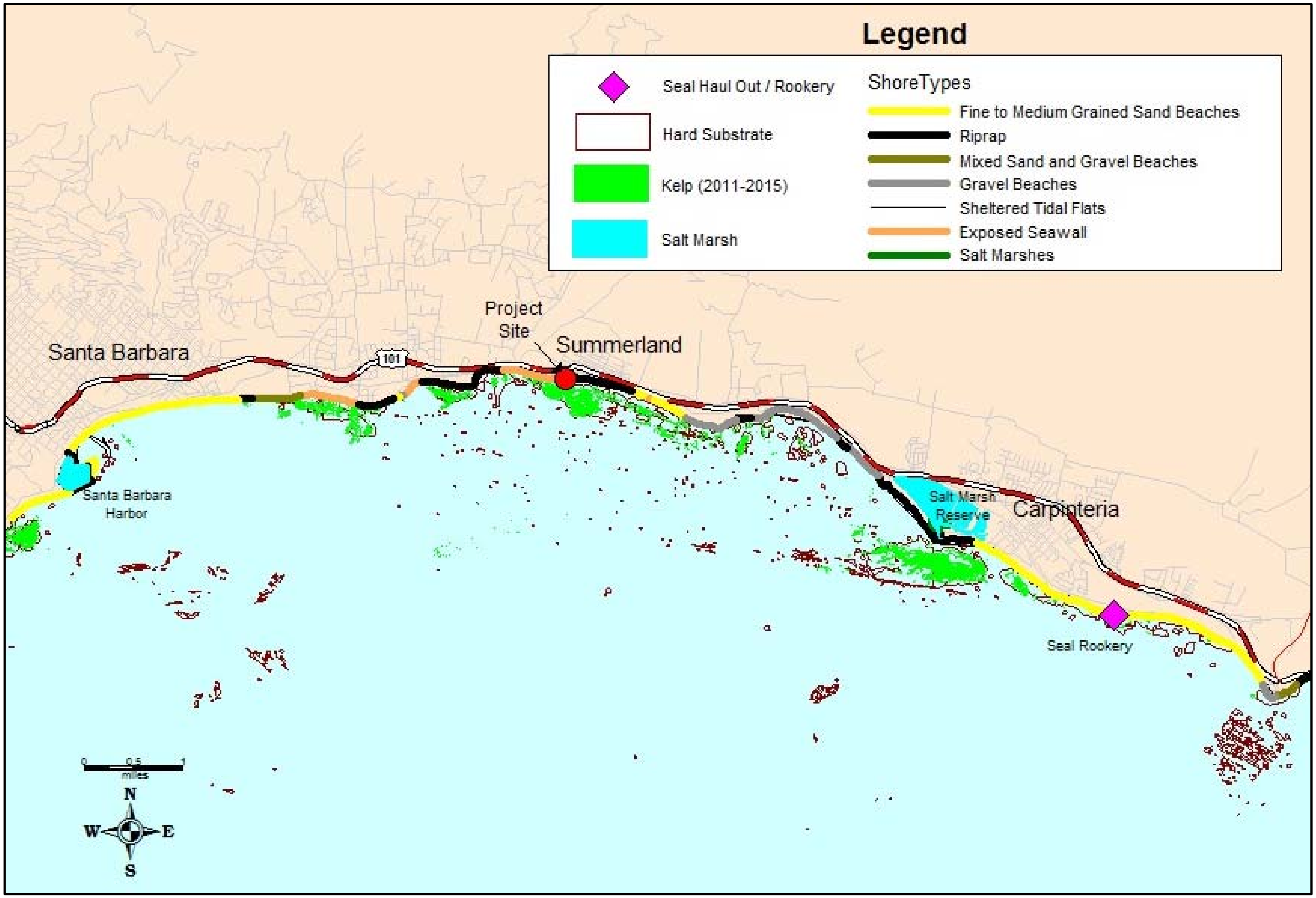


Figure 4.4-2. Marine Biological Resources in the Regional Vicinity



Source: California Department of Fish and Wildlife 2017.

the high intertidal zone of sandy beaches. Along the mainland coast near the Project site are a few comparatively isolated sandy beaches. The snowy plover and federal- and state-endangered California least tern (*Sterna antillarum browni*) frequent the supratidal zone along these beaches.

Coastal Dune Scrub or Coastal Bluffs

Coastal sage scrub and southern coastal scrub communities consist primarily of low-growing, drought-tolerant native shrubs with an understory of grasses and herbs. Coastal scrub is a structurally diverse vegetation community where animals typically have numerous opportunities to find food and shelter. This community in the Project area is mostly absent and has been heavily impacted in its range by fragmentation, invasive non-native weeds, and pollution. Originally, this community would have been one of the dominant terrestrial habitats in the Project area; it is now extremely rare in the general area, and the heavy recreational use of the beach has reduced the overall value to most wildlife species.

Wetland, Aquatic, and Riparian Communities

Wetlands, estuaries, streams, and riparian habitats are considered to be Environmentally Sensitive Habitat Areas (ESHA). ESHAs are defined in the Coastal Act as areas in which plant and animal life or their habitats are either rare or especially valuable because of their special nature or role in the ecosystem and which could be easily disturbed or degraded by human activities or development.

Riparian resources in the Project vicinity include several major canyons and smaller unnamed drainages with riparian habitat, primarily willow, woodland, and riparian scrub. Some of the larger drainages in the Project vicinity (e.g., Santa Clara River, more than 24 miles to the south) also support estuarine habitats. The major drainages typically contain intermittent streams, although permanent water may be present at the downstream portion of the streams, close to the stream mouth and in the vicinity of the culverts. Most of the larger drainages flow directly into the Pacific Ocean; the smaller drainages either flow into the larger canyons or empty directly into the Pacific Ocean.Approximately 4 miles to the east of the Project site is the Carpinteria Marsh. The dominant habitat types in the marsh are salt marsh, open water, and mudflats. Pickleweed (*Salicornia virginica*) is the dominant plant species in the wetter areas. Salt grass (*Distichlis spicata*) mixes with the pickleweed at the upper, less inundated zones and may be dominant in dryer areas. The marsh has supported sensitive habitats and species including California least tern, western snowy plover, light-footed clapper rail (*Rallus longirostris levipes*) and salt marsh bird's beak (*Cordylanthus maritimus*). Other major wetlands in the general Project vicinity include Goleta Slough and Devereaux Slough, approximately 14 and 16 miles to the west, respectively. Figure 4.4-2 identifies important onshore wetland resources present along the coast of the Channel.

Residential, Commercial/Disturbed

Although the upland area near the Project site consists primarily of non-native vegetation, these trees and shrubs provide limited resources for wildlife species that are accustomed to heavily urbanized settings. These species, including opossum (*Didelphis virginiana*) and raccoon (*Procyon lotor*), may use the accessibility and cover found in the area for a travel corridor between urban areas. The trees and shrubs are expected to provide some canopy structure and cover suitable for numerous bird species for roosting, foraging, and nesting habitat. Bird species expected in the area include mourning dove (*Zenaida macroura*), northern mockingbird (*Mimus polyglottos*), American crow (*Corvus brachyrhyncos*), house finch (*Carpodacus mexicanus*), and Anna's Hummingbird (*Calypte anna*). Such areas are important resources for perching, foraging, and nesting for raptor species that are capable of coexisting in urban areas, including the red-tailed hawk (*Buteo jamaicensis*) and American kestrel (*Falco sparverius*). A row of eucalyptus trees located along U.S. Highway 101, approximately 3,000 feet to the west of the Project site, supports a double-crested cormorant (*Phalacrocorax auritus*) nesting and roosting colony high in the canopy of the trees. Nesting activities are protected under the Migratory Bird Treaty Act.

Marine Biological Resources

Marine biological resources in the Project area can be described in terms of three major habitat areas: intertidal, subtidal, and open-ocean. These three biological habitats are exceptionally productive and together include a rich diversity of migratory, resident, and sensitive species of mammals, birds, fishes, and invertebrates. In particular, the Santa Barbara Channel Islands (Channel Islands) are important breeding grounds for several diminishing populations of marine birds and marine mammal species. Since the Channel Islands are situated some distance from a heavily populated coastline in southern California, they also represent the best examples of pristine environments in the southern California area. See Figure 4.4-2 for a graphical representation of shoreline types based on California Department of Fish and Wildlife (CDFW) databases (CDFW 2017).

Intertidal

More than 60 different species of intertidal invertebrates were identified in a survey of 15 beaches in Santa Barbara and Ventura counties (Dugan et al. 2003). On sandy beaches, intertidal invertebrates show a characteristic zonation related to tidal exposure, and the composition and zonation of these communities at a given beach tends to be extremely dynamic due to the highly mobile nature of the sandy substrate and the resources on which these animals depend (Dugan and Hubbard 2006).

Most exposed sandy beaches have two to three zones inhabited by distinct groups of mobile animals. These zones generally correspond to the relatively dry substrate of the upper intertidal zone at and above the drift line, the damp sand of the mid-intertidal zone, and the wet sand of the lower intertidal zone. Sandy beaches on the mainland coasts of Ventura and Santa Barbara counties are generally richer in species than beaches of the Channel Islands. The lower intertidal zone (i.e., swash zone) is dominated by the filter-feeding mole crab (*Emerita analoga*), which move up and down the beach with the tides. The polychaete "bloodworm" (*Euzonus sp.*) is also common in the lower to mid-intertidal. In the upper intertidal, drift kelp, including macrophyte wrack, is an important source of food for many invertebrates. Common organisms associated with macrophyte wrack include beach hoppers (*Megalorchestia* spp.), kelp flies (*Coleopa vanduzeei*), isopods (*Alloniscus perconvexus* and *Tylos punctatus*), and various species of beetles.

<u>Subtidal Habitats</u>

Eelgrass (*Zostera pacifica*) occurs in approximately 18- to 40-foot water depths on soft bottom along the southern Santa Barbara mainland coast. Eelgrass is a flowering plant that provides important habitat for invertebrates and marine fishes. Eelgrass is a source of food and attachment for invertebrates. It also provides habitat for marine fishes that seek the shelter of the eelgrass beds for protection and forage on invertebrates that colonize the eelgrass blades and sediments in and around eelgrass vegetation. Eelgrass is not present in areas immediately offshore Summerland (CDFW 2017).

The coastline in the Project area has typically been characterized by large beds of giant kelp (*Macrocystis pyrifera*), which comprise a distinct type of marine community. Kelp offers food, attachment sites, and microhabitats for invertebrates and provides foraging habitat and shelter for marine fishes. Kelp beds off the Santa Barbara County mainland coast between Jalama and Carpinteria are designated as ESHA in the County of Santa Barbara Local Coastal Program (LCP) (County of Santa Barbara 2014).

Two kinds of giant kelp beds have historically occurred off the Santa Barbara coast east of Point Conception: kelp growing on rocks and kelp growing on sand. In most locations off California, kelp holdfasts require solid substrate for secure attachment, especially in wave-exposed conditions. The kelp beds along the Santa Barbara coast southeast of Point Conception lie in well-protected areas, and the sand-based kelp have unusual holdfasts that are able to penetrate into the soft bottom and persist (North 1994).

<u>The extent of kelp forest varies considerably over time, due largely to major storms, which can dislodge kelp hold-fasts, and climatic factors, such as El Niño cycles, which vary water temperatures and storm intensity. As such, habitat surveys in dynamic intertidal and shallow subtidal areas are considered snapshots that can be affected over time by the factors described above. Kelp locations along the coast over a 5-year period are shown in Figure 4.4-2.</u>

Rocky intertidal habitat is often confined to points and areas of ephemeral beaches in Santa Barbara and Ventura counties. Boulder fields or marine terraces are often present under sandy beaches along the Santa Barbara coast and are alternately exposed and covered by shifting sand. Areas immediately offshore Summerland have some hard substrate (CDFW 2017).

Subtidal Invertebrates

The vast majority of the subtidal benthic habitat within the Project area consists of soft bottom with some hard substrate (CDFW 2017). The soft-bottom benthic invertebrates of the southern California mainland shelf have been studied extensively. Twelve of the 15 most abundant infaunal taxa (i.e., invertebrates that live within substrates) in this region are annelid worms, including 11 polychaete and one oligochaete taxa (Ranasinghe et al. 2003). Abundant taxon on the mainland shelf include the spionid polychaete worm (*Spiophanes duplex*), brittle star (*Amphiodia urtica*), phoronid worms, and another spionid polychaete (*Prionospio pinnata*). Infaunal assemblages in water less than 33 feet deep are influenced by wave surge and dominated by fast-moving crustaceans and opportunistic polychaetes (Thompson et al. 1993).

Epifaunal communities (i.e., invertebrates that live primarily on the surface of the sediments) include 313 species of invertebrates (Allen et al. 2002). Three widely occurring species were white sea urchin (*Lytechinus pictus*), California sand star (*Astropecten verrelli*), and ridgeback shrimp (*Sicyonia ingentis*). The shallow inner shelf (less than 70 feet in depth) has the lowest invertebrate abundance, biomass, and diversity. Invertebrate abundance, biomass, and diversity increases from the inner to the middle shelf and from the middle shelf to the outer shelf. Characteristic species of the inner shelf included blackspotted bay shrimp (*Crangon nigromaculata*), tuberculate pear crab (*Pyromaia tuberculata*), spiny sand star (*Astropecten armatus*), and yellowleg shrimp (*Farfantepenaeus californiensis*). California sand star, ridgeback rock shrimp, and white sea urchin characterize the middle shelf. Species typical of the outer shelf (deeper than 330 feet) include orange bigeye octopus (*Octopus californicus*), northern heart urchin (*Brisaster latifrons*), mustache bay shrimp (*Neocrangon zacae*), flagnose bay shrimp (*Neocrangon resima*), and hinged shrimp (*Pantomus affinis*).

Open-Ocean Habitat

Plankton, pelagic fish, seabirds and marine mammals are present in open-ocean habitats of the Channel.

Plankton

Plankton include phytoplankton (current-drifting primary producers, such as diatoms and dinoflagellates) and zooplankton (slightly more mobile animals, such as small crustaceans, swimming mollusks, jellyfish, and the drifting eggs and larvae of fishes and benthic invertebrates). Planktonic communities are uneven in distribution, composition, and abundance.

Fish eggs and larvae (ichthyoplankton) are an important component of the planktonic community. Because of the importance of commercial and recreational fisheries, ichthyoplankton are the most studied component of plankton in the Channel. Northern anchovy (*Engraulis mordax*) eggs and larvae are by far the most abundant species of ichthyoplankton in the Channel (Cross and Allen 1993). Other abundant ichthyoplankton taxa include rockfishes (*Sebastes* spp.), California smoothtongue (*Leuroglossus stilbius*), Pacific hake (*Merluccius productus*), Mexican lampfish (*Triphotorus mexicanus*), and various species of croaker (*Sciaenidae*). Within the Channel, the larvae of jack mackerel, Pacific hake, and mesopelagic fishes (i.e., fishes that occur at mid-water depths) are most abundant 6 to 60 miles from the shoreline (Cross and Allen 1993). California halibut (*Paralichthys californicus*), turbots (*Pleuronichthys* spp.), sea basses (*Paralabrax* spp.), and blennies (*Hypsoblennius* spp.) have larvae that are most abundant within 6 miles of the shoreline. The larvae of clinids (*Gibbonsia* spp.), queenfish (*Seriphus politus*), California clingfish (*Gobiesox rhessodon*), gobies, silversides, and diamond turbot (*Hypsopsetta guttulata*) are most abundant within 1.2 miles of the shoreline. Northern anchovy, rockfishes, and sanddab (*Citharichthys* spp.) larvae are common both inshore and offshore.

Fishes

Most fishes of the epipelagic zone (i.e., surface layer of the ocean) are widely distributed in the Channel. Common fish species found in the epipelagic zone and nearshore waters of the SCB include northern anchovy and Pacific mackerel (*Scomber japonicus*); predatory schooling fishes such as Pacific bonito (*Sarda chiliensis*) and yellowtail (*Seriola lalandi*); and large solitary predators like blue sharks (*Prionace glauca*) and swordfish (*Xiphias gladius*) (Cross and Allen 1993). The northern anchovy is the most abundant epipelagic fish species found in the nearshore waters of the SCB (Aspen 2005). Large schools occur within 25 miles of the coast over deep water, particularly near escarpments and submarine canyons. In the summer and fall, compact anchovy schools may be found at depths of 360 to 600 feet during daylight hours; at night, these schools rise to the surface and disperse. In spring, many small schools are found at the surface during the day, but at night, the fish scatter over a wide area.

Common fish species found in nearshore, soft-bottom habitats include jacksmelt (*Atherinopsis californiensis*), topsmelt (*Atherinops affinis*), California grunion (*Leuresthes tenuis*), queenfish, walleye surfperch (*Hyperprosopon argenteum*), white seaperch (*Phanerodon furcatus*), northern anchovy, and white croaker (*Genyonemus lineatus*), a bottom feeder that lives in the water column (Cross and Allen 1993). A number of other species, including Pacific bonito, jack mackerel (*Trachurus symmetricus*), tidewater goby (*Eucyclogobius newberryi*), steelhead (*Oncorhynchus* *mykiss*), and brown smoothhound (*Mustelus henlei*), also sometimes occur in nearshore waters. Most fish species found in California nearshore waters are widely distributed from bays and estuaries out to ocean depths of 100 feet or more (Love 1996).

The California grunion range extends from Point Conception, California, to Point Abreojos, Baja California, and have been known to spawn on Summerland Beach. The expected grunion runs for 2017 (U.S. Fish and Wildlife [USFWS] 2017) are scheduled for May through August 2017. Grunion leave the water at night to spawn on beaches beginning on the nights of the full and new moons with spawning occurring after high tides and continuing for several hours.

The tidewater goby reside in brackish-water habitats throughout coastal California; the two nearest critical habitats (USFWS 2013) are located at Mission Creek-Laguna Channel in Santa Barbara and Arroyo Paredon watershed in Carpinteria.

Steelhead are the migratory, ocean-going form of rainbow trout with a range in Southern California from the Santa Maria River to Malibu Creek.

Seabirds

The Channel's continental shelf is biologically productive and supports a rich population of seabirds, many in high densities (Mills et al. 2005; Chambers Group 1992). Their distribution and abundance is subject to temporal fluctuations, both seasonally and from year to year, as prey population densities fluctuate. Seabird densities tend to be greatest near the northern Channel Islands (i.e., San Miguel, Santa Rosa, Santa Cruz, and Anacapa) in winter and north of Point Conception in spring, with higher densities along island and mainland coastlines as compared to the open ocean (Mills et al. 2005). However, seabirds also tend to congregate at the continental shelf/slope break, where fronts and convergences create important habitats for seabirds due to physical processes that promote productivity and concentrate prey (Mills et al. 2005).

Seabirds, sea ducks (scoters), loons (*Gavia* spp.), and western grebes (*Aechmophorus occidentalis*) constitute most of the seabirds that use the Channel (Baird 1993). Other seabirds found off the Santa Barbara coast include pelicans, gulls, terns, cormorants, other grebes, and true seabirds (e.g., petrels, frigatebirds). Additionally, many of the seabirds that occur in the Project area migrate seasonally through the Channel on their way to their northern breeding grounds, resulting in an increase in seabird diversity in the Channel from fall to early spring (Baird 1993). The most abundant species observed during this northward migration are the Arctic loon (*Gavia arctica*), surf scoter (*Melanitta perspicillata*), brant (*Branta bernicla*), Brandt's cormorant (*Phalacrocorax pencillatus*), Bonaparte's gull (*Chroicocephalus philadelphia*), and Forster's tern (*Sterna forsteri*) (Lehman 2016).

The Channel and Channel Islands, particularly the northern Channel Islands, are extremely important breeding areas for seabirds. The Channel Islands support 12 breeding species, including California's entire population of brown pelicans (*Pelecanus occidentalis californicus*), Scripps's murrelets (formerly Xantus's murrelets, *Synthliboramphus scrippsi*), and black storm petrels (*Oceanodroma melania*) (Mills et al. 2005). Many species that roost and nest on the Channel Islands forage in offshore waters and around the islands; however, other species, including brown pelicans and cormorants (*Phalacrocorax* spp.), often fly from the Channel Islands each day to forage in nearshore waters. The greatest number of species and individual breeding seabirds occur on San Miguel Island (Mills et al. 2005); the California brown pelican breeds on Anacapa and Santa Barbara Islands.

Seabird species occurring in the Project area that are protected under either the Federal Endangered Species Act (FESA) or California Endangered Species Act (CESA), and are potentially vulnerable to impacts from an oil spill, are listed in Table 4.4-1. These species include the state endangered bald eagle (*Haliaeetus leucocephalus*), state threatened Scripps's murrelet, and delisted California brown pelican. Table 4.4.-1 also lists CDFW-classified species of concern, including ashy storm petrel (*Oceanodroma homochroa*), rhinoceros auklet (*Cerorhinca monocerata*), and black storm petrel. The ashy storm petrel and rhinoceros auklet breed on the northern Channel Islands.

Table 4.4-1. Special Status Seabirds of the Santa Barbara Channel

Common Name	Scientific Name	Status
Bald eagle	*Haliaeetus leucocephalus*	SE
Scripps's murrelet	*Synthliboramphus scrippsi*	ST
California brown pelican	*Pelecanus occidentalis californicus*	Delisted 2010
California gull	*Larus californicus*	SSC
Double-crested cormorant	*Phalacrocorax auritus*	SSC
Ashy storm petrel	*Oceanodroma homochroa*	SSC
Black storm petrel	*Oceanodroma melania*	SSC
Rhinoceros auklet	*Cerorhinca monocerata*	SSC

Abbreviations: SE = State Endangered; ST = State Threatened; SSC = State Species of Special Concern.

These avian species spend most of their time at sea and primarily breed on offshore islands from the Farallons, near San Francisco, south to the Channel Islands and would only be vulnerable to the potential impacts from the Project in the event of an oil spill in the marine environment. California brown pelican, California gull (*Larus californicus*), and double-crested cormorants are regularly observed in the nearshore waters and shoreline in the Project area. Double-crested cormorants nest and roost in a colony within 3,000 feet of the Project site. The remaining sensitive avian species are most commonly observed beyond the shelf break, in areas adjacent to submarine canyons and other deep water features, or around the Channel Islands. As such, their presence near the Project area is unlikely.

Marine Mammals

More than 40 species of marine mammals are reported within the SCB, all of which are protected under the Marine Mammal Protection Act (MMPA). Six species of cetaceans are federally listed as endangered, while two species of pinnipeds and the southern sea otter (*Enhydra lutris nereis*) are listed as threatened under the FESA. Marine mammal species in the region can be classified into three categories: (1) migrants that pass through the area on their way to calving or feeding grounds; (2) seasonal visitors that remain for a limited time; and (3) residents that remain much or all of the year.

Cetaceans (Whales, Dolphins and Porpoises)

Five whale species transit the ~~Project~~ area during annual migrations, while all but one of the dolphin species have resident populations within the area. Cetaceans occur in the ~~Project~~ area year-round, although the species present may vary from season to season and year to year. Cetacean population levels are generally lowest in spring, and highest in autumn (Dohl et al. 1983). Although 34 species of whales, dolphins, and porpoises occur in the SCB (Carretta et al. 2006; Leatherwood et al. 1982 and 1987; Leatherwood and Reeves 1983; Reeves et al. 1992), approximately only 10 cetacean species occur in any number within the ~~Project~~ area (see Table 4.4-2) (Dohl et al. 1983; Carretta et al. 2006). The remaining cetacean species are only rarely sighted in the SCB, are generally found far offshore, use the coastal waters of the SCB as migratory routes, or are seasonal visitors, and are not likely present in the Project vicinity (See Table 4.4-2).

Pinnipeds (Seals and Sea Lions)

Six species of pinnipeds are found offshore southern California. Four of the species are year-round residents in the Channel, while the remaining two are uncommon visitors (Channel Islands National Marine Sanctuary [CINMS] 2005). The resident populations of California sea lions (*Zalophus californianus*), northern fur seals (*Callorhinus ursinus*), and northern elephant seals (*Mirounga angustirostris*) breed and pup on San Miguel Island, one of the largest pinniped rookeries on the west coast south of Alaska, and the northernmost of the Channel Islands. California sea lions are the most abundant pinnipeds offshore of California and have their highest densities throughout the year near the northern Channel Islands. Harbor seals (*Phoca vitulina*) are commonly observed in the nearshore coastal waters and also haul out along the mainland shore of the Channel, particularly along a small stretch of beach and the rocky outcrops next to the Casitas Pier (more than 5 miles to the east of the Project ~~area~~ site). This site has been used for more than a century as a rookery for this species. The shallow, nearshore waters off the rookery are used for pupping, mating, and hauling out, while nearby kelp beds and waters farther offshore are used for foraging. At sea, harbor seals forage relatively close to shore, and 75 percent remain within 6.2 miles of the shoreline (Minerals Management Service [MMS] 2001).

Table 4.4-2. Cetaceans of the Southern California Bight

Common Name	Scientific Name	Protected Status	Seasonality
Common Cetaceans			
Humpback whale	*Megaptera novaeangliae*	Endangered; strategic, depleted MMPA	Late May through November
Blue whale	*Balaenoptera musculus*	Endangered; strategic, depleted MMPA	June through November
Fin whale	*Balaenoptera physalus*	Endangered; strategic, depleted MMPA	Summer/early fall
California gray whale	*Eschrichtius robustus*	MMPA/Fish & Game Code	December through May
Dall's porpoise	*Phocoenoides dalli*	MMPA/Fish & Game Code	Winter/early spring
Short-beaked common dolphin	*Delphinus delphis*	MMPA/Fish & Game Code	Year-round
Risso's dolphin	*Grampus griseus*	MMPA/Fish & Game Code	Year-round
Pacific white-sided dolphin	*Lagenorhynchus obliquidens*	MMPA/Fish & Game Code	Late spring/summer
Long-beaked common dolphin	*Delphinus capensis*	MMPA/Fish & Game Code	Year-round; more in summer/fall
Bottlenose dolphin	*Tursiops truncatus*	MMPA/Fish & Game Code	Year-round
Less Common Cetaceans			
North Pacific right whale (*Eubalaena japonica*), Sei whale (*Balaenoptera borealis*), Bryde's whale (*Balaenoptera edeni*), Minke whale (*Balaenoptera acutorostrata*), Sperm whale (*Macrocephalus physeter*), Hubb's beaked whale (*Mesoplodon carlhubbsi*), Blainville's beaked whale (*Mesoplodon densirostris*), Ginkgotoothed whale (*Mesoplodon ginkgodens*), Perrin's beaked whale (*Mesoplodon perrini*), Stejneger's beaked whale (*Mesoplodon stejneger*),		Dwarf sperm whale (*Kogia simus*), Pygmy sperm whale (*Kogia breviceps*), Baird's beaked whale (*Berardius bairdii*), Cuvier's beaked whale (*Ziphius cavirostris*), Short-finned pilot whale (*Globicephala macrorhynchus*), Northern right whale dolphin (*Lissodelphis borealis*), Harbor porpoise (*Phocoena phocoena*), Killer whale (*Orcinus orca*), False killer whale (*Pseudorca crassidens*), Spotted dolphin (*Stenella attenuate*), Striped dolphin (*Stenella coeruleoalba*), Spinner dolphin (*Stenella longirostris*), and Rough-toothed dolphin (*Steno bredanensis*)	

Sources: Carretta et al. 2006; Angliss et al. 2005; and Jefferson 2014.
Acronyms: MMPA = Marine Mammal Protection Act; CDFG = California Department of Fish and Game.

Southern Sea Otter

The southern sea otter population is listed as a federally threatened species and California fully protected species because of its limited distribution and susceptibility to marine pollution and competition with fishermen. After commonly thought of as locally extinct, a small remnant population of approximately 50 animals was discovered off Big Sur in the early 1900s. This population grew and expanded, in central California, repopulating much of the coast north of Point Conception. In recent years, however, their range has extended south of the Point and into southern California. In 1987, the ~~U.S. Fish and Wildlife Service (~~USFWS~~)~~ began a translocation program and relocated 139 otters to San Nicholas Island (USFWS 2003).

Marine Turtles

Although uncommon in the region, four species of marine turtles are known to inhabit the waters off the coast of California including the green sea turtle (*Chelonia mydas*) and olive ridley sea turtle (*Lepidochelys olivacea*), which are listed as federally threatened species, and the loggerhead sea turtle (*Caretta caretta*) and leatherback sea turtle (*Dermochelys coriacea*), which are listed as federally endangered species (Hubbs 1977).

Marine Sanctuaries and Reserves

Within the ~~Project area~~ Santa Barbara Channel are a series of overlapping marine reserves and protected areas (see Figure 4.4-1). Most prominent of these areas is the CINMS. Created in 1980, CINMS surrounds the four northern Channel Islands of Santa Rosa, Santa Cruz, San Miguel, and Anacapa out to a distance of 6 nautical miles (nm) encompassing 1,658 square miles. Additionally, in 2002, the California Fish and Game Commission approved a comprehensive marine zoning network in State waters of the sanctuary. In 2007, the National Oceanic and Atmospheric Administration (NOAA) finalized a plan that added approximately 20 additional square miles of no-fish zone just off the southeastern coast of Santa Cruz Island and expanded several of the existing marine reserve areas. In 2012, the CDFW implemented major revisions and additions to Southern California MPAs, including areas around San Miguel Island, Santa Rosa Island, Santa Cruz Island, Anacapa Island and coastal mainland areas including Naples and Point Dume. None of these MPAs are located within 18 miles of the Project site.

Hydroacoustics

Existing ambient noise levels in the Channel consist of a combination of naturally occurring and anthropogenic sources. Wind, surf, precipitation, biological noise, and seismic activity all contribute to the naturally occurring background noise levels found in the marine environment. Anthropogenic sources of noise include shipping, dredging and aggregate extraction, recreational activities, military operations, and scientific research.

Variability in ambient noise in the sea is due, in large part, to variations in these noise sources and levels at any given frequency may fluctuate by 10 to 20 decibels (dB) during the course of a day (Richardson et al. 1995). The impacts of Project noise on marine species is discussed in this section (see also Section 4.10.1.15, *Noise*).

Regulatory Setting

Federal and state laws that may be relevant to the Project are identified in Appendix A. The coastal reaches adjacent to the Project also fall under the local jurisdictions of the County of Santa Barbara. Local laws, regulations, and policies are discussed below.

City of Carpinteria General Plan and Coastal Plan 2003

The Open Space, Recreation, and Conservation Element of the City's General Plan includes policies relating to protecting biological resources within Carpinteria. It also designates an Environmentally Sensitive Habitat (ESH) and Offshore Environmentally Sensitive Habitat Overlay. The Project site is not located within either ESH overlay. However, Primary and Secondary Harbor Seal Haul-out areas are located southeast and southwest of the Project site, respectively (City of Carpinteria 2003).

County of Santa Barbara LCP

The County of Santa Barbara's LCP (County of Santa Barbara 2014) identifies kelp beds, located from Jalama to Carpinteria as ESHAs. Kelp beds are located directly offshore of the Project site along the entire length of Summerland Beach.

Summerland GP/CLUP

The Summerland Community Plan lists four area habitats as designated ESH; Wetlands (streams), Butterfly Trees, Oak Woodlands, and Coastal Sage Scrub. None of these habitats are located in the Project area.

Significance Criteria

Oil-related and construction impacts to marine biological resources would be considered significant if the Project results in:

- Any "take" of a federal- or state-listed endangered, threatened, regulated, fully protected, marine mammals or sensitive species.
- Potential for any part of the population of a federal- or state-listed threatened, endangered, or candidate species to be directly affected or if its federally designated critical habitat is lost or disturbed.

- Destruction or prolonged disturbance to sensitive habit or substantial take of a species that is recognized as biologically or economically significant in federal, state, or local policies, statutes, or regulations.
- Conflict with an adopted habitat conservation plan or result in a net loss occurs in the functional habitat value of: a sensitive biological habitat, including salt, freshwater, or brackish marsh; marine mammal haul-out or breeding area; eelgrass; surfgrass; kelp bed; river mouth; coastal lagoons or estuaries; seabird rookery; ESHA; or Area of Special Biological Significance.
- Permanent change in the community composition or ecosystem relationships among species recognized for scientific, recreational, ecological, or commercial importance.
- Permanent alteration or destruction of habitat that precludes re-establishment of native biological populations.
- Potential for the movement or migration of fish or other marine wildlife to be impeded.
- A substantial loss occurs in the population or habitat of any native fish, marine wildlife, or aquatic vegetation or an overall loss of biological diversity. Substantial is defined as any change that could be detected over natural variability.

Environmental Impact Analysis and Mitigation

The analysis of impacts to biological resources considers existing conditions, which currently include periodic releases of petroleum hydrocarbons on the beach and into the marine environment from leaking wells. Marine and coastal biological resources have already been exposed, and will continue to be exposed, to hydrocarbons until the current conditions at the well head are remediated. This analysis also considers the impacts to biological resources of accidental Project-related spills both onshore and offshore. The potential spill volumes are described in Section 4.1, *Hazardous Materials and Risk of Upset.* Potential impacts associated with anchoring are also addressed as the construction barge would be anchored at four locations: two offshore anchors placed by tugboats; and two onshore anchors positioned and installed with construction equipment (e.g., a front loader). Table 4.4-5 provides a summary of potential Project-related impacts and mitigation measures (MMs) to address significant impacts.

ENVIRONMENTAL IMPACT ANALYSIS

Impact BIO-1: Impact of Temporary Construction-Related Oil Spills to Biological Resources

Inadvertent discharge of petroleum hydrocarbons into marine waters would adversely affect marine biological resources **(Less than Significant with Mitigation)**.

Impact Discussion

Discharge of petroleum hydrocarbons into the coastal and marine environments could result from several potential scenarios discussed in Section 4.1, *Hazardous Materials and Risk of Upset*. All of these potential scenarios would release unspecified quantities of petroleum hydrocarbons, which would affect unquantifiable areas of the marine and coastal environments depending on the source, severity of the leak, weather conditions, and tides. Any release into the environment resulting from Project activities is not expected to exceed the historical average production of each well in the Summerland Oil Field, which was between 2 and 4 barrels of oil per day. The Applicant Proposed Measures (APMs) and MMs identified in Section 4.1, *Hazardous Materials and Risk of Upset*, would increase the likelihood that any leak would be controlled.

Terrestrial Biology

Impacts to terrestrial special status species and sensitive terrestrial natural resources in the event of an unplanned spill could include: (1) loss or injury of federal- or state-listed wildlife species; (2) loss or degradation of upland, wetland, aquatic, or other sensitive biological habitat (e.g., saltwater, freshwater, or brackish marsh; river mouth; coastal lagoon, estuary, riparian area, and breeding habitat designated as critical for the Western snowy plover); or (3) injury to plants and terrestrial and aquatic wildlife through direct toxicity, smothering, or entrapment during cleanup efforts. Saltwater or freshwater marshes in the area are the most sensitive communities ~~in the Project area~~ because the biological activity is concentrated near the soil or water surface where oil would be stranded. However, due to the relatively small spill size potential and the readily available response equipment, spills are not anticipated to reach these areas.

Direct impacts on wildlife from spills include physical contact with oil, ingestion of oil, and loss of food and critical nesting and foraging habitats. Aquatic reptiles, amphibians, and birds, including shorebirds and aquatic species, are most vulnerable to oil spills. Direct effects on vegetation include smothering of plants, thereby reducing the availability of water, nutrients, and oxygen to the plant root system. Due to the relatively small spill size potential and the readily available response equipment, spills are anticipated to have only a minor effect on wildlife.

Plankton

Studies have shown that oil spills have measurable effects upon marine phytoplankton and zooplankton. However, the potential for impacts to plankton as a result of a potential spill from Project operations are expected to be similar to existing ongoing releases from this site, which would be adverse, but less than significant.

Intertidal and Subtidal Habitats and Invertebrates

When spilled oil reaches the shoreline or intertidal zone, it becomes concentrated in a narrow zone. With a shallower water depth in the intertidal zone compared to the water depth offshore, hydrocarbon concentrations can reach toxic levels. Consequently, intertidal biota are exposed to higher concentrations of oil for longer periods of time than most other marine organisms. Impacts to intertidal biota resulting from an oil spill may be caused by physical smothering or hydrocarbon toxicity. Impacts to valuable intertidal habitat in the immediate Project area are of particular concern because oil spilled from the Project site could reach these areas rapidly. However, due to the relatively small spill size potential and the readily available response equipment, spills are anticipated to have only a small effect on intertidal habitats and invertebrates.

Compared to the readily observable impact on intertidal communities, impacts on benthic subtidal communities are more difficult to document. Both shallow (6 to 60 feet) and deep (>60 feet) subtidal areas lack documented impacts. Spilled crude oil that is not recovered and managed, or that does not evaporate or wash ashore, is eventually biodegraded and incorporated into bottom sediments. Depending on the volume of a potential spill and the response time for cleanup operations, open coast sandy beaches generally would not be expected to experience long-term damage from a Project-related oil spill.

Fishes

The majority of data regarding the effects of oil on fish have been obtained in the laboratory. Field data generally consist of reports on large fish kills and some measurements of sublethal effects. Field data regarding effects of oil on fish are extremely difficult to obtain because of the difficulty in quantitatively sampling fish populations. Sublethal effects include histological (i.e., tissue and cell) damage, altered physiological and metabolic patterns, decreased growth and reproduction, and vulnerability to disease (National Research Council [NRC] 1985). Among fishes, benthic species are more sensitive than pelagic species, and intertidal species are the most tolerant (Rice et al. 1979). In general, fishes in early life stages, such as embryos and larvae, are more sensitive to petroleum hydrocarbons than later life stages.

Seabirds

Due to the migratory nature of many bird species, the severity of oil spill impacts on seabirds would depend on the time of the year, species present, and number of individuals. Direct effects of oil on birds include contamination of feathers and removing the feather's insulation qualities (Nero and Associates 1983). Oiling of feathers leads to elevated metabolic rate and hypothermia (Szaro 1991). Oiled birds may also ingest oil through preening of feathers or feeding on contaminated prey, which results in physiological stress (Brown 1982). Effects of ingested oil can range from short-term irritation and difficulties in water absorption to general sub changes in some organs (e.g., Nero and Associates 1983, 1987). Ingestion of oil can also result in changes in yolk structure and reduction in number of eggs laid and egg hatchability (Nero and Associates 1983; Szaro 1991). Oiled birds that are able to return to a nest can contaminate the exterior of eggs, reducing hatchability (e.g., Szaro 1991). Indirect effects result principally from contamination of habitat where feeding occurs. However, due to the relatively small spill size potential and the readily available response equipment, spills are anticipated to have only a small effect on seabirds.

Marine Mammals and Sea Turtles

Marine mammals (including cetaceans, pinnipeds, and sea otters) and sea turtles could be impacted by an oil spill in the Project area. Reviews on the effects of oil on marine mammals have been conducted by Geraci and St. Aubin (1988) and the NRC (1985). Animals that are unable to avoid an oil spill could experience sublethal or lethal effects as a result of oil fouling, inhalation, or ingestion. Evidence suggests that cetaceans may avoid contact with oil at sea; however, pinnipeds and sea otters could potentially suffer lethal and long-term sublethal effects resulting in significant and unavoidable impacts, as discussed in the subsections below. However, due to the relatively small spill size potential and the readily available response equipment, spills are anticipated to have only a small effect on marine mammals and sea turtles.

Summary

During Project activities, the potential exists for accidental spills to occur during the Project's well abandonment and remediation activities. All of the potential spill scenarios described above would be short-term and relatively small volumes as they would only be associated with the construction-related activities lasting 3 weeks, and historical crude oil production levels from the well have been low. Any release into the environment resulting from impacts to the well or surrounding existing facilities is not expected to exceed this relatively manageable quantity. Therefore, impacts to biological resources resulting from potential release of petroleum hydrocarbons would be less than significant with mitigation.

Mitigation Measures

Implementation of the following APMS and MMs identified in Section 4.1, *Hazardous Materials and Risk of Upset*, would reduce the likelihood and severity of oil spill impacts as a result of the Project.

- **APM-1. Abandonment and Contingency Plan.**
- **APM-2. Barge System Engineering.**
- **APM-3. Emergency Response Equipment Availability.**
- **MM HAZ-2a. Removal of Contaminated Sands.**

- **MM HAZ-2b. Water Handling.**

Impact BIO-2: Potential Decreases in Long-term Operational Oil Spill Impacts to the Biological Resources

Project activities would reduce the long-term leakage and releases of hazardous materials to the environment **(Beneficial)**.

Impact Discussion

Historical leakage of crude oil into the marine environment associated with the leaking wells have produced a range of impacts to intertidal and subtidal habitats and invertebrates, fishes, seabirds, and marine mammals as described above under Impact BIO-1. Once the abandonment is completed, the Project would reduce the leakage rate of crude oil from the well into the environment with long-term beneficial impacts. If the abandonment is successful, and the well is abandoned to the Department of Oil, Gas and Geothermal Resources standards, leakage from the well would be eliminated and existing, long-term impacts to biological resources including marine and coastal species, habitats, and sensitive resources would be reduced or eliminated. However, if issues arise related to abandonment activities, and the well is not able to be abandoned appropriately, leakage might still continue, but most likely at a reduced rate, also resulting in a beneficial impact.

Mitigation Measures

No mitigation measures are recommended.

Impact BIO-3: Collision-Related Vessel Traffic Impacts on Marine Mammals and Turtles

Construction-related vessel interactions with marine mammals and turtles may occur **(Less than Significant with Mitigation)**.

Impact Discussion

The proposed Project includes at least three round trips for the barge to allow for the delivery and removal of the cofferdam and abandonment equipment between the Port of Long Beach and the Project site; employees would access the barge each shift change from tug boats arriving from Santa Barbara Harbor.

During Project-related vessel activity, the potential for marine wildlife interactions, including accidental collisions between support vessels and marine mammals or sea turtles, exists. Large cetaceans have been struck by freighters or tankers and sometimes by small recreational boats (NOAA 2012). In contrast, pinnipeds and sea otters are very nimble and considered very unlikely to be struck by vessels. Young et al.

(2014) reported that sea lions in the water often tolerate close and frequent approaches by vessels, while Udevitz et al. (1995) reported that sea otters tend to move away from an approaching vessel. Sea turtles are very rare in the Project area, and collisions with vessel traffic are not expected to occur; however, while rare, vessel-related sea turtle injuries ~~in the Project area~~ have been noted. For example, in January 2004, an olive ridley sea turtle with a cracked carapace was stranded at Ellwood Beach following an apparent boat strike. Increased boat activity associated with the Project has the potential to cause significant impacts due to vessel strikes.

Because the Project does not substantially increase total vessel traffic above baseline conditions, collisions between vessels and marine mammals or sea turtles are not anticipated to substantially increase. Implementation of MM BIO-3 would further reduce the potential of harm to such species, including those federally listed and protected under the MMPA, therefore, resulting in a less-than-significant impact with mitigation.

Mitigation Measure

MM BIO-3. Marine Mammal and Sea Turtle Avoidance and Response Training. Vessel operators shall develop, submit for approval, and implement a contingency and training plan that focuses on avoidance and response procedures when marine mammals and sea turtles are encountered at sea by crew or supply boats at the Project site. All boat crew members shall be provided training prior to the onset of construction activities that focuses on the identification of marine mammal and sea turtle species and the specific behavior of species common to the Project area, including when species can be expected to occur in the Project area. New crew members shall receive such training upon hire. All crew members shall serve as lookouts during boat trips so that collisions with marine mammals and sea turtles can be avoided. Minimum components of the training plan include:

- Vessel operators shall make every effort to maintain a distance of 1,000 feet from sighted whales and federally threatened or endangered or otherwise protected marine mammals or sea turtles.
- Supply vessels shall not cross directly in front of migrating whales or any other threatened or endangered marine mammals or sea turtles.
- When paralleling whales, support vessels shall operate at a constant speed that is not faster than the whales.
- Female whales shall not be separated from their calves.
- Vessel operators shall not herd or drive whales.
- If a whale engages in evasive or defensive action, support vessels shall drop back until the animal moves out of the area.
- Any collisions with marine wildlife shall be reported promptly to the federal and state agencies listed below pursuant to each agency's reporting procedures.

Stranding Coordinator, Southeast Region
National Marine Fisheries Service
Long Beach, CA 90802-4213
(310) 980-4017

Enforcement Dispatch Desk
California Department of Fish and Wildlife
Long Beach, CA 90802
(562) 590-5132 or (562) 590-5133

California State Lands Commission
Environmental Planning and Management Division
Sacramento, CA 95825-8202
(916) 574-1890

Impact BIO-4: Noise Impacts on Marine Mammals, Sea Turtles, Birds, and Fish

Noise from sheet pile installation, drilling, excavation, vessel support, and transit activities may potentially disturb marine mammals, sea turtles, birds and fish in the Project area **(Less than Significant with Mitigation)**.

Impact Discussion

The Project would generate temporary construction noise along the coastal and marine environments due to the following construction-related activities: installation of the barge; installation and removal of the cofferdam using a pile driver; workover rig diesel engines; cement pump engines; construction related noises from excavation of material around the wellhead; metal clangs and intermittent maintenance activities; tug and crew/supply boat engines; and pumps and various miscellaneous maintenance equipment. Construction activities would be conducted for 24 hours per day, seven days per week to complete the Project as quickly as possible. Once the well abandonment activities are completed and the cofferdam and barge are removed, there would be no additional activities on the beach.

All construction activities are estimated to take 3 weeks, with 2 weeks of sheet pile driving, assuming no weather-related interruptions or delays due to unforeseen issues with the condition of the 100+-year-old wellbore. During the 3-week construction phase of the Project, noise levels would be temporarily elevated as a result of construction activities, which may potentially impact marine mammals, sea turtles, birds, and fish.

The CSLC has identified the following APM related to pile driving; consequently, impact pile driving is not discussed in this EIR.

APM-4. Use of Vibratory Pile Driver. Preliminary information obtained from contractors indicated that the use of a vibratory pile driver would be feasible, but that it was not proposed by all of the contractors contacted. Generally, a geotechnical assessment is needed in order to ensure that high-force methods (impact pile drivers) are not needed. However, due to the beach location and the presence of sand, a geotechnical analysis is not considered necessary. The use of a vibratory pile driver would substantially lower the noise levels, both in-air and in-water, and would reduce impacts, both to humans and to biological resources.

When analyzing the auditory effects of noise exposure, noise is categorized as either being impulsive (high peak sound pressure, short duration, fast rise-time, and broad frequency content) or non-impulsive (steady-state). For example, sonars, vessel, engines and vibratory pile driving are considered to be non-impulsive sources, while explosives, impact pile driving, and airguns are treated as impulsive sources. Marine species generally have lower thresholds for damage associated with impulsive noise than non-impulsive noise sources as the high peak noise levels associated with impulse noise.

Impacts on marine resources from noise are generally defined as those causing permanent hearing loss and loss of hearing sensitivity (permanent threshold shift [PTS]), those causing a temporary impact to a species' hearing abilities with a return to normal hearing (temporary threshold shift [TTS]) and those causing a disturbance to species behavior. These levels vary depending on the marine species. Sound would be produced by crew/supply and tug boats transiting to and from the Project site. Sound levels from vessel activity could be above the NOAA in-water acoustic thresholds of 120 dB_{rms} (dB root mean square) for behavioral changes to marine resources from non-impulsive noise sources (NOAA 2017a), but generally below the TTS or PTS thresholds. However, noise generated by supply/crew vessels would be similar to that from other vessels that routinely transit the water's surface, noise from vessel traffic would be comparable to other routine noise-generating activities in the coastal area and would therefore be less than significant.

Sound from above water non-sheet pile construction activities, such as cranes and pumps, would be below the NOAA in-air acoustic thresholds for harbor seals and non-harbor seal pinnipeds (NOAA 2017a) or birds and would therefore not produce impacts on marine resources.

The greatest construction-related noise, both in-water and in-air, is expected to occur during the installation and removal of the cofferdam via sheet pile installation. The cofferdam would be installed with interlocking sheet piles and would be installed approximately 15 to 20 feet into the sand and subsurface with a vibratory pile driver system attached to the crane on the barge. The same setup/system would be used for removal. Sound and acoustic pressure resulting from pile driving could cause behavioral avoidance of the construction area and/or injury or permanent damage to marine resources. Therefore, the potential impacts of Project-related noise impacts resulting from this activity are discussed in more detail below. Sound principals are discussed in section 4.10, *Noise*.

There is some uncertainty associated with the sound levels that the actual Project equipment arrangement and wave/marine conditions could produce; for example, the construction activities would be taking place within the surf zone, thereby producing substantial ambient noise levels and noise reductions (similar to the mitigation method of using “bubble tents” as discussed in the National Marine Fisheries Service (NMFS or NOAA Fisheries) Technical Guidance (2016)). However, these issues would serve to reduce the sound levels from the Project activities and the historical pile installation measurements by the California Department of Transportation (Caltrans) and NOAA are therefore considered to be a conservative estimate.

Estimation of Vibratory Pile Driving Noise

Underwater sound measurement data for similar projects were reviewed to estimate sound levels for vibratory pile driving activities for the installation the cofferdam. Pile driving sounds from similar type and sized piles measured from other projects can be used to estimate Project-generated noise levels. Data used were from the Caltrans (2015) Compendium of Pile Driving Sound Data, which contains measured underwater noise levels for various pile types and environments. Measurements are typically taken within 33 feet (10 meters) of the pile during driving activities. As sound spreads through the water from the point of origin, it loses intensity (transmission loss). The analysis in this EIR relies on sound measurements obtained from similar projects and uses the simplified attenuation formula for shallow water, which is an accepted method to estimate transmission loss of sound through water (NMFS 2012, 2016) to calculate the sound levels at various distances from the point of origin.

Sound levels for vibratory pile drivers range from 165 to 195 dB_{peak} (peak noise level) with average sound levels of 150 to 180 dB_{peak} (Caltrans 2015). Vibratory pile driving with a similar arrangement as the Project (10- to 12-inch steel H-piles) produced peak sound levels of up to 164 dB_{peak} and an average sound level of 147 dB_{peak} (Norfolk Naval Station, Northern Rail Extension, and San Rafael Canal).

Potential Effects of Pile Driving Noise on Marine Mammals

Pile driving generates both airborne and underwater noise. Airborne noise generated from pile driving could potentially impact pinnipeds (e.g., sea lions and harbor seals) if hauled out near the Project site. The closest pinniped haul-out site is located in Carpinteria, approximately 6 miles to the south-east of the Project site. Based on the NMFS’s in-air acoustic thresholds for pinnipeds (90 dB_{rms} for harbor seals, 100 dB_{rms} for other pinnipeds), pile driving noise would not exceed these thresholds at the haul-out site due to the distance (approximately 6 miles) from the Project site. Therefore, airborne noise during pile driving is not expected to be significant (producing less than ambient noise levels at that distance).

In 2016, NMFS adopted new guidelines for the assessment of in-water noise impacts on marine mammals (NMFS 2016). The NMFS Technical Guidance provides a new method for calculating the onset of PTS for various marine mammal groups based on the hearing characteristics of the groups (e.g., high-, mid-, and low-frequency range cetaceans). Table 4.4-3 provides a summary of marine mammal hearing ranges and PTS onset threshold levels for both impulsive and non-impulsive sounds. Because vibratory pile driving would be used for the Project, the non-impulsive noise thresholds will be used for this analysis. The NMFS Technical Guidance, however, does not make any changes with respect to the behavioral disruption thresholds; therefore, NMFS's previous acoustic threshold for non-impulsive, continuous noise sources (120 dB_{rms}) is still applicable. There are no underwater acoustic thresholds established for sea otters; however, in light of experimental evidence, the U.S. Fish and Wildlife Service (USFWS) recently used NMFS's acoustic thresholds for otariids to determine underwater acoustic impacts to sea otters for pile driving activities in Elkhorn Slough, Monterey County (USFWS 2017). The same approach was taken in this analysis.

For vibratory pile driving, the NMFS studies indicate that only high-frequency cetaceans (true porpoises) might be permanently impacted by sound levels generated from vibratory pile driving (distances to the 173 dB threshold of 24 to 54 meters for average and peak sound levels, respectively). However, porpoise species in the Project area are typically found several hundred feet off the shoreline and are, therefore, expected to be predominately located beyond the range of physiological impact. The NMFS studies show that all other cetaceans and pinnipeds have cumulative SEL thresholds above 198 dB for the onset of PTS and would therefore not be impacted permanently by the use of a vibratory pile driver (peak noise distance of 14 meters only).

Table 4.4-3. Summary of Marine Mammal Hearing Ranges and PTS Onset Thresholds (Received Level) for Non-Impulsive Noise[1, 2]

Hearing Group	Peak SPL (dB re 1 uPa)	Cumulative SEL (dB re 1uPa)
Low-Frequency Cetaceans	219	199
Mid-Frequency Cetaceans	230	198
High-Frequency Cetaceans	202	173
Phocids (underwater)	218	201
Otariids (underwater)	232	219

Source: NMFS 2016.

Acronyms: dB = decibel; Hz = Hertz; kHz = kilohertz; PTS = permanent threshold shift; SEL = sound exposure level; SPL = sound pressure level.

Notes:

[1] If a non-impulsive sound may exceed peak SPL thresholds associated with impulsive sounds, these thresholds should also be considered; therefore, peak SPL thresholds are also provided.

[2] All cumulative SEL acoustic threshold levels (re 1 $\mu Pa^2 s$) incorporate marine mammal auditory weighting functions, while peak SPL thresholds should not be weighted.

For behavioral disruption, noise levels produced by vibratory pile drivers would exceed the 120 dB_{rms} threshold. Based on NMFS spreadsheet tools and acoustic calculations, using the near shore projects simplified attenuation formula applicable to shallow and near-shore waters (NMFS 2016) with an attenuation rate of 5 dB/10 meters, the distance to the behavioral threshold for marine mammals would be up to 150 meters for a vibratory pile driver and 98 meters for a vibratory pile driver with sheet piles similar to those that might be used in the Project (12- to 15-inch steel H-piles, using peak values). As these distances to the behavioral disturbance threshold are close to shore, it is anticipated that marine mammals would rarely occur within this area of elevated noise, where behavioral disturbance could occur. Given the information above, the temporary, localized nature of vibratory pile driving, and the implementation of MM BIO-4a through MM BIO-4c, potential impacts would be reduced to less than significant.

Potential Effects of Pile Driving Noise on Fish and Sea Turtles

In 2008, the Fisheries Hydroacoustic Working Group (FHWG)[1] issued interim threshold criteria based on best available science for the onset of injury to fish from noise generated during pile driving, as shown in Table 4.4-4 (FHWG 2008). Vibratory pile driving activities would most likely have higher thresholds for fish than those listed in Table 4.4-4 because the injury thresholds for impact driving are generally lower than the injury thresholds for non-impulsive, continuous sounds produced by vibratory pile drivers (due to the high peak levels associated with impact drivers).

For behavioral changes in fish, NMFS and USFWS generally have used 150 dB_{peak} as the threshold for behavioral effects on ESA-listed fish species, citing that sound pressure levels in excess of 150 dB_{peak} can cause temporary behavioral changes (startle and stress) that could decrease a fish's ability to avoid predators (Caltrans 2015). However, no special-status fish species are anticipated to occur near the Project site.

Table 4.4-4. Interim Thresholds for Onset of Injury and Behavioral Effects in Fish from Impulsive Noise

	Peak SPL (dB re 1 μPa)	Cumulative SEL (dB re 1 $\mu Pa^2 s$)
Less than 2 grams*	206	183
Greater than or equal to 2 grams*	206	187
Behavioral effect threshold**	150	N/A

Source: FHWG 2008*; Caltrans 2015**.
Acronyms: dB = decibel; N/A = no data available; SEL = sound exposure level; SPL = sound pressure level.
Note: There are no formal criteria for continuous noise. The impulse noise thresholds are commonly applied for continuous noise in the absence of a specific threshold.

[1] Members of the FHWG include: NMFS's Southwest and Northwest Divisions; California, Washington, and Oregon Departments of Transportation; CDFW; and U.S. Federal Highway Administration.

Very few hearing studies have involved sea turtles (Popper et al. 2014). Sea turtles appear to be sensitive to low-frequency sounds with a functional hearing range of approximately 100 Hz to 1.1 kHz (Ridgway et al. 1969; Bartol et al. 1999; Ketten 2008; Martin et al. 2012). It has been suggested that sea turtle hearing thresholds should be equivalent to TTS thresholds for low-frequency cetaceans (Southall et al. 2007; Finneran and Jenkins 2012); however, more recently, the Acoustical Society of America standards committee suggested that turtle hearing was probably more similar to that of fishes than marine mammals (Popper et al. 2014). For this analysis, sea turtles were presumed to have the same thresholds as those fishes with swim bladders not involved in hearing. Thus, sea turtle mortality and mortal injury would be expected at pile driving sound levels greater than a cumulative SEL threshold of 210 dB and peak SPL threshold of 207 dBpeak (Popper et al. 2014). Little information is available on sea turtle behavior changes due to in-water noise. Behavioral changes for sea turtles would most likely be similar to marine mammals (120 dB) or fish (150 dB) and impacts to sea turtle behavior would be similar to the conclusions above for marine mammals and fish.

Based on NMFS spreadsheet tools and acoustic calculations, using the near shore projects simplified attenuation formula applicable to shallow and near-shore waters (NMFS 2016) with an attenuation rate of 5 dB/10 meters, vibratory pile driving would not exceed the injury thresholds established for fish or sea turtles. The distance to the behavioral disruption threshold for fish would be up to 100 meters for a vibratory pile driver and 38 meters for a vibratory pile driver with sheet piles similar to those that might be used in the Project (using peak noise values). However, no special-status fish species are anticipated to occur near the Project site and, as these distances are close to shore, it is anticipated that sea turtles would rarely, if ever, occur within this area of elevated noise. Given the information above, the temporary, localized nature of vibratory pile driving, and the implementation of MM BIO-4a through MM BIO-4c, potential impacts would be reduced to less than significant.

Potential Effects of Vibratory Pile Driving Noise on ~~Seab~~Birds

While there are no official criteria for airborne or underwater noise thresholds for birds, Caltrans (2007) has recommended interim in-air guidelines to assess noise effects on birds, which are 125 dBA for PTS and 93 dBA for TTS for in-air noise levels. For pile driving, in-air noise levels would generally be below the 125 dBA PTS threshold, and below the 93 dBA TTS threshold within 126 feet. The double-crested cormorant, which is an SSC area, which nests and roosts in a colony within 3,000 feet of the Project site, would experience calculated peak in-air noise levels of 72 dBA during vibratory pile driving, which is less than both PTS and TTS thresholds. The remaining sensitive avian species are most commonly observed beyond the shelf break, in areas adjacent to submarine canyons and other deep water features, or around the Channel Islands. As such, their presence near the Project area is unlikely. Therefore, in-air noise impacts to seabirds would be less than significant. Most terrestrial avian species, including the numerous species of shorebirds regularly observed in the area, are expected to temporarily avoid the Project area during the 3-week disturbance period. Due to the temporary nature of the disturbance and other readily available foraging habitat nearby, impacts to these bird species would be less than significant.

Diving seabirds include those that make shallow plunges from the water surface down to depths of 3 feet (1 m), make aerial plunges from various altitudes to depths of several feet, or dive to depths of tens of feet or more to feed. There is only extremely limited information on diving seabird sensitivity to sound underwater. Additionally, there are no underwater acoustic guidelines for diving seabirds. The U.S. Navy (2011) convened the Marbled Murrelet Science Panel, to examine the potential impacts to the marbled murrelet due to underwater noise. While the marbled murrelet is not found in the Project area, as it is a smaller bird than the cormorants, and noise impacts are generally a function of bird weight, the impacts on marbled murrelet are a conservative correlation to the birds in the area. The panel discussed a range of potential threshold levels between 183 and 206 dBA. Although noise impacts to birds would vary by species, this threshold would be generally applicable to other similarly sized seabirds. Behavioral changes in seabird activity in-water would most likely indirectly correlate to behavioral changes in fish, as the birds are diving to pursue fish species.

Diving seabirds are especially vulnerable approaching a sound source not only because birds have high hearing thresholds, but also because the sound-reflecting nature of the air-sea interface tends to trap waterborne sounds beneath the sea surface. As a result, seabirds on the water or diving in the area have the potential to be exposed to the maximum sound energy from pile driving. Near a pile driving site off Point Loma, California, least tern counts were lower on days with pile driving compared to days without pile driving (NAVFAC SW 2014). Potential indicators of behavioral stresses due to noise on birds may include a startle response, difficulty detecting prey or predators, masking of communication sounds, physical displacement, and changing breeding or nesting sight locations. Awareness of seabird species and their responses are especially important since some of the birds in the area are listed as sensitive species. Based on NMFS spreadsheet tools and acoustic calculations, using the near shore projects simplified attenuation formula applicable to shallow and near-shore waters (NMFS 2016) with an attenuation rate of 5 dB/10 meters, the vibratory pile driving would exceed the values out to 34 meters (for the peak noise value). For projects with similar characteristics as the Project (small sheet piles), the in-water noise levels would not exceed the thresholds for the vibratory pile driving.

Since the duration of underwater sound exposure for diving seabirds is expected to be short, impacts resulting from vibratory pile driving are unlikely. As suggested by a Minerals Management Service (2006) Biological Evaluation, the soft start” process may cause seabirds to disperse and thus serve as an avoidance measure preventing more direct effects. Seabirds in general relocate to an area where they are not bothered by physical or noise disturbance, and then continue with their foraging, roosting, and other activities. Given the information above, the temporary use of pile driving, this impact is considered less than significant for vibratory pile driving.

Applicant Proposed Measures

APM-4. Use of Vibratory Pile Driver.

Mitigation Measures

MM BIO-4a. Marine Resources Noise Reduction. Installation of sheet pile shall utilize H-type, or equivalent, and smaller sized sheet piles to the extent feasible, and shall be scheduled to concur with the ocean-facing sheet piles installed at the lowest tides feasible during the construction phase to reduce the potential for behavioral impacts on marine mammals, sea turtles, and nearshore fish species.

MM BIO-4b. Soft Start. A “soft start” shall be used during vibratory pile driving to give marine mammals, sea turtles, birds and nearshore fish species an opportunity to move out of the area away from the sound source. Soft starts would be implemented at the start of each day's pile driving and at any time following the cessation of pile driving for a period of 30 minutes or longer. For vibratory pile drivers, the sound shall be initiated for 15 seconds at reduced energy followed by a 30-second waiting period; this procedure shall then be repeated two additional times.

MM BIO-4c. Marine Mammal/Sea Turtle Monitoring. To ensure that no harassment occurs during vibratory pile driving activities, site-specific marine mammal/sea turtle observations shall be conducted using qualified marine wildlife monitors (MWMs) stationed on the existing response boats (no additional boats should be used for marine observers) and approved by California State Lands Commission (CSLC) staff, in consultation with National Marine Fisheries Service (NMFS) and California Department of Fish and Wildlife (CDFW) staffs. Such monitoring shall include at least the following elements.

- The MWMs shall monitor an area within 150 meters (exclusion/shutdown zone) of the construction area for the presence of marine mammal species.
- Prior to the start of pile driving operations, if a marine mammal or sea turtle is sighted within or approaching the exclusion/shutdown zone, MWMs shall notify the on-site construction lead (or other authorized individual) to delay pile driving until the animal has moved out of the exclusion/shutdown zone or the animal has not been re-sighted within 15 minutes (for pinnipeds and small cetaceans) or 30 minutes (for large cetaceans).

- If a marine mammal or sea turtle is sighted within or on a path toward the exclusion/shutdown zone during pile driving activities, pile driving shall cease until that animal has moved out of the exclusion/shutdown zone or 15 minutes (pinnipeds and small cetaceans)/30 minutes (for large cetaceans) has lapsed since the last sighting.
- MWMs shall have authority to temporarily halt in-water project activities if those activities pose a threat to individuals of a special-status species, and to suspend project activities until the animals have left the area. If due to fog, rain, or other periods of limited visibility the exclusion/shutdown zone cannot be monitored, MWMs have the authority to direct cessation (or continuation) of construction activities based on observed abundance of marine mammals and sea turtles and their ability to view the exclusion/shutdown zone. Periodic reevaluation of weather conditions and reassessment of the continuation/cessation recommendation shall be completed by the MWMs.
- MWMs shall record sightings and animal behavior within the zone during pile driving activities. At a minimum, MWMs shall collect the following information daily: (1) general location(s) of MWMs and marine wildlife observations; (2) date/time monitoring begins/ends; (3) activities occurring during each observation period; (4) weather parameters (e.g., percent cover, visibility) and conditions (e.g., sea state); (5) species observed and number of individuals; (6) description of any marine wildlife behavior patterns, including bearing and direction of travel and distance from pile driving activities; (7) other human activity in the area. MWMs shall keep a log book of notes about sightings of marine mammals, special-status birds or sea turtles. Entries in the log shall be made at least hourly, even if the entry is "None observed." Reports shall be emailed to CSLC staff daily.
- Within 30 days of completion of pile driving, the MWMs shall submit to CSLC staff for approval a Final Marine Wildlife Monitoring Report and copies of log books prepared by the qualified MWMs that include at a minimum:
  - an evaluation of the effectiveness of monitoring protocols/procedures
  - reporting of all marine mammal, sea turtle, and other wildlife sightings (including species and numbers)
  - any wildlife behavioral changes that may be attributed to project construction or operations
  - all project changes (e.g., delays, work stoppages, etc.) due to the presence in the area of marine wildlife species.

Impact BIO-5: Construction and Lighting Impacts on Kelp, Birds, Fish, and Plankton

~~Lighting~~ Construction and lighting ~~from~~ associated with sheet piling, re-drilling activities and vessel support and transit activities may potentially disturb kelp, marine birds, fish, and zooplankton in the Project area **(Less than Significant Impact with Mitigation)**.

Impact Discussion

The Project would take approximately 3 weeks operating on a 24/7 schedule to complete, assuming no weather- or site condition-related delays. Up to 25 employees per day would be required to complete work activities that would be performed 24 hours per day; therefore, daytime and nighttime construction would occur and night lighting would be required for the safe completion of work tasks.

During the Project construction phase, supply vessels traveling to and from the Project ~~area~~ site may create localized ~~light~~ disturbances, including impacting area kelp with frequent passing from the Project site to and from the Santa Barbara Harbor. Vessel use of area waters is common and long-term impacts are not anticipated from the short-term use of vessels in the area. However, impacts to kelp forest can be minimized by avoidance measures taken by vessel pilots. ~~; however,~~ For lighting impacts, it is not anticipated that vessels would run at night and any disturbances would be temporary and brief.

Construction activities could have impacts to fish that use the beach areas. Grunion runs might correlate to Project activities, for example. However, as grunion are not threatened, endangered, or candidate species and grunion runs are often pursued by fishermen, the relatively small area of impact for the Project (25-foot-square sheet pile enclosure) would not produce significant impacts to grunion. Other beach fish, such as tidewater goby, do not populate open beaches and are limited to brackish sloughs and would also not be impacted by Project construction activities.

In the marine environment, artificial lighting is recognized as an attractant for a variety of marine species. Nocturnal and night foraging seabirds known to occur in the Channel are especially vulnerable to the adverse effects of night lighting. Some forage fishes, squid, and plankton species may also be attracted to the artificial lights of the Project work area, making them more vulnerable to predation (Shaw et al. 2001). If patterns of darkness experienced by wildlife are disturbed by light, wildlife may experience: attraction, fixation, or repulsion reactions; increased orientation or disorientation; disruption of biological rhythms; or changes in habitat quality. However, the Project duration would be relatively short (approximately 3 weeks), and marine wildlife species in the general Project vicinity are already exposed to existing light sources from residential properties.

Current conditions produce some nighttime illumination levels on the beach. The Project duration would be relatively short (approximately 3 weeks). MM NOI-1 would require that construction activities involving the installation of sheet pile be conducted only between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday, therefore reducing some of the lighting impacts. With the implementation of MM BIO-7, reducing Project-related lighting impacts with directional and shielded lighting during the construction phase would reduce impacts to less than significant.

Mitigation Measures

MM BIO-5a. Project Lighting. All lighting associated with the Project, as well as any additional light required for the existing parking area and adjacent roads, drilling rig, barge, and sheet pile driver rig, shall be directed and shielded in such a way as to eliminate any direct light towards the ocean and immediate nearshore waters, as well as to minimize reflection and glare from such light in the same areas. As much as is allowable under Federal Aviation Administration (FAA) regulations, the red flashing light at the top of the drilling rig shall also be shielded from view from the immediate nearshore waters.

MM BIO-5b. Kelp Avoidance. Support vessel pilots shall avoid kelp forest areas to the extent feasible and shall utilize a similar corridor in repeat visits to the Project site.

Summary of Proposed Mitigation Measures

Table 5 provides a summary of the mitigation measures proposed for potential Project impacts.

Table 4.4-5. Marine Biology Impact/Mitigation Summary

Impact	Mitigation Measures
BIO-1: Impact of Temporary Construction-Related Oil Spills to Marine Biological Resources	**APM-1.** Abandonment and Contingency Plan **APM-2.** Barge System Engineering **APM-3.** Emergency Response Equipment Availability **HAZ-2a.** Removal of Contaminated Sands **HAZ-2b.** Water Handling
BIO-2: Long term Oil Spill Impact to Marine Biological Resources	None recommended
BIO-3: Collision-Related Vessel Traffic Impacts on Marine Mammals and Turtles	**BIO-3.** Marine Mammal and Sea Turtle Avoidance and Response Training
BIO-4: Noise Impacts on Marine Mammals, Sea Turtles, Birds, and Fish	**APM-4.** Use of Vibratory Pile Driver **BIO-4a.** Marine Resources Noise Reduction **BIO-4b.** Pile Driving Soft Starts **BIO-4c.** Hydroacoustic and Marine Mammal/Sea Turtle Monitoring

BIO-5: Construction and Lighting Impacts on Kelp, Birds, Fish, and Zooplankton	**BIO-5a.** Project Lighting Requirements **BIO-5b.** Kelp Avoidance

Cumulative Impacts

Cumulative projects that could exacerbate Project impacts include any projects that could increase the risks of immediate impacts from the Project due to increased risks of oil spills or noise impacts to biological resources, impacting the same areas of coastline or the same receptors as the Project.

Of the cumulative projects listed in Section 3, *Cumulative Projects*, industrial projects that would increase oil spill risks to the marine environment include the Carpinteria Offshore Field Redevelopment and Paredon projects. Each project, individually, would involve oil development and transportation of increased oil volumes within the marine environment and would increase the cumulative spill risk to the same marine environment that could be impacted by the Project. Individually and cumulatively, these projects would produce significant and unavoidable impacts due to oil spill risks. However, as the Project analyzed in this EIR would be temporary, after which the historical leakage of crude oil into the environment would be reduced or eliminated, and due to the relatively small spill size potential and the readily available response equipment during the temporary and short-term construction phase of the Project, cumulative impacts to biological resources from oil spills would be beneficial.

4.5 CULTURAL AND PALEONTOLOGICAL RESOURCES

This section identifies cultural, historical and paleontological resources in the proposed Project area, evaluates the type and significance of impacts that may occur as a result of the Project, and identifies measures to avoid or substantially lessen any impacts found to be potentially significant. Project-related physical improvements are limited to the Summerland Beach areas, including the Becker well and associated staging area, as well as other legacy wells along Summerland Beach that may be abandoned by the California State Lands Commission (CSLC) in the future. See Section 4.6, *Cultural Resources - Tribal*, for a discussion on cultural resources potentially of importance to California Native American Tribes.

Historical resources are defined as historic-period buildings, structures, facilities, districts, and objects; or archaeological sites and districts dating from either the prehistoric or historic period. Historical resources may be structures still in use, those that are abandoned, standing above ground, preserved on the ground surface, buried beneath the ground surface, or submerged under rivers, lakes, or the ocean. Paleontological resources, or fossils, are the evidence of once-living organisms preserved in the rock record. They include both the fossilized remains of ancient plants and animals and the traces thereof (e.g., trackways, imprints, burrows, etc.). In general, fossils are considered to be greater than 5,000 years old (Middle Holocene) and are typically preserved in sedimentary rocks. Although rare, fossils can also be preserved in volcanic rocks and low-grade metamorphic rocks under certain conditions (Society of Vertebrate Paleontology [SVP] 2010).

This section includes a brief summary of the cultural and paleontological setting of the Project area to provide context for assessment of archaeological and historical sites. Cultural resource records searches were obtained from the California Historical Resources Information System at the Central Coast Information Center (CCIC) housed at the Department of Anthropology, University of California, Santa Barbara (UCSB) and the CSLC Shipwreck Database Records. To ascertain whether the Project has the potential to contain significant fossil resources at the surface or subsurface, relevant scientific literature and geologic mapping was reviewed to determine the geology of the area. In addition, Los Angeles County Museum of Natural History (LACM) and University of California Museum of Paleontology (UCMP) to determine whether any recorded fossil localities occur within or adjacent to the Project area and ascertain the abundance and taxonomic diversity of fossils of the geologic strata.

4.5.1 Environmental Setting

The Project is located in the Summerland Oil Field, within and offshore Summerland, Santa Barbara County (see Figure 2-1). As described in Section 2, *Project Description*, the field was developed in the late 1890s in an area of naturally occurring oil and gas seeps (see Figures 2-2 and 2-3). The Project area encompasses portions of Summerland Beach, including locations where a jack-up barge will be anchored and a cofferdam will be built adjacent to the Becker well site in the surf zone. In addition, portions of Lookout Park are proposed for use as a staging area for oil spill response equipment. Similar types of physical ground disturbances would be associated with other Summerland legacy well abandonment and remediation activities.

4.5.1.1 Prehistory and Archaeology[1]

Although the earliest documented human habitation of the Santa Barbara Channel area dates to at least 13,000 years before present (B.P.), it was not until approximately 9,000 B.P. that human presence became more widespread. Cultural adaptations between 9,000 and 5,000 B.P. are characterized by hunting and gathering lifeways with subsistence focused on shellfish and other ocean resources. Intensive use of wild plant resources was also common during this period, when manos and metates (milling stones) were used to process wild seeds and other foods. Between approximately 5,000 and 2,000 years ago, there was greater emphasis on hunting large land animals, such as deer and elk; chipped stone tool manufacture became well developed; and plant processing shifted from manos and metates in favor of mortars and pestles. This cultural adaptation was followed by a gradual increase in the use of marine resources, including fish and sea mammals, and the development of more complex political and economic systems during the Middle and Late periods of prehistory through the time of contact with Europeans.

4.5.1.2 Regional and Local History

Historic Period

The historic period along the Santa Barbara/Ventura County coastal areas began with Juan Rodriguez Cabrillo’s voyage in 1542, but it was not until 1769 that the first Spanish land expedition, led by Gaspar de Portolá, initiated more sustained and intensive European influence in the region. Between 1769 and 1823, 21 missions were established in California, resulting in drastic changes to native ways of life. Five of these missions were in areas inhabited by the Chumash. Establishment of the missions led to the recruitment of Chumash people into mission enclaves and the gradual abandonment of native Chumash villages and settlements. During the Spanish Period (between 1769 and 1822), some lands held by the missions were granted to Spanish military veterans. These land grants foreshadowed the subsequent Rancho Period (between 1822 and 1866) in California.

[1] This brief overview of prehistory and archaeology is adapted from Munns and Haslouer (2013). Other sources (e.g., Gamble [2008], Glassow et al. [2007]) offer more detailed accounting and interpretation of local prehistory, the contact era, and history.

With the Mexican Revolution came the end of the Spanish Period, and much of the region was divided into ranchos. Rancho lands were primarily used to graze livestock and for dryland agriculture. The Rancho Period ended abruptly as a result of a statewide drought that occurred between 1860 and 1864. This ushered in the Early Anglo-American Period, which was marked by the transition from large colonial ranchos to small ranches and farms.

Historical Development of Offshore Oil Production in Southern California

As an extension of inland drilling, in 1886 the first wells to intentionally collect offshore oil were drilled in Summerland (*Oil and Gas History* 2010). Following the success of wells located closer to the ocean, the first piers, averaging 300 to 500 feet long, were built out over the surf to create the first offshore wells in 1896. Some of the piers also served as the first offshore tanker loading sites (Schempf 2007). After the Summerland offshore wells proved productive, piers equipped with wooden derricks and steel-girder rigs were employed throughout Southern California's coastal fields. As field production levels slowed, Summerland's wells were plugged and abandoned during the 1920s (Easton 1972; Schempf 2007).

4.5.1.3 Paleontological Resources

The area of primary Project activities is located offshore of the Santa Barbara County coastal plain within the petroliferous Ventura Basin Province, part of the western Transverse Ranges physiographic province. The Transverse Ranges extend approximately 275 miles from Point Arguello, within the Santa Ynez Mountains of Santa Barbara County, to the San Bernardino Mountains in the east and predominately consist of Proterozoic to Mesozoic intrusive igneous and metamorphic rocks and Cenozoic volcanic, marine, and terrestrial sedimentary deposits. The Ventura Basin Province encompasses the area roughly south of the Santa Ynez Mountains fault, west of the 3-mile limit of State waters of the Santa Barbara-Ventura coastal area and north of the Santa Monica-Malibu Coast fault system (including the Santa Barbara Channel). The Ventura Basin began forming during the Pliocene in a major fold and thrust belt and is underlain by up to 10,000 meters of faulted, folded, and deformed deep shelf and shallow marine sediments that accumulated along the western margin of the North American plate during the Upper Cretaceous to Pleistocene epochs.

Prior to the formation of the Ventura Basin, Miocene subsidence in the region resulted in the accumulation of thick deep-marine deposits including the Monterey Formation and Sisquoc Formation, which are present at depth below the Project area. These fine-grained sedimentary deposits are overlain by submerged Quaternary terrace deposits, asphaltic sands, and the sand and mud of the sea floor. The offshore Project area is mapped at a scale of 1:24,000 by Johnson et al. (2013). A general description of geologic units underlying the Project area is provided below.

Monterey Formation. The middle to late Miocene Monterey Formation is exposed discontinuously within the Coast Ranges and Transverse Ranges in western California. The unit, which is named after extensive exposures in the vicinity of Monterey is up to 5,000 feet thick and is easily recognized by its pale buff to white color. Numerous vertebrate fossil localities have been documented within the Monterey Formation, including specimens of large sea turtles, whales, pinnipeds, sharks, sea cows, fish, birds, and many other fauna (UCMP Online Database 2016). In addition, the deposit has yielded numerous species of scientifically significant invertebrates; foraminifera; and plants such as kelps and other large soft-bodied seaweeds.

Sisquoc Formation. The late Miocene to early Pliocene Sisquoc Formation is exposed in Santa Barbara County and is composed of marine siliceous mudstone, shale, conglomerate, and subordinate dolomite. The Sisquoc has yielded at least five vertebrate localities which produced fossils of walrus, seal, whale, shark, as well as several bird type specimens (UCMP Online Database 2016).

Continental Shelf and Asphaltic Deposits. Fine-grained marine deposits of the Santa Barbara Channel continental shelf generally consist of Quaternary clay, silt, and very fine sand up to several hundred feet deep; these deposits are replenished during seasonal drainage from coastal rivers. The continental shelf in this region includes submerged wave-cut terraces that formed due to fluctuations in sea level related to tectonic uplift, subsidence, and Quaternary glaciation. Natural black asphalt (tar) deposits, derived from natural hydrocarbon seeps, are also mapped on the Santa Barbara continental shelf. Holocene offshore asphaltic deposits are mapped within the Ellwood Field along the Coal Oil Point Anticline. Nearby onshore exposures of the natural seeps include Coal Oil Point and the Quaternary asphaltic sands at Carpinteria State Beach. The Carpinteria asphaltic sands yielded well-preserved fossils of Late Pleistocene plants, mollusks, insects, reptiles, birds, and mammals during the early 20th Century, prior to widespread disturbance due to mining operations for paving materials.

4.5.1.4 Description of Resources in the Project Area

A record search of the California Historical Resources Information System at the CCIC housed at the UCSB Department of Anthropology was performed March 6, 2017, to identify previous cultural resources investigations and recorded archaeological and historic sites within 0.5 mile of the Project ~~area~~ site. Of the 38 cultural resources investigations performed within 0.5 mile of the Project ~~area~~ site, three partially overlap the Project ~~area~~ site. Wilcoxon (1977) surveyed Lookout Park, with negative results (i.e., no archaeological resources were identified). The other two investigations consisted of a record search overview for a wastewater reclamation study (Brown et al. 1980) and a monitoring project for installation of a fiber optic line (Yost et al. 2001). The beach and surf zone have not been previously surveyed.

Onshore Archaeological and Historical Resources

Seven archaeological sites are located within 0.5 mile of the Project ~~area~~ site. The closest site (CA-SBA-2178/H) is located along the Southern Pacific Railroad right-of-way north of Lookout Park. SBA-2178/H is a highly disturbed historic and prehistoric site that has been subject to four investigations, beginning with the initial survey and recording in 1988, followed by additional recording and subsurface testing in 1992 and 2001 (Yost et al. 2001), and another surface recordation in 2008. The historic component consists of a light scatter of structural remains and other debris (e.g., bottle glass, nails) in the western portion of the site where a 1927 map indicates bunkhouses were located. The prehistoric component consists of a surface scatter of reworked/redeposited marine shell midden as well as subsurface marine shell and lithic artifacts found in disturbed soil contexts.

The other archaeological sites are all located north of U.S. Highway 101, including a prehistoric site with a large assemblage of ground stone tools (CA-SBA-16), the remains of the circa 1820 Masini Adobe (SBA-1578), a low-density surface scatter of shellfish remains (SBA-2183), a moderate-density surface scatter of shellfish remains, chert flakes, and ground stone artifacts (SBA-2187), a low-density surface scatter and subsurface deposit of shellfish remains (SBA-2184), and a moderate-density surface scatter of shellfish remains and chert flakes (SBA-2186).

Historical resources located within 0.5 mile of the Project ~~area~~ site consist of 19 historic buildings and structures and the Summerland Residential Historic District. The individual historic buildings consist of houses, bungalows, cottages, and commercial buildings in Summerland. The Summerland Residential Historic District consists of four frame houses on Lillie Avenue between Olive and Temple streets. All of these buildings and structures are located north of U.S. Highway 101 and would not be directly or indirectly affected by the Project; therefore, they are not discussed further.

Offshore Archaeological and Historical Resources

A record search of the CSLC Shipwreck Database Records was performed March 6, 2017, to identify any submerged archaeological sites within 0.5 mile of the Project ~~area~~ site. One shipwreck (ID number 816) is recorded near the area of the Becker well. The *Chetco*, a two-masted schooner built in 1887 at Turner's shipyard in Benicia, burned on February 10, 1918, near the Summerland area and may have sunk.

4.5.2 Regulatory Setting

The primary federal and state laws, regulations, and policies that pertain to the Project are summarized in Appendix A, while applicable local laws, regulations, and policies are summarized below.

4.5.2.1 County of Santa Barbara Coastal Land Use Plan and Comprehensive Plan

Section 3.10 of the County of Santa Barbara Coastal Land Use Plan, as amended, states that “All available measures… shall be explored to avoid development on significant historic, prehistoric, archaeological, and other classes of cultural sites” (Policy 10-1). If avoidance is not possible, then appropriate mitigation measures shall be required when development would adversely impact archaeological, historical, or paleontological resources. The Conservation Element of the County of Santa Barbara Comprehensive Plan similarly calls for protection and preservation of the widest possible range of types of archaeological and historical resources.

4.5.2.2 County of Santa Barbara Cultural Resource Guidelines

Chapter 8 of the County of Santa Barbara Environmental Thresholds and Guidelines Manual (Regulations Governing Cultural Resource Projects Undertaken in Conformance with Federal and State Environmental Protection Acts) contains guidelines for implementing provisions under the California Environmental Quality Act (CEQA) pertaining to archaeological, historic, or ethnic importance sites. Chapter 8 also contains thresholds similar to those found in State CEQA Guidelines section 15064.5. Chapter 8 supporting technical documents include: (1) Archaeological Element (1986, reissued January 1993), (2) Historic Resources Element (1986, revised January 1993), and (3) Regulations Governing Archaeological and Historical Projects Undertaken in Conformance with the CEQA and Related Laws: Cultural Resources Guidelines (1986, revised January 1993) (referenced as the Cultural Resources Guidelines).

4.5.3 Significance Criteria

4.5.3.1 Historical and Archaeological Resources

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 (Pub. Resources Code, § 21084.1). State CEQA Guidelines section 15064.5 subdivision (b) provides significance threshold criteria for determining a substantial adverse change to the significance of a cultural resource:

- Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired.
- The significance of an historical resource is materially impaired when a project:
    - Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the CRHR; or

- o Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1 subdivision (k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1 subdivision (g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
- o Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the CRHR as determined by a lead agency for purposes of CEQA.

4.5.3.2 Paleontological Resources

An impact to a paleontological resource would be significant if it directly or indirectly destroys a unique paleontological resource or site or unique geologic feature.

4.5.4 Environmental Impact Analysis and Mitigation

Potential direct and indirect construction-related impacts on cultural, historical and paleontological resources are evaluated below. There are no historic buildings or structures in the Project area; therefore, the following discussion focusses on potential impact to onshore and offshore archaeological resources.

ENVIRONMENTAL IMPACT ANALYSIS

Impact CR-1: Impacts to Onshore or Offshore Archaeological Resources from Well Abandonment and Remediation Activities

The proposed Becker well abandonment and remediation activities would not directly affect any known or suspected onshore or offshore archaeological resources. However, similar activities for other legacy wells along Summerland Beach could impact archaeological resources during construction **(Less than Significant with Mitigation)**.

Impact Discussion

No identified cultural resources are present within the Project area. A previous archaeological survey of the portion of Lookout Park that would be used for staging an equipment trailer yielded negative results. Although the beach has not been surveyed for archaeological resources, the nature of the marine and geologic setting of the active beach and surf zone make it unlikely that intact archaeological resources exist where the Becker well abandonment and remediation activities would be conducted. Therefore, the proposed Becker well-specific abandonment and remediation activities would not have the potential to directly affect any known or suspected onshore or offshore archaeological resources, and there would be no impact.

Similar to the Becker well, it is unlikely that intact archaeological resources exist within the active beach and surf zone related to other potential legacy well abandonment and remediation activities along Summerland Beach. However, potential staging areas and offshore footprints (e.g., offshore well anchors for a jack-up barge) have not been identified for these legacy well-specific activities. Implementation of Mitigation Measure (MM) CR-1a would ensure that staging and offshore activities would avoid onshore and offshore archaeological resources and reduce the risk to known and undiscovered resources to a less than significant level.

Mitigation Measure

MM CR-1. Pre-Construction Review of Legacy Well Abandonment and Remediation Plans. Prior to abandonment and remediation activities at legacy wells along Summerland Beach, the California State Lands Commission (CSLC) will review and approve all construction plans to ensure that staging and offshore activities will avoid previously identified and unidentified archaeological resources.

- If a staging area is located in a developed area (e.g., parking lot), then no impacts would occur.
- If a staging area is located on an undeveloped and undisturbed area, then CSLC staff will ensure that location has been adequately surveyed for archaeological resources and that all staging activities will avoid impacts.
- For offshore activities, a qualified maritime archaeologist will analyze remote sensing survey data (from side-scan sonar, sub- bottom profiler, or magnetometer as appropriate), or video from a remotely (or autonomous) operated vehicle, or conduct a diver inspection to locate previously unidentified cultural resources in areas of proposed ground disturbance to ensure avoidance. In addition, CSLC staff will ensure offshore ground disturbance will avoid known shipwrecks and other known submerged cultural resources.
- All construction plans shall have measures and protocols in place in the event of an inadvertent find, along with notification requirements for Tribal leadership or their designees, and appropriate experts, and shall include stop-work requirements until appropriate assessments are completed.

Impact CR-2: Impacts to Cultural Resources Due to Construction-Related Oil Spill Risks

Well remediation and abandonment activities could result in a temporary release of crude oil that could impact onshore or offshore archaeological resources **(Less than Significant with Mitigation)**.

Impact Discussion

As described in Section 4.1, *Hazardous Materials and Risk of Upset*, Project activities could temporarily increase spill volumes of crude oil, although the size and likeliness of a spill would be minimized through the use of contingency planning procedures and equipment. Impacts to previously unidentified archaeological resources would include direct oiling or tarring of cultural resources. Resources could also be damaged during subsequent clean-up and remediation activities that cause ground disturbance, particularly those activities involving use of heavy equipment. Offshore resources such as shipwrecks could also be vulnerable to Project-related oil spills as oil products mix within the water column. Implementation of MM CR-2 below will ensure adequate spill response to preserve archaeological resources and reduce the risk to previously unidentified resources to a less than significant level.

Mitigation Measure

Mitigation measures related to an oil release are included in Section 4.1, Hazardous Materials and Risk of Upset. The following APMs and MMs would apply:

- **APM-1. Abandonment and Contingency Plan.**
- **APM-2. Barge System Engineering.**
- **APM-3. Emergency Response Equipment Availability.**
- **MM HAZ-2a. Removal of Contaminated Sands.**
- **MM HAZ-2b. Water Handling.**

In addition, the following mitigation measure is included:

MM CR-2. Prepare a Spill Response Plan for Archaeological Resources. Prior to issuance of permits for the Project, an oil spill response plan for onshore and offshore archaeological resources shall be prepared. The plan's response measures shall contain protocols for the identification, protection, and mitigation of impacts on cultural resources in the event of any increase in seepage from well abandonment and remediation activities. The plan shall provide for collection, analysis, reporting, and curation of significant surface or subsurface archaeological deposits at risk of damage or destruction due to a spill and/or subsequent clean-up efforts. The plan shall be prepared by a qualified archaeologist who has prior experience with spill-related emergency response procedures and shall be reviewed and approved by CSLC staff and the County prior to approval of permits. These measures could be added to the Project's oil spill contingency plan or could reside in a stand-alone document.

Impact CR-3: Disturb Unidentified Human Remains

Human remains have not been identified within the Proposed Project area; however, ground disturbing activities could adversely impact presently unidentified human remains, including those interred outside of dedicated cemeteries **(Less than Significant with Mitigation)**.

Impact Discussion

A review of previous archaeological surveys and site reports did not identify any reports of human remains in the Project area or its immediate surroundings. However, it is possible that previously unidentified human remains could be found. If human remains or related resources are discovered, such resources shall be treated in accordance with State and local law, regulations and guidelines that govern the disclosure, recovery, relocation, and preservation of human remains (State CEQA Guidelines, § 15064.5, subd. (e)). Implementation of MM CR-3 would ensure that adverse effects resulting from the inadvertent discovery of human remains would be less than significant.

Mitigation Measure

While it is not anticipated, in the case that human remains are found within the offshore Project area, the following mitigation measure shall be implemented.

MM CR-3: Appropriate Treatment of Human Remains. In accordance with Health and Safety Code section 7050.5 and Public Resources Code section 5097.98, if human remains are found, all ground disturbing activities shall halt within 165 feet (50 meters) of the discovery. The County Coroner will be notified within 24 hours of the discovery. No further excavation or disturbance of the discovery or any nearby area reasonably suspected to overlie potential remains shall occur until the County Coroner has determined whether the remains are subject to his or her authority. The County Coroner must make this determination within 2 working days of notification of the discovery pursuant to Health and Safety Code section 7050.5 subdivision (b). If the County Coroner determines that the remains do not require an assessment of cause of death and that the remains are, or are believed to be Native American, the Coroner must notify the Native American Heritage Commission (NAHC) by telephone within 24 hours. In accordance with Public Resources Code section 5097.98, the NAHC must immediately notify those persons it believes to be the Most Likely Descendant (MLD) of the deceased Native American. The MLD shall complete their inspection and make recommendations within 48 hours of being granted access to the site. The MLD may recommend means for treatment or disposition, with appropriate dignity, of the human remains and any associated grave goods. CSLC staff will discuss and confer with the MLD regarding their recommendations pursuant to Public Resources Code section 5097.98 subdivisions (b) and (c).

Impact CR-4: Impacts to Previously Unidentified Paleontological Resources

Although paleontological resources are present within the overall Project area, the proposed Project would not directly affect any known or suspected onshore or offshore paleontological resources. Therefore, Project implementation would not result in direct impacts to paleontological resources **(Less than Significant)**.

Impact Discussion

Literature review and museum records searches indicate that the Monterey Formation, Sisquoc Formation, and asphaltic sands have yielded fossil resources throughout Santa Barbara County and have high paleontological sensitivity according to SVP guidelines (SVP 2010). The potential for direct impacts on scientifically significant surface and subsurface fossils in fossiliferous sedimentary deposits is controlled by two factors: the depth and lateral extent of occurrence of fossiliferous bedrock and/or surficial sediments, and the depth and lateral extent of disturbance. Ground disturbance has the potential to adversely impact an unknown quantity of fossils which may occur on or underneath the surface in areas containing paleontologically sensitive units.

Project impacts on paleontological resources would not occur. Plugging existing wells would use existing casing and would not have a potential effect on paleontologically sensitive geologic units. Therefore, there would be less than significant impacts to paleontological resources.

Mitigation Measures

No mitigation measures recommended.

4.5.5 Summary of Proposed Mitigation Measures

Table 4.5-1 provides a summary of the mitigation measures proposed for potential Project impacts.

Table 4.5-1. Cultural Resources Impact/Mitigation Summary

Impact	Mitigation Measures
CR-1: Impacts to Onshore or Offshore Archaeological Resources from Well Abandonment and Remediation Activities	**CR-1.** Pre-Construction Review of Legacy Well Abandonment and Remediation Plans
CR-2: Impacts to Cultural Resources Due to Construction-Related Oil Spill Risks	**APM-1.** Abandonment and Contingency Plan. **APM-2.** Barge System Engineering. **APM-3.** Emergency Response Equipment Availability. **HAZ-2a.** Removal of Contaminated Sands. **HAZ-2b.** Water Handling. **CR-2.** Prepare a Spill Response Plan for Archaeological Resources
CR-3: Disturb Unidentified Human Remains	**CR-3.** Appropriate Treatment of Human Remains
CR-4: Impacts to Previously Unidentified Paleontological Resources	None recommended

4.5.6 Cumulative Impacts

For cultural resources, the geographic extent of cumulative impacts encompasses a relatively broad area because the importance of any individual resource can only be judged in terms of its regional context and relationship to other resources. Thus, the significance of cumulative impacts on any given resource or group of resources must be examined in light of the integrity of the regional resource base. Because the number of cultural and historical resources is finite, limited, and non-renewable, any assessment of cumulative impacts must take into consideration the Project's contribution to cumulative impacts on resources within the Project area; the extent to which those impacts degrade the integrity of the regional resource base; and impacts other projects may have on the regional resource base. If these effects, taken together, result in a collective degradation of the resource base, then those impacts are considered cumulatively considerable.

Section 3, *Cumulative Projects*, identifies projects that are either reasonably foreseeable or are expected to be constructed or operated during the Project life. The list includes industrial or marine transportation projects and residential, commercial, institutional, or recreational projects. Industrial projects that would increase oil spill risks to the marine environment include the Carpinteria Offshore Field Redevelopment and Paredon projects. Each project, individually, would involve oil development and transportation of increased oil volumes within the marine environment and would increase the cumulative spill risk to the same marine environment that could be impacted by the Project. However, because no known cultural resources have been identified in the Project area that could be affected by the Project or an oil spill, the Project is not expected to contribute to cumulative impacts to those resources. Therefore, the Project would not represent a cumulatively considerable contribution to any significant cumulative impact.

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4.6 CULTURAL RESOURCES – TRIBAL

Assembly Bill (AB) 52 (Gatto; Stats. 2014, ch. 532), which was enacted in September 2014, sets forth both procedural and substantive requirements for analysis of Tribal cultural resources, as defined in Public Resources Code section 21074, and consultation with California Native American Tribes. This section identifies Tribal cultural resources or other resources potentially of importance to California Native American Tribes in the Project area, evaluates the type and significance of impacts that may occur as a result of the Project, and identifies measures to avoid or substantially lessen any impacts found to be potentially significant. Project-related physical improvements are limited to the Summerland Beach areas, including the Becker well and its staging area, and other legacy wells along Summerland Beach that may be abandoned by the California State Lands Commission (CSLC) in the future. See Section 4.5, *Cultural and Paleontological Resources*, for a further discussion of cultural and historical resources.

4.6.1 Environmental Setting

The Project is located in the Summerland Oil Field, within and offshore of Summerland, Santa Barbara County (see Figure 2-1). The Project area encompasses portions of Summerland Beach, including the Becker onshore and offshore well anchors for the jack-up barge, the location of the Becker cofferdam and well site located in the surf zone, and portions of Lookout Park proposed for use as a staging area for the oil spill response equipment. Similar types of physical ground disturbances would be associated with other Summerland legacy well abandonment and remediation activities.

The Project area lies within the ethnohistoric territory of the Barbareño Chumash. The Chumash at the time of European contact inhabited villages and towns in coastal and inland areas extending from the Santa Monica Mountains in the south to Paso Robles in the north, including the Northern Channel Islands. Early Spanish expeditions to the Santa Barbara Channel area encountered densely populated villages along the Santa Barbara/ Goleta coast, some with as many as 800 to 1,000 residents (Munns and Haslouer 2013). Interior mainland areas were more sparsely populated, although several larger inland communities are known. Other important differences in subsistence practices, social and political organization, and other cultural features existed among the different zones within Chumash territory. Today, Tribes asserting cultural affiliation or expressing interest in the Project area include the Santa Ynez Band of Mission Indians, Coastal Band of the Chumash Nations, and Barbareño/Ventureño Band of Mission Indians (Munns and Haslouer 2013).

4.6.1.1 Tribal Coordination

Following Governor Brown's issuance of Executive Order B-10-11 concerning coordination with Tribal governments in public decision making, the CSLC adopted a Tribal Consultation Policy (Policy) in August 2016 to provide guidance and consistency in its interactions with California Native American Tribes (CSLC 2016). The Policy, which was developed in collaboration with Tribes, other State agencies and departments, and the Governor's Tribal Advisor, recognizes that Tribes have a connection to areas that may be affected by CSLC actions and "that these Tribes and their members have unique and valuable knowledge and practices for conserving and using these resources sustainably" (CSLC 2016).

The CSLC submitted a Native American Heritage Commission (NAHC) sacred lands file search in September 2015. The response indicated no known presence of Native American Tribal cultural resources in the immediate area around the Project ~~area~~ site. The NAHC also provided a Native American contact list the CSLC used for outreach and coordination. Over the past two years, CSLC staff has communicated with local Tribes and Native American groups a number of times related to the Project, including two separate notifications in August 2015[1] during the Phase I Well Assessment of the Project as well as mailing tribes the Notice of Preparation (NOP) that was sent out in October 2016. In response to the NOP, the CSLC received one email from a member of the Barbareno/Ventureno Band of Mission Indians opposing the Project. While no Tribes with geographical or cultural affiliation in Santa Barbara County have submitted written requests to the CSLC for notification of CEQA projects pursuant to AB 52, in March 2017 the CSLC staff contacted the Tribal Chairpersons identified by the NAHC to ensure the Tribes had an opportunity to provide meaningful input on the potential for Tribal cultural resources to be found in the Project area, and what steps should be taken to ensure adverse impacts to Tribal cultural resources are avoided. The outreach letters sent in March 2017 included the following Tribes and non-profit groups:

- Barbareno/Ventureno Band of Mission Indians
- Coastal Band of the Chumash Nation
- Chumash Tribal Representative
- Owl Clan (non-profit group)
- Santa Ynez Band of Mission Indians
- Santa Ynez Tribal Elders Council
- Wishtoyo Foundation (non-profit group)

In response, the CSLC received one communication (March 23, 2017) from a member of the Santa Ynez Tribal Elders Council deferring to other local Tribes.

4.6.1.2 Tribal Cultural Resources

As described in Section 4.5, *Cultural and Paleontological Resources*, seven archaeological sites are located within 0.5 mile of the Project ~~area~~ site, but none are within the Project boundaries. Some of these sites may meet the definition of a Tribal

[1] CSLC staff had previous mailing lists of Native American tribes prior to NAHC contact list.

cultural resource. No other potential Tribal cultural resources have been identified, to date, for the Project area, although continuing Tribal coordination could provide additional information on sites, features, places, cultural landscapes, sacred places, or objects with cultural value to a Tribe in the Summerland Beach area.

4.6.2 Regulatory Setting

The primary federal and state laws, regulations, and policies that pertain to the Project are summarized in Appendix A, while applicable local laws, regulations, and policies are summarized below. Those related to historic, prehistoric, archaeological, and other classes of cultural sites, including the County of Santa Barbara Environmental Thresholds and Guidelines Manual, are discussed in Section 4.5, *Cultural and Paleontological Resources*.

Tribal cultural resources is a newly defined class of resources under AB 52. These resources include sites, features, places, cultural landscapes, and sacred places or objects that have cultural value or significance to a Tribe. A Tribal cultural resource is one that is either: 1) listed on, or eligible for listing on the CRHR or local register of historical resources (see Section 4.5, *Cultural and Paleontological Resources,* for more information about the CRHR); or 2) a resource that the lead agency, at its discretion and supported by substantial evidence, determines is significant pursuant to the criteria in Public Resources Code section 5024.1 subdivision (c) (see Pub. Resources Code, § 21074). Further, because Tribes traditionally and culturally affiliated with a geographic area may have specific expertise concerning their Tribal cultural resources, AB 52 sets forth requirements for notification and invitation to government-to-government consultation between the CEQA lead agency and geographically affiliated Tribes (Pub. Resources Code, § 21080.3.1 subd (a)). Under AB 52, lead agencies must avoid damaging effects to Tribal cultural resources, when feasible, regardless of whether consultation occurred or is required.

4.6.3 Significance Criteria

With respect to significance determinations, Public Resources Code section 21084.2 states, “A project with an effect that may cause a substantial adverse change in the significance of a Tribal cultural resource is a project that may have a significant effect on the environment.” Lead agencies are further directed to avoid damaging effects to Tribal cultural resources, when feasible. If measures are not otherwise identified in consultation with affected Tribes to mitigate a substantial adverse change to a Tribal cultural resource, the examples of measures provided in Public Resources Code section 21084.3 may be considered, if feasible. An impact to Tribal cultural resources would be significant if:

- The project would cause a substantial adverse change in the significance of a Tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:
    - Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1, subdivision (k), or
    - A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

4.6.4 Environmental Impact Analysis and Mitigation

Potential direct and indirect construction-related impacts on Tribal cultural resources are evaluated below. This includes a review of impacts on archaeological resources, which may or may not qualify as a Tribal cultural resource.

ENVIRONMENTAL IMPACT ANALYSIS

Impact TCR-1: Impacts to Previously Identified or Unidentified Tribal Cultural Resources from Project Implementation

The proposed well remediation and abandonment activities would not directly affect any known or suspected Tribal cultural resources **(Less than Significant with Mitigation)**.

Impact Discussion

Although there are no identified Tribal cultural resources present within the overall Project area, implementation of Mitigation Measure (MM) CR-1 would ensure that staging and offshore activities for other legacy wells would avoid unidentified onshore and offshore Tribal cultural resources. Given the absence of any other known Tribal cultural resource, the Project would not have the potential to directly affect Tribal cultural resources, and there would be less than significant.

Mitigation Measures

MM CR-1. Pre-Construction Review of Legacy Well Abandonment and Remediation Plans (see ~~s~~Section 4.5, *Cultural Resources*).

Impact TCR-2: Impacts to Tribal Cultural Resources Due to Construction-Related Oil Spill Risks

Well remediation and abandonment activities could result in a temporary release of crude oil that could impact Tribal cultural resources **(Less than Significant with Mitigation)**.

Impact Discussion

As described in Section 4.5, *Cultural and Paleontological Resources*, archaeological resources, which may or may not qualify as a Tribal cultural resource, could be impacted in the event of an oil spill. Impacts would include direct oiling or tarring of cultural resources. In addition, cleanup activities, particularly those involving use of heavy equipment, could cause indirect impacts to such cultural resources. Implementation of MM CR-2, Prepare a Spill Response Plan for Archaeological Resources, and MM TCR-2 will ensure adequate spill response to preserve Tribal cultural resources and reduce the risk to known and undiscovered resources to a less than significant level.

Mitigation Measures

MM CR-2. Prepare a Spill Response Plan for Archaeological Resources. See Section 4.5, *Cultural Resources*.

MM TCR-2. Incorporate Coordination with Native American Tribes into the Spill Response Plan for Archaeological Resources. During development of the Spill Response Plan for Archaeological Resources (MM CR-2), a protocol shall be incorporated regarding coordination with Native American Tribes culturally affiliated with the Project area prior to the commencement of Project activities as well as a protocol to notify Tribal designees within 48 hours of a spill emergency, consistent with the California State Land Commission's (CSLC) Tribal Consultation Policy.

4.6.5 Summary of Proposed Mitigation Measures

Table 4.6-1 provides a summary of the mitigation measures proposed for potential Project impacts.

Table 4.6-1. Tribal Cultural Resources Impact/Mitigation Summary

Impact	Mitigation Measures
TCR-1: Impacts to Previously Identified or Unidentified Tribal Cultural Resources from Project Implementation	**CR-1.** Pre-Construction Review of Legacy Well Abandonment and Remediation Plans
TCR-2: Impacts to Tribal Cultural Resources Due to Construction-Related Oil Spill Risks	**CR-2.** Prepare a Spill Response Plan for Archaeological Resources **TCR-2.** Incorporate Coordination with Native American Tribes into the Spill Response Plan for Archaeological Resources

4.6.6 Cumulative Impacts

For Tribal cultural resources, the geographic extent of cumulative impacts encompasses a relatively broad area because the importance of any individual resource can only be judged in terms of its regional context and relationship to other resources. Thus, the significance of cumulative impacts on any given resource or group of resources must be examined in light of the integrity of the regional resource base. Because the number of Tribal cultural resources is finite, limited, and non-renewable, any assessment of cumulative impacts must take into consideration the Project's contribution to cumulative impacts on resources within the Project area; the extent to which those impacts degrade the integrity of the regional resource base; and impacts other projects may have on the regional resource base. If these effects, taken together, result in a collective degradation of the resource base, then those impacts are considered cumulatively considerable.

Section 3, *Cumulative Projects*, identifies projects that are either reasonably foreseeable or are expected to be constructed or operated during the Project life. Industrial projects that would increase oil spill risks to the marine environment include the Carpinteria Offshore Field Redevelopment and Paredon projects. Each project, individually, would involve oil development and transportation of increased oil volumes within the marine environment and would increase the cumulative spill risk to the same marine environment that could be impacted by the Project. However, because no known Tribal cultural resources have been identified in the Project area that could be affected by the Project or an oil spill, the Project is not expected to contribute to cumulative impacts to these resources. Therefore, the Project would not represent a cumulatively considerable contribution to any significant cumulative impact.

4.7 GEOLOGY AND SOILS

This section discusses geological resources in the Project vicinity, evaluates the type and significance of impacts that may occur as a result of the Project, and identifies measures to avoid or substantially lessen any impacts found to be potentially significant. The analysis is based on a review of publicly available information, which is incorporated by reference, on the geology of the Summerland Oil Field, natural gas seeps, and other geological resources and does not include design-level engineering geology or geotechnical investigations, subsurface explorations, or laboratory testing. Primary Project activities are short-term and temporary and would occur mostly offshore along Summerland Beach with the use of a jack-up barge raised over the well to perform the well abandonment and remediation operation. The primary areas of focus of this geologic analysis are Summerland Beach and Lookout Park.

4.7.1 Environmental Setting

4.7.1.1 Physiography and Stratigraphy

The Becker onshore well is located in the surf zone adjacent to Lookout Park at the western end of Summerland Beach, approximately 100 feet south of the base of the coastal bluffs, a location that is only accessible at extremely low tide. Based on the Phase I assessment performed in October 2015, the top of the Becker well casing is approximately 4 feet below the surface of the beach. Additional legacy wells, which may also leak oil and may need to be re-abandoned, are located in the Becker well vicinity as close as 75 feet from the Becker well and some 3,600 to 3,800 feet to the east.

The surficial geology consists of marine nearshore deposits, which are predominately sand at the surface (Johnson et al. 2013) with underlying sandstone bedrock. Lookout Park is located on marine terrace deposits that consist of moderately consolidated gravel, sand, and silt deposited as marine intertidal, beach, and estuarine deposits (Minor et al. 2009). Beneath the marine nearshore deposits are alternating clay and sand beds of the Pleistocene-age Casitas Formation. Natural oil seeps at Summerland Beach and elsewhere along the south coast of Santa Barbara County are common. Oil in the Summerland Oil Field is trapped within the sand beds of the Casitas Formation by impermeable clay layers. Oil in the Casitas formation is shallow, at an average depth of 140 feet (Division of Oil, Gas, and Geothermal Resources [DOGGR] 1992), this formation is underlain by the Miocene-age Rincon Shale which is generally impermeable and caps the underlying Oligocene-age Vaqueros formation. Oil has also been found in the Vaqueros Formation at an average depth to oil of 1,400 feet in the Summerland Oil Field (DOGGR 1992).

4.7.1.2 Soils and Soil-Related Hazards

Land surrounding the area of primary Project activities consist of Coastline Beaches bordered by a variety of soil types. Soils bordering the beaches around the Project ~~area~~ site are Diablo clay, with 9 to 15 percent slope, and Milpitas-Positas fine sandy loam, with 15 to 30 percent slope and eroded. The Diablo series soils are well-drained, formed in soft shale and mudstone, with slight to moderate erosion hazards The Milpitas and Positas series soils are moderately well-drained, form from mixed alluvium, with moderate to severe erosion hazards (U.S. Department of Agriculture [USDA] 2017).

The Summerland Community Plan (County of Santa Barbara 2017) indicates that some soil types present at the Project ~~area~~ site (Diablo, Milpitas, and Positas) could have geologic problems with high expansion potential. These classifications are based on the presence of smectites (a clay mineral group) in study area soils. The presence of expansive soils does not by itself constitute a geologic hazard. The hazard arises when clay minerals with expansive potential are constantly subjected to periods of wetness and periods of dryness. Structures in these areas can be damaged due to shrinking and swelling of the clay minerals in soil beneath their foundations.

4.7.1.3 Faulting and Seismicity

The Summerland area is located in the Western Transverse Ranges, a seismically active region of Southern California. Summerland Beach is located within the Santa Barbara Fold Belt, a series of linear tectonic folds that parallel the coastline and include buried reverse faults that have deformed late Pleistocene/Holocene marine terraces, terraces deposits, and alluvial fans (Keller and Gurrola 2000). Both active and potentially active faults are present in the Project area as shown in Table 4.7-1, which provides the estimated distances and maximum earthquake magnitudes from the faults.

Table 4.7-1. Active and Potentially Active Faults in the Vicinity of Project Area

Fault	Distance[1] (miles)	Maximum Earthquake Magnitude (Mw) (SCEDC 2013)
Arroyo Parida Fault	0.4	6.5 to 7.3
Mesa-Rincon Creek	1.25	6.0 to 7.0
Red Mountain	2.2	6.0 to 6.8
Santa Ynez (East)	5.2	6.5 to 7.5
Ventura-Pitas Point	8.2	6.0 to 6.8
Oak Ridge (Blind Thrust Offshore)	12.7	6.5 to 7.5
Santa Cruz Island	30	6.5 to 7.5
San Andreas - Whole	36	6.8 to 8.0

Earthquakes within the past 50 years occurred in 1978 (offshore North Channel Fault, magnitude 5.9) and 2004 (Isla Vista, magnitude 4.4) (U.S. Geologic Survey [USGS] 2014). Based on the USGS (2015) Uniform California Earthquake Rupture Forecast, which estimates the probability of occurrence of large magnitude earthquakes for all of

California, the likelihood of a magnitude 6.7 or larger quake occurring in Southern California within the next 30 years is 93 percent, and the average number of years between earthquakes of magnitude 6.7 or higher is 12 years.

4.7.1.4 Tsunamis

Tsunamis are long period waves generated by impulsive geophysical events such as submarine earthquakes, coseismal coastal or submarine landslides, and volcanoes. For planning purposes, the County of Santa Barbara Planning and Development (2015) recommends that a conservative elevation contour of 40 feet be used to establish the tsunami risk limit. Based on this contour, Lookout Park would be beyond the risk of tsunami, but a major tsunami in the area would likely impact all of Summerland Beach up to the coastal bluff (CEMA/CGS/USC 2009), including the Project ~~area~~ site.

4.7.1.5 Coastal Process Hazards

Erosion and scour, while ongoing and naturally occurring in a beach environment, can be affected by human-induced changes, including changes to topography; addition of structures, roads, and artificial fill; or other disturbances to the existing natural setting as well as changes in coastal processes as a result of climate change. In areas of increased scour, a net increase in removal of beach sand could occur (Keller and Gurrola 2000). Sea-level as a result of climate change is discussed in Section 8, *Other Commission Considerations*.

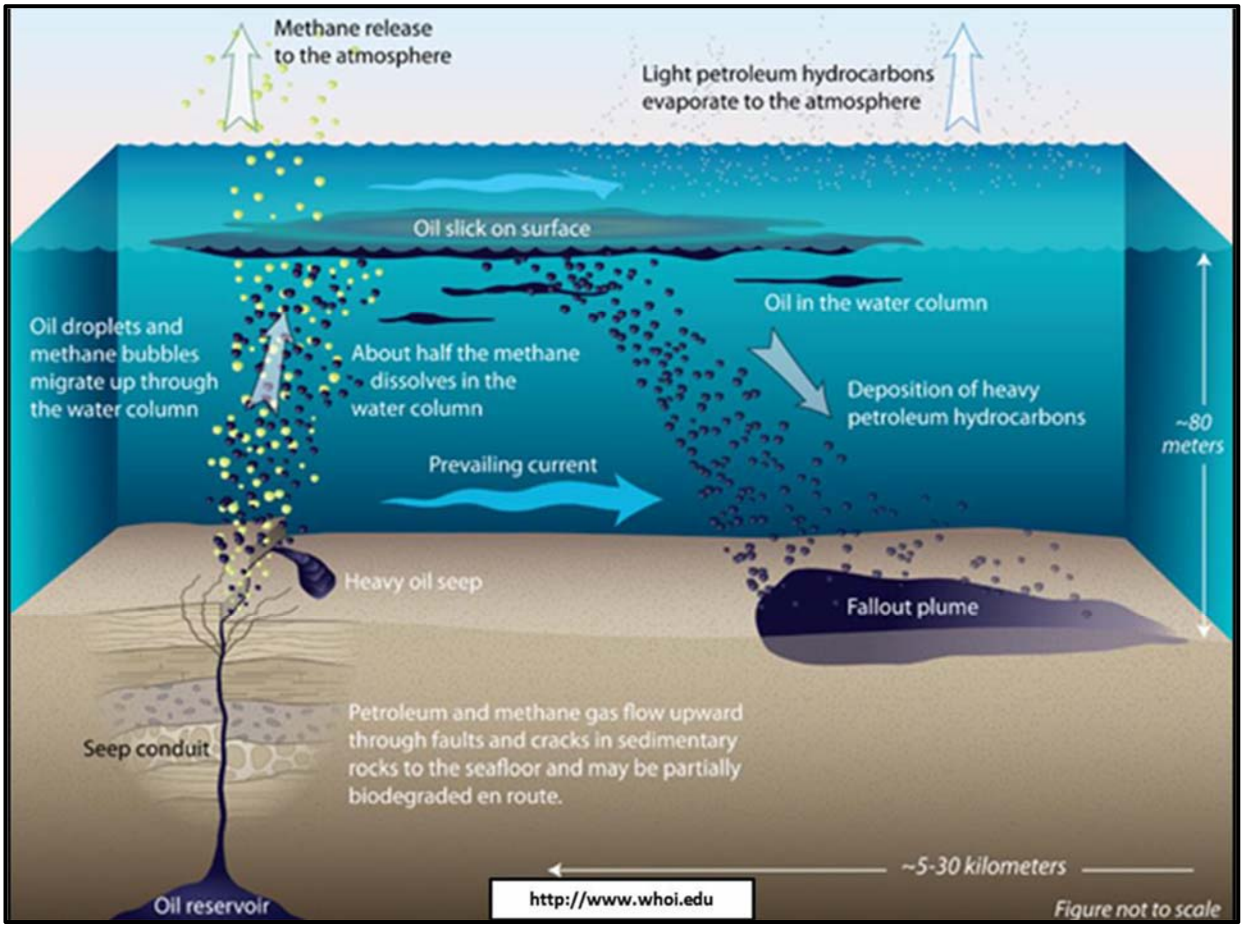
4.7.1.6 Natural Oil and Gas Seeps

Natural oil seeps occur extensively in offshore waters along the Santa Barbara coast. Up to 2,000 natural oil seeps have been documented from Point Conception to Rincon Point. Seep hydrocarbons are released gradually throughout the marine environment, including the sea floor, water column, sea surface, and shoreline (County of Santa Barbara Energy Division 2002). Natural gas components (primarily methane) rise to the sea floor and dissolve in the water column or reach the surface and evaporate; other hydrocarbons form slicks on the surface or fall to the seafloor creating tar over time (see Figure 4.7-1).

Sampling and geochemical analysis of beach tar balls and oil from offshore drilling platforms have been completed along the coast from Santa Barbara north to Point Sal (Lorenson 2004). All beached tar balls in the Santa Barbara Channel share geochemical characteristics of typical source rock in the near-surface Monterey Formation, which contains heavy, low-grade petroleum that formed under low thermal maturity conditions.

Oil entering the ocean naturally through seeps does not degrade open ocean water quality as severely as an accidental oil spill, which would cause the most degradation to water quality during and for a few weeks after each spill. The effects of accidental oil spills are discussed further in Section 4.1, *Hazardous Materials and Risk of Upset*, Section 4.3, *Air Quality*, Section 4.8, *Greenhouse Gas Emissions,* and Section 4.4, *Biological Resources.*

Figure 4.7-1. Schematic Depiction of a Natural Seafloor Oil Seeps



Source: WHOI 2014.

4.7.2 Regulatory Setting

The primary federal and state laws, regulations, and policies that pertain to the Project are summarized in Appendix A. Local policies are summarized below.

4.7.2.1 Santa Barbara County

Conformance with the County of Santa Barbara's Grading and Building Codes are considered generally satisfactory (by the County), with respect to geologic hazards; however, select amendments are recommended in the County General Plan Seismic Safety and Safety Element (County of Santa Barbara 2015). This document recommends that an adequate site-specific investigation be performed where the possibility of soil or geologic problems exist.

4.7.3 Significance Criteria

Impacts related to geology and soils would be considered significant if the Proposed Project:

- Results in substantial adverse effects involving rupture of a known earthquake fault;
- Results in substantial adverse effects from seismically induced groundshaking or seismically induced ground failures such as landslides or liquefaction related phenomena;
- Exacerbates any existing geologic hazard;
- Results in substantial adverse effects related to construction triggered slope instability, such as landslides; or
- Results in construction-triggered or accelerated soil erosion or loss of topsoil.

4.7.4 Environmental Impact Analysis and Mitigation

In accordance with the California Supreme Court's decision in December 2015 in *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal. 4th 369, 386, this analysis focuses on the Project's potential to trigger geologic hazards affecting others based on site-specific information described in the Environmental Setting section above. The Court held that

> *[A]gencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents. But when a proposed project risks exacerbating those environmental hazards or conditions that already exist, an agency must analyze the potential impact of such hazards on future residents or users. In those specific instances, it is the project's impact on the environment — and not the environment's impact on the project — that compels an evaluation of how future residents or users could be affected by exacerbated conditions."*

ENVIRONMENTAL IMPACT ANALYSIS

Impact GEO-1: Potential Increase in Instability in Soils, Seismic Related Activities and Substantial Soil Erosion

Project activities have the potential to cause instability in soils or potential soil erosion during the construction or well abandonment activities **(Less than Significant)**.

Impact Discussion

The Project will result in temporary work conducted on sand surrounding the Becker well and other legacy wells to be plugged and abandoned. This area is subject to tidal influences and would likely return to its normal configuration shortly after the end of the temporary work and no impact is expected.

Although the Project is located in an area that is subject to seismic hazards and seismically-induced hazards, such as earthquakes, ground shaking, and tsunami, the proposed plugging and abandonment activities will not induce any seismic movements or result in any additional ground shaking that would have effects outside of the Project ~~area~~ site. Similarly, the plugging and abandonment of the well will be done in accordance with existing standards which would reduce the susceptibility of an oil spill as a result of any ground shaking once the Project is completed.

In order to access the well area to be abandoned, some disruption of soils will occur, including excavation to remove sand cover from the well to be abandoned and some final recontouring of the site. The Project ~~areas are~~ site is located below the bluffs, which may be susceptible to moderate soil stability impacts; however, the Project will occur on the beach areas and not affect any areas with slopes. Ultimately, the various plugging and abandonment activities are not expected to adversely affect existing geological conditions of the Project area because they are all considered to be short term.

Mitigation Measures

No mitigation measures are recommended.

4.7.5 Summary of Proposed Mitigation Measures

Table 4.7-2 summarizes the mitigation measures proposed for potential Project impacts.

Table 4.7-2. Geology and Soils Impact/Mitigation Summary

Impact	Mitigation Measures
GEO-1: Potential Increase in Instability in Soils, Seismic Related Activities and Substantial Soil Erosion	None recommended

4.7.6 Cumulative Impacts

Project implementation is not anticipated to add to the cumulative impacts from geologic hazards of other projects in the area. No new structures are proposed and the proposed repair work would result in structural improvements to the existing subsurface Becker or legacy wells. In addition, any past, present or proposed structural development would be subject to California Building Code requirements and would be completed in accordance with recommendations by a licensed geotechnical engineer and the County of Santa Barbara Building and Safety Division and Planning and Development Department. Therefore, impacts to geology and soils associated with cumulative projects in the Project area would generally be site-specific and less than significant.

4.8 GREENHOUSE GAS EMISSIONS

This section evaluates the potential for the proposed Project to generate greenhouse gas (GHG) emissions, either directly or indirectly, within the Project area. Specifically, this section describes expected impacts associated with GHG emissions from Project activities, equipment and scheduling and evaluates the significance of those impacts relative to the existing setting. Potential air quality impacts are discussed in Section 4.3, *Air Quality*. The section begins with a discussion of GHG science and the existing GHG setting within the Project area. Following that discussion, the section includes a listing of significance criteria, assesses potential GHG effects from proposed Project activities, and identifies feasible mitigation measures (including Applicant Proposed Measures) that would reduce or avoid potentially significant impacts.

4.8.1 Environmental Setting

4.8.1.1 Introduction

GHGs are defined as any gas that absorbs infrared radiation in the atmosphere. GHGs include, but are not limited to, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3). These GHGs lead to the trapping and buildup of heat in the atmosphere near the earth's surface, commonly known as the greenhouse effect. There is overwhelming scientific consensus that human-related emissions of GHGs above natural levels have contributed significantly to global climate change by increasing the concentrations of the gases responsible for the greenhouse effect, which causes atmospheric warming above natural conditions.

According to the National Oceanic and Atmospheric Administration (NOAA), the atmospheric concentration CO_2 measured at Mauna Loa, Hawaii in May 2016 was 407.70 parts per million (ppm) (NOAA 2017b) compared to the pre-industrial levels of 280 ppm +/- 20 ppm (Intergovernmental Panel on Climate Change [IPCC] 2007). NOAA's Mauna Loa data also show that the mean annual CO_2 concentration growth rate is accelerating, where in the 1960s it was about 0.9 ppm per year and in the first decade of the 2000s it was almost 2 ppm per year, and from May 2015 to May 2016 it was nearly 4 ppm. Because GHG emissions are known to increase atmospheric concentrations of GHGs, and increased GHG concentrations in the atmosphere exacerbate global warming, a project that adds to the atmospheric load of GHGs adds to the problem. As a result, in order to avoid disruptive and potentially catastrophic climate change, annual GHG emissions must not only stabilize, but in fact must be substantially reduced. The impact to climate change due to the increase in ambient concentrations of GHGs differ from criteria pollutants (see Section 4.3, *Air Quality*), in that GHG emissions from a specific project do not cause direct adverse localized human health effects. Rather, the direct environmental effect of GHG emissions is the cumulative effect of an overall increase in global temperatures, which in turn has numerous indirect effects on the environment and humans.

The IPCC completed a Fifth Assessment Report (AR5) in 2014 that contains information on the state of scientific, technical, and socio-economic knowledge about climate change. The AR5 includes working group reports on basics of the science, potential impacts and vulnerability, and mitigation strategies.[1] Global climate change has caused physical, social, and economic impacts in California, such as land surface and ocean warming, decreasing snow and ice, rising sea levels, increased frequency and intensity of droughts, storms, and floods, and increased rates of coastal erosion. In its Climate Change 2014 Synthesis Report, which is part of the AR5, the IPCC (2014) notes:

> *Human influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gases are the highest in history. Recent climate changes have had widespread impacts on human and natural systems…warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, and sea level has risen.*

The potential of a gas or aerosol to trap heat in the atmosphere is called global warming potential (GWP). The GWP of different GHGs varies because they absorb different amounts of heat. CO_2, the most ubiquitous GHG, is used to relate the amount of heat absorbed to the amount of the gas emissions; this is referred to as CO_2 equivalent (CO_2e). CO_2e is the amount of GHG emitted multiplied by the GWP. The GWP of CO_2, as the reference GHG, is 1. Methane has a GWP of 25; therefore, 1 pound of methane equates to 25 pounds of CO_2e. Table 4.8-1 shows a range of gases with their associated GWP, their estimated lifetime in the atmosphere, and the GWP over a 100-year timeframe (per federal and state reporting requirements).

Table 4.8-1. Global Warming Potential of Various Gases

Gas	Life in Atmosphere (years)	100-year GWP (average)
Carbon Dioxide	50-200	1
Methane	12	25
Nitrous Oxide	120	298
HFCs	1.5-264	12-14,800
Sulfur Hexafluoride	3,200	22,800

Source: U.S. Environmental Protection Agency (USEPA) 40 [CFR] Part 98, Subpart A, Table A-1, effective January 1, 2015. (USEPA 2017) The 40 CFR Part 98 approach is used to estimate GHG emissions per million British Thermal Units, assuming 99.9 percent combustion efficiency (Appendix E).
Note: GWP = global warming potential; HFC = hydrofluorocarbon.

Before discussing the treatment of GHG emissions in this document, it is important first to establish the relevant context given by emission inventories and projections.

[1] For additional information on the Fifth Assessment Report, see https://www.ipcc.ch/report/ar5/.

According to the Emission Database for Global Atmospheric Research (European Commission 2016), the estimated global emissions in 2012 were 53,937 million metric tons of CO_2e ($MMTCO_2e$), and the U.S. Environmental Protection Agency (USEPA 2014) estimates United States emissions were approximately 6,525 $MMTCO_2e$. In California, the California Air Resources Board (CARB) is the primary agency responsible for providing information on implementing the GHG reductions required by the State pursuant to Assembly Bill (AB) 32 (CARB 2014), the Global Warming Solutions Act of 2006, and its 2016 update, Senate Bill (SB) 32. Together, these laws require CARB to develop regulations that reduce GHG emissions to 1990 levels by 2020 and to 40 percent below 1990 levels by 2030. CARB developed and approved its first Scoping Plan, describing its approach to meeting the AB 32 goal, in 2008. With enactment of SB 32, CARB (2017c) is undertaking a 2017 Climate Change Scoping Plan Update. In addition to the Scoping Plan, CARB maintains an online inventory of GHG emissions in California. The most recent inventory, released in June 2016, includes emissions from 2000 to 2014. This inventory is an important companion to the Scoping Plan because it documents the historical emission trends and progress toward meeting the 2020 and 2030 targets, which are 431 $MMTCO_2e$ and 260 $MMTCO_2e$, respectively.

In order to monitor the State's emission reduction progress, the Scoping Plan includes a modeled reference scenario, or "business as usual" (BAU) projection, which estimates future emissions based on current emissions, expected regulatory implementation, and other technological, social, economic, and behavioral patterns. Prior BAU emissions estimates assisted CARB in demonstrating progress toward meeting the 2020 goal of 431 MMTCO2e. The 2030 BAU reference scenario was modeled for the 2017 Scoping Plan Update, representing the forecasted state GHG emissions with existing policies and programs but without additional action beyond that to reduce GHGs. This modeling shows that the State is expected to achieve the 2020 target but that a significant increase in the *rate* of GHG reductions will need to be realized in order to meet the 2030 and 2050 targets (CARB 2017c).[2]

4.8.1.2 National

The primary source of GHG in the United States is energy-use related activities, which include fuel combustion and energy production, transmission, storage and distribution. Energy related activities generated 84 percent of the total U.S. emissions in 2012. Fossil fuel combustion represents the vast majority of the energy related GHG

[2] CARB (2017c) recommends that local governments aim to achieve a community-wide goal to achieve emissions of no more than 6 MTCO2e per capita by 2030 and no more than 2 MTCO2e per capita by 2050. These goals are appropriate for the plan level (e.g., city, county, subregional, or regional), but not for specific individual projects because they include all emissions sectors in the State.

emissions, with CO_2 being the primary GHG. The United States, which has about 4.4 percent of the global population, emits roughly 12 percent of all global GHG emissions.

4.8.1.3 State

California, which has approximately 0.51 percent of the global population, emits less than 0.85 percent of the total global GHG emissions, which is approximately 40 percent lower per capita than the overall U.S. average. Despite growing population and gross domestic product (GDP), gross GHG emissions continue to decrease, as do emissions per capita (per capita emissions have dropped from 14 tons to 11.4 tons), exhibiting a major decline in the “carbon intensity” of the State’s overall economy. The transportation sector remains responsible for the largest share of GHG emissions in the 2016 Inventory, accounting for approximately 36 percent of the total. While transportation and electric power sector emissions are decreasing year to year, other sectors have been flat or rising slightly (CARB 2016). Since its 2004 peak, the State has reduced its total annual emissions by 9.4 percent; transportation sector emissions are 13 percent lower.

Even though California is aggressively moving to reduce its annual GHG emissions, it is already experiencing the effects of GHG-related climate change, which is a relevant aspect of the environmental setting. A 2013 report entitled *Indicators of Climate Change in California* (Office of Environmental Health Hazard Assessment [OEHHA] 2013) concludes that the changes occurring in California are largely consistent with those observed globally. These climate change indicators show the following:

- Annual average temperatures in the State are on the rise, including increases in daily minimum and maximum temperatures.
- Extreme events, including wildfire and heat waves, are more frequent.
- Spring runoff volumes are declining as a result of a diminished snowpack.
- The number of “winter chill hours” – crucial for the production of high-value fruit and nut crops – are declining.
- Species are on the move, showing up at different times and locations than previously recorded, including both flora and fauna at higher elevations.

4.8.1.4 Local

The Santa Barbara County Climate Action Strategy included a Climate Action Study that was released September 2011 and addresses GHG emissions from implementation, municipal operations, and County-wide operations. Total GHG emissions were estimated at approximately 1.5 million tons in 2007. GHG emissions are generally classified as direct and indirect. Direct emissions for the proposed Project are associated with the production of GHG emissions in the immediate Project area and include combustion of natural gas, combustion of fuel in engines and construction vehicles, and fugitive emissions from valves and connections of equipment used during Project implementation or throughout the Project life. Indirect emissions include emissions from electrical generation and offsite vehicles. Current emissions of GHG are associated with leakage of gas from the Becker and legacy wells. Specific quantities of gas released have not been quantified, but due to the odors emanating from the released crude oil and associated gases, some GHG gases most likely are being released to the environment due to the leakage from the wells, but this level would most likely be small due to the heavy oil and minimal gas levels.

In contrast with prior year inventory reports, the 2016 Inventory reclassifies petroleum seeps as "excluded emissions" because petroleum seeps are a natural emission source. The IPCC Guidelines do not identify petroleum seeps as an emission source to be quantified, nor are they included in USEPA's national GHG inventory. CARB's reclassification of 0.6 $MMTCO_2e$ of emissions in California from petroleum seeps as "excluded" emissions is therefore consistent with the IPCC framework and the inventories of USEPA and other nations. Petroleum seeps emissions will continue to be accounted for as a separate informational item in the "excluded" inventory.

4.8.2 Regulatory Setting

Appendix A summarizes relevant federal and state laws, regulations, and policies related to GHG emissions. Local requirements are discussed below.

4.8.2.1 Santa Barbara County Association of Governments (SBCAG)

The SBCAG Final Sustainable Communities Strategy (approved by CARB in November 2013) is part of the Regional Transportation Plan. The Strategy's implementation goal in the region is a 10.5 percent per capita passenger vehicle GHG reduction in 2020, and a 15.4 percent reduction in 2035, exceeding established targets.

4.8.2.2 Santa Barbara County Climate Action Strategy

Pursuant to Santa Barbara County Board of Supervisors' Resolution 09-059 (March 2009), the County developed a two-phase Climate Action Strategy "to take immediate, cost effective, and coordinated steps to reduce the County's collective GHG emissions." The Phase 1 Climate Action Study included: a GHG inventory and forecast for the unincorporated County, a discussion of GHG emission reduction target options that the County could pursue, a list of current County activities that reduce GHG emissions, evaluation of potential additional emission reduction measures that the County could implement, and recommendations to implement the study through an Energy and Climate Action Plan (ECAP) to be developed in Phase 2. The ECAP sought to reduce County GHG emissions by implementing selected programs with the goal of achieving a GHG reduction target to be selected by the Board as part of the ECAP. In March 2013, the Board endorsed a 15 percent GHG reduction target by the year 2020. In May 2015, the Board adopted the ECAP (County of Santa Barbara Long Range Planning Division 2015) including a GHG reduction strategy, County government reductions, implementation and issues related to beyond 2020.

4.8.2.3 South Coast AQMD and Ventura County APCD

Delivery and removal of the Project's cofferdam and abandonment equipment and materials would require three round trips between the Port of Long Beach (POLB), including waters offshore Los Angeles and Ventura Counties, and the Project site in Santa Barbara County. On each trip, the barge would be loaded at the POLB with the equipment and materials necessary for that phase of the operation. Upon completion, the barge would be towed back to the POLB to prepare for the next Project phase. The duration of all construction activities would be approximately 3 weeks.

On April 30, 2015, the Ventura County APCD updated its Environmental Review Guidelines to include guidance for evaluating the significance of the impacts of GHGs from new or modified stationary sources. The APCD guidelines indicate that a project would be less than significant if it emits less than the screening significance level of 10,000 $MTCO_2e$ or shows compliance with an approved GHG-emission reduction plan or GHG mitigation program that avoids or substantially reduces GHG emissions.

Project GHG emissions at the POLB and offshore Los Angeles County are within the jurisdiction of the South Coast Air Quality Management District (SCAQMD). In 2008, the SCAQMD Governing Board adopted an interim GHG significance threshold of 10,000 $MTCO_2e$/year for projects where the SCAQMD is lead agency.

4.8.3 Significance Criteria

The criteria for determining the significance of impacts for this analysis are based on the State CEQA Guidelines Appendix G checklist, specifically if the Project would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions

In 2015, the County of Santa Barbara Board of Supervisors adopted a GHG threshold of 1,000 MTCO2e annually for all industrial/stationary-source projects. The County's Environmental Thresholds and Guidelines Manual (County of Santa Barbara 2015) was also amended to include new thresholds. The more conservative Santa Barbara County GHG thresholds (1,000 MTCO2e versus 10,000 MTCO2e) are used in this EIR.

4.8.4 Environmental Impact Analysis and Mitigation

State CEQA Guidelines section 15064.4 offers direction to lead agencies on how to evaluate GHG emissions and determine significance. Specifically, the Guidelines state that GHG significance determinations call for "careful judgement" by the lead agency, and that to the extent feasible, agencies should "describe, calculate, or estimate the amount of [GHG] emissions" based on either a modeled quantification or a qualitative, performance-based standard. Consistent with this guidance, the CSLC calculated expected emissions from Project-related activities using the CalEEMod (version 2016.3.1) model for on-site emissions, barge tug emissions based on EPA Tier requirements and the EMFAC 2014 Model (for Santa Barbara County) for on-road transportation emissions, as depicted in Appendix E.

Project construction and operations would produce GHG emissions from Project construction equipment, including emissions from fuel combustion in boats and construction equipment, and from offsite mobile emissions. Quantification of the GHG emissions associated with the Project involves estimating the amount of fuel use for the construction activities and utilizing conversion factors to estimate GHG emissions.

ENVIRONMENTAL IMPACT ANALYSIS

Impact GHG-1: GHG Emissions from Project Activities

Construction activities associated with the Project would increase GHG emissions **(Less than Significant)**.

Impact Discussion

Emissions of GHG would be associated with short-term fuel use by construction equipment (e.g., cranes, well abandonment equipment), by tug boats and supply/crew boats, and by transportation of employees and materials to and from the Project site. Of the Project elements contributing to GHG emissions, the tug boats used to transport the barge to and from the Project site and the supply/crew boats would contribute the highest level of emissions.

Appendix E presents detailed calculations of GHG emissions. Total emissions would equal 302 $MTCO_2e$ in all counties, with a total of 112 $MTCO_2e$ in Santa Barbara County, 81 $MTCO_2e$ in Ventura County and 109 $MTCO_2e$ within the SCAQMD's jurisdiction (which includes, but is not limited to coastal Los Angeles County). These emissions are well under the Santa Barbara County GHG threshold of 1,000 $MTCO_2e$ and Ventura County and SCAQMD thresholds of 10,000 $MTCO_2e$. The emissions are also extremely small compared to the 2014 water-borne emissions (transportation sector) of 3.95 $MMTCO_2e$ (CARB 2016). Over the long-term, GHG emissions would be reduced as a result of well abandonment and remediation as gas emissions and leakage would be reduced, although the level of reduction in GHG emissions would likely be low. The emission levels of GHG associated with Project construction would therefore be less than significant.

Mitigation Measures

No mitigation measures are recommended.

Impact GHG-2: Consistency with Applicable GHG Plan, Policy, or Regulation

GHG emissions resulting from Project activities would not conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHG **(Less than Significant).**

Impact Discussion

As stated above, both SBCAG and the County of Santa Barbara have adopted GHG reduction policies. Because the Project consists entirely of temporary construction for the abandonment activities and total emissions are 11 percent of the threshold emissions level for Santa Barbara County and approximately one percent of the threshold emissions level for Ventura and SCAQMD jurisdictions, the Project would not conflict with the SBCAG Sustainable Communities Strategy or the Santa Barbara County Climate Action Strategy GHG reduction policies or goals. As provided above, the long-term GHG emissions would be reduced as a result of well abandonment and remediation as gas emissions and leakage would be reduced, although the level of reduction in GHG emissions would likely be low.

Mitigation Measures

No mitigation measures are recommended.

4.8.5 Summary of Proposed Mitigation Measures

Table 4.8-2 provides a summary of the mitigation measures proposed for potential Project impacts.

Table 4.8-2. GHG Impact/Mitigation Summary

Impact	Mitigation Measures
GHG-1: Increased GHG Emissions from Project Activities	None recommended
GHG-2: Consistency with Applicable GHG Plan, Policy, or Regulation	None recommended

4.8.6 Cumulative Impacts

Climate change under CEQA differs from most other types of impacts in that, by definition, it is a cumulative impact that results not from one project's GHG emissions, but rather from GHG emissions generated globally over decades by multiple sources. All other projects listed in Section 3.0, *Cumulative Projects*, and other projects in California, the U.S., and the world, potentially emit GHG emissions and contribute to cumulative impacts. This differs from criteria pollutant emissions, which have a local or regional impact only. Therefore, if Project GHG emissions are below the thresholds, then they have a less than significant cumulative impact.

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4.9 HYDROLOGY AND WATER QUALITY

This section describes the hydrology and water quality conditions in the Project area, evaluates the type and significance of potential impacts, including the effects of an accidental oil spill and those of cumulative projects, and identifies measures to avoid or substantially lessen any impacts found to be potentially significant. Potential impacts are evaluated based on anticipated changes to existing conditions. Where applicable, data and conclusions from Environmental Impact Reports (EIRs) prepared for other projects in the region are incorporated by reference and summarized where appropriate.

4.9.1 Environmental Setting

The Project area for hydrology and water quality conditions consists of nearshore waters at Summerland Beach and waters of the Santa Barbara Channel (Channel). Water quality has historically been adversely affected by ongoing leakage of crude oil and associated gases at the Becker and legacy wells and by natural seeps. As noted in Section 2.3.2, fresh oil and tar balls on Summerland Beach and oil/sheen visible in nearshore waters are often reported. Summerland Beach was closed in August 2015 for 4 days due to health concerns over oil on the beach.

The Project would not affect groundwater or surface waters of the adjacent watershed. The nearest municipal groundwater well to the Project site is 0.6 mile to the northeast. The nearest drainages to the Project site are Romero Creek and Toro Canyon, which outlet to the ocean approximately 1 mile west and 2 miles east of the Project site. The fate of any resuspended sediments or Project-related materials discharged or released to the ocean would be determined in part by nearshore current movements and waves.

4.9.1.1 Currents

Ocean currents and circulation in the Channel offshore of the Project area are part of the larger-scale California Current system, which is the eastern expression of the ocean-wide subtropical anticyclonic gyre in the Pacific Ocean. The California Current is a broad, slow-moving current with considerable meso-scale variability that brings cold, low-salinity, highly oxygenated water from the north. South of Point Conception, the California Current mixes with warmer, moderately saline, Central North Pacific water. Channel currents are influenced by large-scale processes that dominate the physical oceanographic conditions along the California coast, although the effects are somewhat decoupled by the Channel Islands and the basin-ridge topography of the Channel. Superimposed on these larger scale circulation patterns are smaller scale currents that are driven by localized wind, wave, and tidal conditions. These local current patterns would have the greatest influence on dispersion and transport of Project-related discharges, and would influence, for example, whether any floating construction debris would be transported towards or away from the shoreline.

4.9.1.2 Waves

Littoral processes and sediment transport are strongly affected by breaking wave heights and incident wave angles along the shoreline. The wave climate for the Channel is affected by the complex topography of the basins and ridges and the presence of the offshore islands, which tend to dissipate the wave energy farther offshore. Coastal areas within the Channel are more protected from wind and waves by the offshore features. Channel is susceptible to wave fronts from the west-southwest, southeast, and passages of the Channel Islands (wave windows). However, the east and west ends of the Channel are affected differently because of the protection provided by Point Conception, the length of the Channel (fetch), and the orientation of the Channel Island passages with respect to the mainland. Typically, waves approaching the coastline from the north will drive a southward alongshore current, while waves approaching from the south result in a northward alongshore current. Summerland Beach typically is protected from large waves due to the orientation of the coastline with respect to predominant wave directions, although wave heights vary seasonally in response to storms and wave direction. Local storms from the southeast generate wind waves (seas) over a fetch of 90 miles. These local waves have significant wave heights that range from 7.8 to 15.7 feet and generally occur in short periods (8 to 9 seconds).

4.9.1.3 Tides

Tides in the Santa Barbara area are mixed, semidiurnal with a range of up to 7 feet high tides and lows of -1.8 feet (see Appendix H). The tide enters the Channel via the southeast end, moves northward up the coast, and exits at the west end. Expected tidal-induced currents are approximately 3.93 inches per second (mean). However, constrictions between islands (passes) and regions near promontories and peninsulas (e.g., Point Conception) can be expected to accelerate tidal currents.

4.9.1.4 Hydrographic Conditions (temperature, salinity, stratification)

Hydrographic conditions in the Channel are subject to the influence of larger-scale oceanographic and seasonal patterns, precipitation, and runoff. The temperature gradient in the Channel varies seasonally in response to variations in upwelling-favorable winds and the Alongshelf Pressure Gradient. In spring, upwelled cold water may be transported eastward into the Channel. Subsequent warming associated with the reversal of flows allows greater penetration into the Channel by the warmer Southern California Bight waters. Typical average water temperatures range from approximately 13.5 degrees Celsius (°C) during late winter to 18°C in summer/fall. Surface water salinity also exhibits a seasonal pattern, with maximum values in summer and minimum values in winter. Surface salinity values range from 32.5 to 33.5 parts per thousand. During summer and fall, Southern California Bight waters typically are stratified, with rapid changes in temperature and density (thermocline/pycnocline) separating the warmer, surface mixed layer from the cooler, subsurface layers. The presence of strong stratification can act as a barrier to vertical dispersion of substances in the water column. Stratification weakens under the influence of upwelling events, seasonal cooling cycles, and storm-induced turbulence (Coastal Data Information Program [CDIP] 2015).

4.9.1.5 Dissolved Oxygen/pH

Variations in dissolved oxygen (DO) concentrations in the Channel reflect natural mixing and biological processes. Oxygen concentrations in surface waters typically decrease with depth, range from 6 to 9 milligrams per liter, and are at or exceed saturation. Maximum DO concentrations occur in June and July, while relatively lower levels occur during periods of spring upwelling.

Hydrogen ion concentrations (pH) are expected to range from 7.8 to 8.1. In general, pH levels in seawater are relatively uniform (with no large horizontal nor vertical variations nor seasonal trends expected) because seawater is a highly-buffered medium.

4.9.1.6 Light Transmittance/Turbidity

The relative amount of light transmitted through surface waters determines the depth of the euphotic or lighted zone in which photosynthesis by phytoplankton and attached algae occurs. Variations in the concentrations of suspended particulate matter, especially suspended sediments and plankton, greatly influence seasonal cycles in light transmittance in Channel waters. In general, greater turbidity accompanies higher suspended loads in nearshore waters, whereas there is increased light transmittance, along with lower suspended particulate concentrations, in offshore waters. The major sources of suspended particles are river and stream sediments discharged into Channel waters. Seasonal storms also contribute resuspended sediments to the water column. Water clarity typically decreases towards shore, which is a result of resuspension of surficial sediments by shoaling surface gravity waves. Conditions affecting resuspension of surficial sediments include sediment size distribution, flow velocity above the seafloor, surface roughness of the substrate, and sediment armoring. Once suspended, the aerial extent of turbidity impacts depends on the lateral flow speed and the settling rate of the suspended particulates, where settling rate is dependent on the size distribution of suspended material.

4.9.1.7 Petroleum Hydrocarbons

Petroleum hydrocarbons are organic contaminants that enter the ocean from natural oil seeps and as the result of human actions (i.e., oil spills; urban runoff containing oils, gasoline, diesel fuel, and tire particles; produced-water discharges; atmospheric deposition from the combustion of fossil fuels; vessel leaks, spills, and exhaust; leaching of creosote from wooden pilings; and oil and grease contained in municipal sewage effluent (Lorensen et al. 2009). Seeps are places in the ocean floor where hydrocarbon gases and fluids escape into the overlying waters and the atmosphere. Seeps releasing petroleum hydrocarbons are from a reservoir layer in which ancient carbon buried over geologic time eventually reaches sufficient pressure and temperature for conversion into petroleum. The liquid petroleum then penetrates the capping layer when that layer either erodes or is penetrated by faults and fractures that provide migration pathways for focused seepage. Natural oil seeps release an estimated 40 to 670 barrels of oil per day to the Channel.

Oil and gas leaks from legacy wells are another source of petroleum hydrocarbons. Measurements of oil and gas emissions at an abandoned well on the seabed along the historical location of the Treadwell Wharf were 2.4 and 38.7 liters per day, respectively, and seepage rates at the capped T-10 Well, located in approximately 16.4 feet of water, showed high correlation to tides (Leifer 2007). As noted in Section 2.3.2, Phase 2 of the 1994 USCG investigation noted that approximately 0.5 barrels (approximately 80 liters) per day of oil was leaking from the Becker well.

Hydrostatic pressure changes caused by tides have been shown to affect the emission of oil (Leifer 2007). Pressure changes due to swell coming in toward the beach from offshore affect emission rates on a shorter timescale. Under changing pressure conditions, higher hydrostatic pressure corresponds to higher emissions. Swell-induced changes in emissions are due to hydrostatic pressure changes and near-seabed fluid motion (surge). Although speculative, rain and the resulting onshore aquifer pressure due to recharge may also affect seepage. Because rock strata run under the Channel and are heavily fractured by faulting, pathways likely exist that allow hydraulic pressure to affect reservoir layers and migration pathways under the seep field.

Fresh oil from seeps rises on bubbles to the surface and forms slicks that drift under the effects of wind and currents. The physical and chemical properties of the oil are affected due to various “weathering” processes, such as evaporation and photolysis that transform the petroleum into a composite with different chemical and physical characteristics. Seep oil often spreads into bordering convergence zones, where it accumulates overnight (when surface conditions are calm) and is drawn off into long, thick brown slicks stretching many miles, generally parallel to the shoreline. During the following day, morning winds compress the slicks while pushing them shoreward. By late afternoon, weathering (sun and wind) causes the narrow, thick brown slicks (several millimeters) to form pancakes of brown mousse which then begin sinking, much of it several hundred feet offshore. After sinking, the oil’s fate remains unknown; it may disperse into a plume throughout the water column, be deposited into a seabed layer or into the sediment, or be transported onto area beaches. Seep oil also leads to formation of tarballs, which can subsequently be transported onto adjacent beaches (Lorensen et al. 2009). Thus, current marine water quality conditions at the Project site are substantially affected by ongoing petroleum seeps and leaks.

4.9.2 Regulatory Setting

The primary federal and state laws, regulations, and policies that pertain to the Project are summarized in Appendix A. Local policies are summarized below.

4.9.2.1 Santa Barbara County Fire Department (SBCFD)

As noted in Sections 4.1, *Hazardous Materials and Risk of Upset*, the Santa Barbara County Planning and Development Department is the overseeing agency for implementing local regulations in the event of a hazardous waste or petroleum spill.

4.9.2.2 County of Santa Barbara Coastal Land Use Plan (CLUP)

The County of Santa Barbara CLUP, which was adopted in 1982 and updated in 2014, includes the following coastal land use policies relevant to the Project:

- Policy 6-19: Unavoidable routing through recreation, habitat, or archaeological areas, or other areas of significant coastal resource value, shall be done in a manner that minimizes the impacts of a spill, should it occur, by considering spill volumes, durations, and trajectory. Appropriate measures for cleanup or structures such as catch basins to contain a spill shall be included as part of an oil spill contingency plan.
- Policy 9-11: Wastewater shall not be discharged into any wetland without a permit from the Regional Water Quality Control Board finding that such discharge improves the quality of the receiving water.

4.9.3 Significance Criteria

Impacts to hydrology and water quality would be considered significant if:

- The water quality objectives contained in the Water Quality Control Plan for the Central Coast or in the California Ocean Plan (SWRCB 2016) are exceeded;
- Project operations or discharges that change background levels of chemical and physical constituents or elevate turbidity producing long-term changes in the receiving environment of the site, area, or region, thereby impairing the beneficial uses of the receiving water occur; or
- Contaminant levels in the water column are increased to levels with the potential to cause harm to marine organisms.

4.9.4 Environmental Impact Analysis and Mitigation

Potential direct and indirect Project-related impacts to hydrology and marine water quality are evaluated below. As described in Section 2, *Project Description*, the proposed Project has incorporated design measures and standard best management practices (BMPs) to reduce potential direct and indirect Project-related impacts. Table 4.9-1 provides a summary of potential Project-related impacts and mitigation measures to address significant impacts. The proposed Project or its alternatives are not expected to affect hydrological conditions within the Project area or adjacent portions of the Channel. However, certain hydrological conditions, such as periods of large waves, could restrict Project operations and affect the completion schedule. Additionally, localized currents would affect dispersion and transport of any construction debris or other Project-related wastes that are accidentally discharged to the ocean during Project operations. Therefore, oceanographic processes are important considerations for assessing potential impacts from the proposed Project to marine resources.

ENVIRONMENTAL IMPACT ANALYSIS

Impact WQ-1: Impacts to Marine Water Quality from Inadvertent Oil Spill During Abandonment Operations

Accidental discharge of petroleum hydrocarbons into marine waters would adversely affect water quality **(Less than Significant with Mitigation)**.

Impact Discussion

Oil spills to the marine environment could degrade marine water quality. However, as discussed in Section 2, *Project Description*, meetings would be held before and during the execution of the Project to reduce the potential for the incidence of spills, including pre-job contractor meetings to review abandonment procedures and job responsibilities as well as daily safety meetings with all workers present. The contractor would also prepare and implement an oil spill contingency plan, a plan which provides guidance in the event of an oil spill on how to conduct response and notification procedures; describes roles and responsibilities; and lists response equipment inventories. Workers would be instructed on contingency procedures prior to the commencement of Project activities. The implementation of Applicant Proposed Measures (APMs) APM-2 and APM-3, and mitigation measures (MMs) HAZ-2a and HAZ-2b (see Section 4.1, *Hazardous Materials and Risk of Upset*) would further enhance spill readiness by incorporating contaminated sand handling measures, water handling measures, and barge system engineering measures and by increasing the availability of emergency response equipment. These measures would reduce the potential impacts to marine water quality to less than significant.

Mitigation Measures

Mitigation measures related to an oil release are included in Section 4.1, *Hazardous Materials and Risk of Upset*. The following APMs and MMs would apply:

- **APM-2. Barge System Engineering.**
- **APM-3. Emergency Response Equipment Availability.**
- **MM HAZ-2a. Removal of Contaminated Sands.**
- **MM HAZ-2b. Water Handling.**

Impact WQ-2: Marine Water Quality from Eliminating Becker Well Oil Releases

Abandonment and remediation activities would eliminate future oil releases **(Beneficial)**.

Impact Discussion

Oil is currently leaking from the abandoned Becker well into nearshore waters of Summerland Beach. The leaking oil increases petroleum hydrocarbon concentrations in ocean waters, forms a surface sheen that reduces light transmittance, and fouls the adjacent beach, representing a potential risk to public health and to wildlife (e.g., shorebirds). The proposed Project would permanently ~~cap~~ abandon the Becker well and eliminate or significantly reduce the magnitude and frequency of future oil releases. This would be a beneficial impact to marine water quality.

Other legacy wells in the historical nearshore Summerland Oil Field would also be plugged and abandoned as part of the Project, similarly reducing oil leaks. Releases from natural seeps in the area would continue. Therefore, the Project would not eliminate all oil and gas releases to the ocean. However, eliminating the Becker well releases and those from other legacy wells in the area would reduce the current volume of combined natural and anthropogenic inputs and would, therefore, represent an improvement to local marine water quality.

Mitigation Measures

No mitigation measures are recommended.

4.9.5 Summary of Proposed Mitigation Measures

Table 4.9-1 provides a summary of the mitigation measures proposed for potential Project impacts.

Table 4.9-1. Hydrology and Water Quality Impact/Mitigation Summary

Impact	Mitigation Measures
WQ-1: Impacts to Marine Water Quality from Inadvertent Oil Spill during Abandonment Operations	**APM-2.** Barge System Engineering **APM-3.** Emergency Response Equipment Availability **HAZ-2a.** Removal of Contaminated Sands **HAZ-2b.** Water Handling
WQ-2: Marine Water Quality from Eliminating Becker Well Oil Releases	None recommended

4.9.6 Cumulative Impacts

Of the cumulative projects listed in Section 3, *Cumulative Projects*, none would introduce additional populations into the area. Industrial projects that would increase oil spill risks to the marine environment include the Carpinteria Offshore Field Redevelopment and the Paredon projects. Each project, individually, would involve oil development and transportation of increased oil volumes within the marine environment and would increase the cumulative spill risk to the same marine environment that could be impacted by the Project. Individually and cumulatively, these projects would produce significant and unavoidable impacts due to oil spill risks. However, as the Project analyzed in this EIR would be temporary, after which the historical leakage of crude oil to the environment would be reduced or eliminated, and due to the relatively small spill size potential and the ready availability of response equipment during the temporary and short-term construction phase of the project, cumulative impacts to hydrological resources from oil spills would be beneficial.

4.10 NOISE

This section describes the noise environment in the onshore Project (Summerland Beach) area, evaluates the type and significance of impacts that may occur as a result of the Project, and identifies measures to avoid or substantially lessen any impacts found to be potentially significant. Potential impacts are evaluated based on anticipated changes to existing conditions. Information included in this section incorporates by reference data and conclusions from other Environmental Impact Reports (EIRs) prepared in the region, and data from the Summerland Community Plan and the County of Santa Barbara Coastal Land Use Plan. This analysis is based on area planning documents, other project EIRs, and discussion with appropriate agencies.

4.10.1 Environmental Setting

4.10.1.1 Fundamentals of Noise

Noise is defined as unwanted sound that is heard by people or wildlife and that interferes with normal activities or otherwise diminishes the quality of the environment. Noise should not be equated with all sounds, as nature makes many sounds that most people consider to be agreeable. The sound of surf, for example, can be quite loud (i.e., have a high decibel [dB] reading), but would not be considered “noise.” However, surf sounds can drown out noise generated from human sources that might be considered disagreeable.

Sound is measured on a logarithmic dB scale of pressure relative to a reference intensity of 20 micropascals (μPa) for measurements in air. The 20 μPa is near the threshold of normal human hearing. Because it is a logarithmic scale, an increase of 10 dB represents a 10 times increase in sound energy. Noise impacts on humans are usually measured with the frequency spectrum adjusted by the A-weighting network for human exposure. The A-weighting network is a filter that approximates the response of the human ear at moderate sound levels. The resulting unit of measure is the A-weighted decibel, or dBA. As animals have a different hearing system than humans do, noise is also presented in a linear scale without the A weighting described above. Peak sound level is defined as the highest sound level encountered during a period, without the A-weighting, and is denoted by Lpk.

To analyze the overall noisiness of an area, noise events are combined for an instantaneous value or averaged over a specific time period (e.g., 1 hour, multiple hours, 24 hours). The time-weighted measure is referred to as equivalent sound level and represented by Leq (using the A-weighting). The equivalent sound level is defined as the same amount of sound energy averaged over a given time period. The percentage of time that a given sound level is exceeded can also be represented. For example, L10 is a sound level that is exceeded 10 percent of the time over a specified period.

4.10.1.2 Noise Effects on Wildlife

Wildlife response to noise is dependent not only on the magnitude, but also the characteristic of the sound, including the sound frequency distribution. Wildlife is affected by a broader range of sound frequencies than humans. Determining the effects of noise on wildlife is complicated because responses vary between species and individuals of a population. However, noise is known to affect an animal's physiology and behavior, and chronic noise-induced stress is deleterious to an animal's energy budget, reproductive success, and long-term survival (Radle 2007). Noise impacts to wildlife are detailed in Section 4.4, *Biological Resources*.

4.10.1.3 Noise Effects on Humans

Human response to noise is dependent not only on the magnitude but also on the characteristic of the sound, including the sound frequency distribution. Generally, the human ear is more susceptible to higher frequency sounds than lower frequency sounds. Human response to noise is also dependent on the time of day and expectations based on location and other factors. For example, a person sleeping at home might react differently to the sound of a car horn than to the same sound while driving during the day. The regulatory process has attempted to account for these factors by developing noise metrics such as Community Noise Equivalent Level (CNEL) and the Day-Night Average Noise Level (L_{dn}) which incorporate penalties for noise events occurring at night (all using the A-weighting). The L_{dn} rating is an average of noise over a 24-hour period in which noises occurring between 10 p.m. and 7 a.m. are increased by 10 dBA. The CNEL is similar but also adds a weighting of 5 dBA to noise events that occur between 7 p.m. and 10 p.m. Table 4.10-1 is a scale showing typical noise levels encountered in common daily activities.

The effects of noise are considered in two ways: how a project may increase existing noise levels and affect surrounding land uses and how a proposed land use may be affected by existing surrounding land uses. The Summerland Community Plan focuses on particular types of "noise-sensitive" land uses when measuring the effects of noise and applying project requirements. These "sensitive receptors" include residences, transient lodging, such as hotels and motels, hospitals, nursing homes, convalescent hospitals, schools, libraries, houses of worship, and public assembly places.

When a new noise source is introduced, most people begin to notice a change in noise levels at approximately 5 dBA. Typically, average changes in noise levels of less than 5 dBA cannot be definitely considered as producing an adverse impact. For changes in levels above 5 dBA, any impact beyond recognizing that greater noise level changes would result in greater impacts is difficult to quantify.

Table 4.10-1. Representative Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Power Saw	—110—	Rock Band
Jet Fly-over at 100 feet		Crying Baby
Subway	—100—	
Gas Lawnmower at 3 feet		
Rail Transit Horn/ Tractor	—90—	
Jack Hammer		Food Blender at 3 feet
Rail Transit At-grade (50 mph)	—80—	Garbage Disposal at 3 feet
Noisy Urban Area during Daytime		
Gas Lawnmower at 100 feet	—70—	Vacuum Cleaner at 10 feet
Rail Transit in Station/ Commercial Area		Normal Speech at 3 feet
Heavy Traffic at 300 feet	—60—	Sewing Machine
Air Conditioner		Large Business Office
Quiet Urban Area during Daytime	—50—	Dishwasher in Next Room
		Refrigerator
Quiet Urban Area during Nighttime	—40—	Theater, Large Conference Room (background)
Quiet Suburban Area during Nighttime		
	—30—	Library
Quiet Rural Area during Nighttime		Bedroom at Night, Concert Hall (background)
	—20—	
		Broadcast/Recording Studio
	—10—	
Lowest Threshold of Human Hearing	—0—	Lowest Threshold of Human Hearing

Source: California Department of Transportation (Caltrans) 1998.

In community noise impact analysis, long-term noise increases of 5 to 10 dBA are considered to have “some impact.” Noise level increases of more than 10 dBA are generally considered severe. In the case of short-term noise increases, such as those from construction activities, the 10 dBA threshold between “some” and “severe” is replaced with a criterion of 15 dBA. These noise-averaged thresholds shall be lowered when the noise level fluctuates, when the noise has an irritating character such as considerable high frequency energy, or if the noise is accompanied by subsonic vibration. In these cases the impact must be individually estimated.

As presented in the Santa Barbara County Comprehensive Plan Noise Element (County of Santa Barbara 2009), the U.S. Environmental Protection Agency (USEPA) consolidated data from a number of surveys conducted in England and the United States to measure the association between noise exposure and community response. The results of this study show community noise exposure in Day-Night Average Level versus percent of residential populations reporting that they are “highly annoyed” by noise in their neighborhood. Percent “highly annoyed” ranged from 17 percent at a noise level of 55 L_{dn} to 52 percent at 75 L_{dn}.

Also presented in the Santa Barbara County Comprehensive Plan Noise Element is discussion related to construction noise. Because construction noise is temporary, people are usually more tolerant of it than permanent noise-producing installations. While acoustic "curtains" can be used around some stationary equipment, abatement is difficult because most construction activities cannot be enclosed. The most effective long-term solution to construction noise is to utilize construction equipment that produces less noise. Another way to limit construction noise impact is to regulate the time of day when construction activities may occur. Curfews on evening, nighttime, and early morning work, exempting emergency work, can be imposed.

4.10.1.4 Traffic and Rail Noise

Existing traffic-generated noise levels associated with U.S. Highway 101 were modeled using a version of the Federal Highway Administration Traffic Noise Model and traffic data detailed in Caltrans studies (Caltrans 2010). This analysis was conducted in order to demonstrate the noise levels associated with current traffic levels. The analysis indicates that the beach residences along the south side of U.S. Highway 101 experience an average CNEL of approximately 74 dBA, with a minimum nighttime hour of approximately 60 dBA. Residences along the north side of U.S. Highway 101 experience an average CNEL of approximately 76 dBA, with a minimum nighttime hour of approximately 62 to 63 dBA.

Noise from trains during mainline travel were estimated using the Federal Transit Administration (FTA) computational algorithms to estimate hourly equivalent noise levels based on train activity and characteristics (FTA 2006). The FTA has developed a set of equations that estimate the noise levels of trains based on the number of train locomotives, the number of rail cars, the train speed, the track type, the locomotive type, and the throttle setting. Caltrans (2013) estimates in its 2013 Coast Daylight Service Development Plan that the existing freight train traffic on the Coast Line is two trains per day with an additional six passenger trains per day. Using the FTA models, trains would produce a CNEL of approximately 65 dBA at the closest beach residence and approximately 71 dBA CNEL at the closest residence north of U.S. Highway 101. However, as only a few trains pass during the night, train activity would not affect the minimum nighttime hourly noise levels when a train is not present. Therefore, trains have no effect on the minimum hourly noise level during nighttime hours.

4.10.1.5 In-Water Hydroacoustics

Sound pressure levels in water are also described in dB, but with a difference reference pressure: 1 μPa instead of 20 μPa as measured in air. The dB scale for hydroacoustics is also not corrected for A weighting and is presented without weighting, generally as a root-mean-square (RMS). The speed of sound underwater is also approximately 4 to 5 times faster than it is when it travels through air, depending on temperature and salinity. In addition, because the characteristic impedance of water is much greater than that of air, a sound source located above the water surface (in the air) has less effect under the water. The difference in the characteristic impedance values of air and water causes a sound transmission loss between air and water of approximately 30 dB.

For construction activities in water, sound propagates through direct transmission from the source to the receiver, through reflected paths from the surface and the bottom of the water medium, and there is the potential for sound energy to be re-radiated from the ground due to vibrations within the ground below the water depending on the construction activity. Normally, the ground-radiated noise is dominated by low frequencies, which cannot propagate efficiently through shallow water.

Caltrans studies of construction activities indicate that underwater noise levels for various construction activities range from a high 220 dB (for piling driving or explosives) to a quiet waterbody with boat traffic (60 to 120 dB). Noise levels differ depending on the type of pile driver used as described in the Caltrans study.

Impact hammer	• Range: 180 to 220 dB peak sound level • Average sound level: 186 to 205 dB • Data for similar arrangement as Project (10- to 15-inch steel H piles): peak sound levels of up to 190 dB with average sound levels of 180 dB (for Noyo River, San Rafael Canal and Ballena Isle Marina in generally shallow water (CalTrans))
Vibratory hammer	• Range: 165 to 195 peak sound level • Average sound level: 150 to 180 dB150 to 180 dB • Data for similar arrangement as Project (10- to 15-inch steel H piles): peak sound levels of up to 164 dB and an average sound level of 147 dB (Norfolk Naval Station, Northern Rail Extension and San Rafael Canal (CalTrans))

Vibratory hammers generally produce less sound than impact hammers and are often employed as a mitigation measure to reduce the potential for adverse effects on fish that can result from impact pile driving. Although peak sound levels can be substantially lower for vibratory hammers than those produced by impact hammers, the total energy imparted can be comparable to impact driving because the vibratory hammer operates continuously (Caltrans 2015). For pile driving sounds that are predominately high frequency (e.g., small-diameter steel pipe or steel H-type piles), the transmission loss can be higher than losses associated with piles that predominantly produce lower frequencies (e.g., larger diameter piles).

For information on impacts to marine species, see Section 4.4, *Biological Resources*.

4.10.1.6 Vibration Background

Vibrations caused by various activities can cause impacts as energy transmitted in waves through a solid mass, such as soil. These energy waves dissipate with distance from the vibration source. Since energy is lost during the transfer of energy from one particle to another, vibration that is distant from a source is usually less perceptible than vibration closer to the source. Human, animal and structural response to different vibration levels is influenced by a combination of factors, including soil type, distance between source and receptor, duration, and the number of perceived events. If great enough, the energy transmitted through the ground as vibration can result in structural damage.

Vibration consists of waves transmitted through solid material. Unlike in air, there are several types of wave motion in solids including compressional, shear, torsional, and bending. The solid medium can be excited by forces, moments or pressure fields. This leads to the terminology "air-borne" (pressure fields) or “structureborne/groundborne” (forces and moments) vibration.

Ground-borne vibration propagates from the source through the ground to adjacent buildings by surface waves. Vibration may be comprised of a single pulse, a series of pulses, or a continuous oscillatory motion. The frequency of a vibrating object describes how rapidly it is oscillating, measured in hertz (Hz). Most environmental vibrations consist of a composite spectrum of many frequencies and are generally classified as broadband or random vibrations. The normal frequency range of most ground-borne vibration which can be felt generally starts from a low frequency of less than 1 Hz to a high of approximately 200 Hz.

Vibration energy spreads out as it travels through the ground, causing the vibration amplitude to decrease with distance away from the source. High frequency vibrations reduce much more rapidly than low frequencies, so that in the far-field from a source the low frequencies tend to dominate. Soil properties also affect the propagation of vibration. When ground-borne vibration interacts with a building, there is usually a ground-to-foundation coupling loss, but the vibration can also be amplified by the structural resonances of the walls and floors. Vibration in buildings is typically perceived as rattling of windows or items on shelves or the motion of building surfaces. The vibration of building surfaces can also be radiated as sound and heard as a low-frequency rumbling noise, known as ground-borne noise.

Perceptible ground-borne vibration is generally limited to areas within a few hundred feet of railway systems, certain types of industrial operations, and construction activities. Vibration intensive activities such as pile driving and sheet piling using impact hammers and large piles can produce perceptible vibration levels up to 700 feet from the source (FTA 2006).

Building structural components can also be impacted by high levels of low-frequency noise (typically less than 100 Hz). The many structural components of a building, excited by low-frequency noise, can be coupled together to create complex vibrating systems. The low frequency vibration of the structural components can cause smaller items such as ornaments, pictures, and shelves to rattle, which can cause annoyance to building occupants. Human sensitivity to vibration varies by frequency and by person, but generally people are more sensitive to low-frequency vibration. Human annoyance is also related to the number and duration of events. The more events or the greater the duration, the more annoying it will be to humans.

Construction activities can produce varying degrees of ground vibration, depending on the equipment and methods employed. Construction activities that typically generate the highest levels of vibration are blasting and impact pile driving and sheet pile.

The vibratory ground motion is measured in terms of peak particle velocity (PPV) in the vertical and horizontal directions (vector sum), typically in units of inches per second (in/sec). The PPV is defined as the maximum instantaneous positive or negative peak of the vibration and is often used in monitoring of blasting vibration because it is related to the stresses experienced by structures. For instance, a freight train passing at 100 feet can cause vibrations of 0.1 in/sec PPV, while a strong earthquake can produce vibration in the range of 10 in/sec PPV.

The vibration levels for typical human and structural responses and sources are shown in Table 4.10-2 below. Although the human perceptibility threshold for ground-borne vibration is approximately 0.04 in/sec, human annoyance occurs when vibration exceeds 0.12 in/sec (FTA 2006). Background vibration (0.012 in/sec or lower) is usually well below the threshold of human perception and is of concern only when the vibration affects very sensitive manufacturing or research equipment.

Table 4.10-2. Typical Levels of Ground-Borne Vibration

Human/Structural Response	Velocity Level (inch/sec)	Typical Sources (at 50 feet)
Threshold, minor cosmetic damage fragile buildings	3.9	Blasting from construction projects, bulldozers and other heavy tracked construction equipment
Difficulty with vibration-sensitive tasks, such as reading a video screen.	1.2	Commuter rail, upper range
Residential annoyance, infrequent events	0.4	Rapid transit rail, upper range Commuter rail, typical range
Residential annoyance, frequent events	0.12	Bus or truck over bump Rapid transit rail, typical range
Limit for vibration-sensitive equipment, Threshold for human perception of vibration	0.04	Bus or truck, typical
None	0.012	Typical background vibration

Source: Adapted from Transit Noise and Vibration Impact Assessment (FTA 2006).

Typical vibration levels associated with use of different equipment are given in Table 4.10-3.

Table 4.10-3. Vibration Levels of Various Equipment

Equipment	Vibration - Peak Particle Velocity (inch/sec) Distance from Source			
	50 feet	100 feet	200 feet	300 feet
Pile Driver, impact (high value), Sheet piling	0.537	0.190	0.067	0.037
Pile Driver, sonic (high value)	0.260	0.092	0.032	0.018
Caisson Drilling	0.031	0.011	0.004	0.002
Jackhammer, Large Bulldozer	0.012	0.004	0.002	0.001

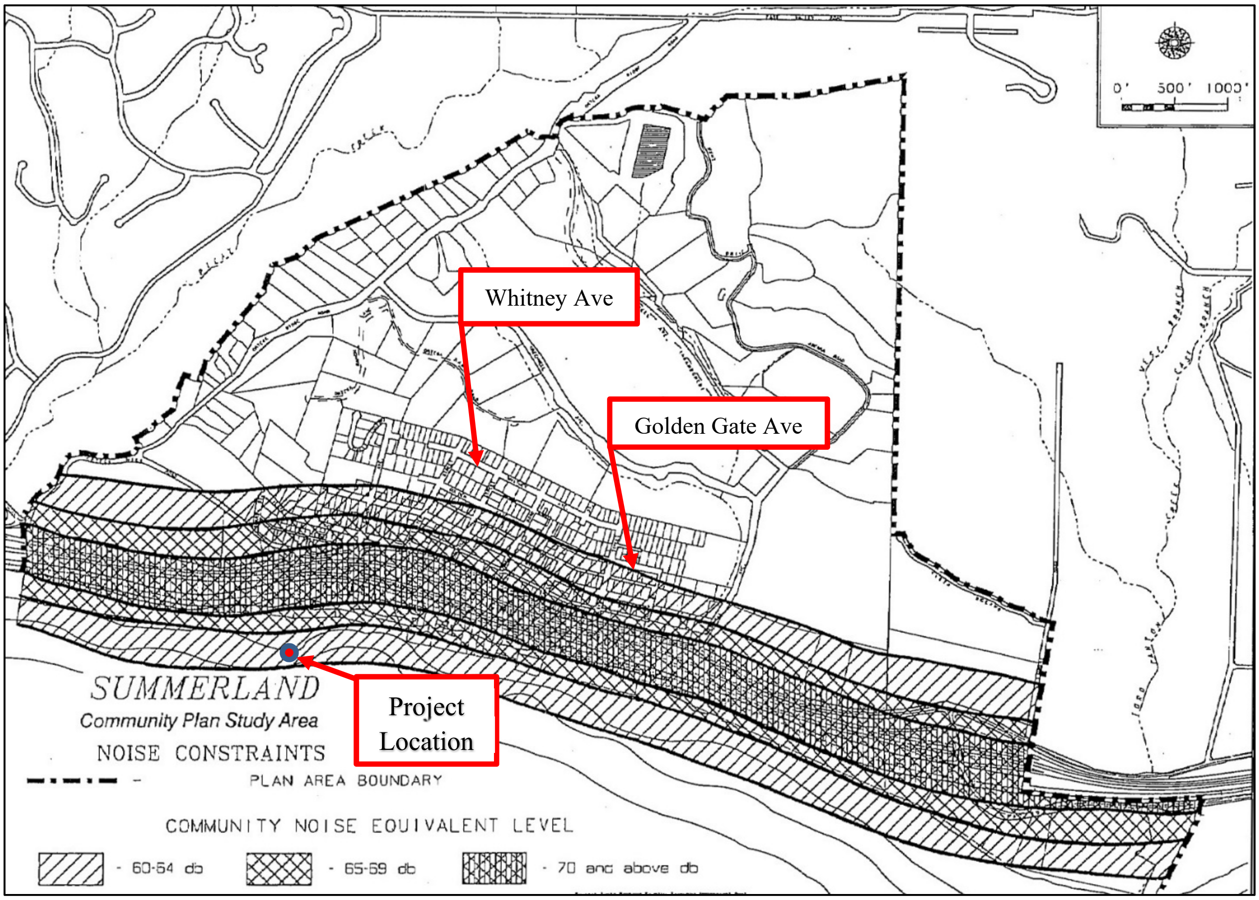
Source: FTA 2006.

The prediction of vibration through the soil at distances removed from the source is difficult to make as the soil/subsoil structure can vary considerably from one site to another. The transmission of vibration waves through soil and rock is mathematically very complex to calculate. When boundaries are present, such as layers of soil or rock or building foundations, then waves can be attenuated or enhanced by refraction and interference. Such phenomena are impossible to foresee.

4.10.1.7 Project Area Overview

Ambient noise levels within the Summerland area are generated by vehicular traffic on U.S. Highway 101 and by the Southern Pacific Railroad, which form a "noise corridor" approximately 1 mile in width, running in an east/west direction along the southern most portion of the Summerland Area. The highest noise levels, 70 dBA or more, are found just north and south of U.S. Highway 101 along Lillie Avenue and along areas south of the railroad. Noise levels decrease to between 65 and 69 dBA one or two blocks north of Lillie Avenue at Banner Avenue, and in the Summerland Beach area. At Golden Gate Avenue, in residential Summerland north of the freeway, noise levels decrease to 60 dBA. See Figure 4.10-1 for estimated noise levels. The County of Santa Barbara Comprehensive Plan Noise Element presents results of community noise surveys (County of Santa Barbara 2009). One survey was conducted in Summerland and estimated an L_{dn} level (which produces a result similar to the CNEL metric) of 59 dBA along the north side of Summerland near Whitney Avenue.

Figure 4.10-1. Summerland Area Noise Levels



Source: Summerland Community Plan, Figure 30 (County of Santa Barbara Planning and Development Department 2014).

4.10.2 Regulatory Setting

A summary of the regulatory setting for noise at the federal and state level is provided in Appendix A, and the local level is provided below. Guidelines have been developed at the federal level by the USEPA and at the State level by the now-defunct California Office of Noise Control. Local policies are commonly adaptations of federal and state guidelines

4.10.2.1 County of Santa Barbara

The County of Santa Barbara noise policies would be applicable to the Project activities. Project-related barge, tug and supply boat trips from the Port of Long Beach (POLB) would occur, yet would not generate substantial noise during transit as these noise sources would be well offshore; therefore, noise policies from the POLB and/or Ventura/Los Angeles counties are not analyzed.

Chapter 40 of the Santa Barbara County Municipal Code restricts nighttime noise activities (between 10 p.m. and 7 a.m.). Although the intention of Chapter 40 is for amplified music, Chapter 40 states:

> *It shall be unlawful within the unincorporated area of the County of Santa Barbara to make, assist in making, permit, continue, create, or cause to be made, any loud and unreasonable noise….*

> *A loud and unreasonable sound shall include any sound created by means prohibited above which is clearly discernable at a distance of one hundred feet from the property line of the property upon which it is broadcast or which is at any level of sound in excess of sixty decibels at the edge of the property line of the property upon which the sound is broadcast.*

Although these prohibitions do not specifically apply to construction activities, they provide guidance on noise levels that would be acceptable during nighttime hours.

The Santa Barbara County Comprehensive Plan also contains policies that serve to achieve certain resource protection objectives of the Open Space and Conservation Elements. The County of Santa Barbara Building and Safety Division, for projects located in the City of Montecito, require construction to occur only between 7 a.m. and 4:30 p.m., Monday through Friday. The County may also impose conditions on permits limiting construction hours depending on a project's location.

4.10.2.2 Summerland General Plan/Coastal Land Use Plan

The Summerland Community Plan Policy N-S-1 states that "Interior noise-sensitive uses (i.e., residential and lodging facilities, educational facilities, public meeting places and others specified in the Noise Element) shall be protected to minimize significant noise impacts." This policy has several requirements, including that noise sensitive projects (i.e., residential developments) be designed to provide sufficient attenuation of ambient noise levels for indoor living areas and, where practical, for outdoor living areas. Also included is the requirement for an acoustic evaluation for noise sensitive land use development projects which are located between U.S. Highway 101 on the south and the east-west line defined by Golden Gate Avenue to the north.

4.10.3 Significance Criteria

A noise impact is considered significant if noise levels from a project's operations exceed the local policies and noise standards. Thus, the noise policies of the County of Santa Barbara and Summerland shall be adhered to. Project impacts would therefore be considered significant if the following occurs:

- Noise which generates levels exceeding 65 dB CNEL that could affect sensitive receptors.

- Outdoor areas of noise sensitive uses that are subject to noise levels in excess of 65 dBA CNEL would generally be presumed to be significantly impacted by noise. A significant impact would also generally occur where interior noise levels cannot be reduced to 45 dBA CNEL or less.
- A project generally has a significant effect on the environment if it increases substantially the ambient noise levels for noise sensitive receptors in adjoining areas, i.e., when ambient noise levels affecting sensitive receptors are increased to 65 dBA CNEL or more. However, a significant effect may also occur when ambient noise levels affecting sensitive receptors increase substantially, but remain less than 65 dBA CNEL, as determined on a case-by-case basis.
- Construction would be within 1,600 feet of sensitive receptors and would be performed outside the timeframe of weekdays between the hours of 8 a.m. to 5 p.m.
- Exposure of persons to, or generation of, excessive ground borne vibration or ground borne noise level.

4.10.4 Environmental Impact Analysis and Mitigation

The Project would generate temporary construction noise in the Summerland area due to activities including the following:

- Installation of the cofferdam from sheet pile vibratory hammers
- Workover rig diesel engines and cement pump engines
- Metal clangs and intermittent maintenance activities
- Pumps and various miscellaneous maintenance equipment

Construction activities would occur 24 hours per day, 7 days per week in order to condense the operations schedule and reduce impacts to beach visitors and recreational resources. Once the well abandonment activities are completed and the cofferdam and barge are removed, there would be no additional activities on the beach.

Noise impacts are discussed below. Noise impacts to wildlife are discussed in Section 4.4, *Biological Resources*.

Table 4.10-6, located at the end of this section, provides a summary of Project-related noise impacts and recommended mitigation measures (MMs) to address these impacts.

ENVIRONMENTAL IMPACT ANALYSIS

Impact NOI-1: Construction Impacts to Sensitive and Recreational Receptors

Short-term noise levels would increase during Project construction potentially affecting sensitive and recreational receptors **(Less than Significant with Mitigation)**.

Impact Discussion

Noise would increase during construction. As some of the loudest activities would occur 24 hours per day, the impacts could cause significant increases in the noise levels at residences over the existing background levels during the nighttime hours. As U.S. Highway 101 and the Southern Pacific Railroad, which produce substantial noise levels during the day, lie between the beach areas and most residences, Project noise levels during the daytime would not produce a significant increase in disturbance-causing noise levels. Because Lookout Park is located directly adjacent to the Project site and is not separated from the Project site by U.S. Highway 101 and the railroad, greater, although temporary, noise level increases would be experienced at Lookout Park, impacting recreational resources in the short term.

The construction activity producing the highest sound levels would be installation of the sheet piles with a vibratory pile driver. Noise from the sheet pile driving varies in loudness and duration depending on the specific driving activities, depth of the sheet in the ground, and the subsurface resistance encountered. Difficulties with alignment of the sheet piles due to flexing of the sheets when encountering obstructive resistance to advancing the sheet piles may occur and require retracting sheet piles and re-driving them to adjust alignment. Retracting, re-aligning, and re-driving sheet piles can add to the duration of noise from the sheet pile driving process.

Noise level increases associated with daytime construction activities would be less than significant for residences and recreational areas during the day since the Project would be short term. Generally, construction noise performed during the daytime hours is not considered to be a significant impact. Multiple jurisdictions allow for construction noise during daytime hours, including the Cities of Santa Barbara (section 09.16.040) and Montecito. The County of Santa Barbara does not have a prohibition on construction hours and only discusses "*loud and unreasonable noise*" levels occurring during the nighttime hours in the County Municipal Code Chapter 40 and as discussed above.

In order to determine noise level increases due to nighttime construction activities, the SoundPlan Noise Model was used to estimate noise levels in the Summerland area during sheet piling and during well abandonment, the two construction activities with the highest noise levels. The SoundPlan Noise Model takes multiple factors into account to estimate noise levels, including terrain, meteorological conditions, and ground type. The various noise sources associated with each phase of the Project are input to the model.

The software then uses this information to calculate noise contours and single-point-receiver noise levels, assuming a light downwind in all directions.

4.10-4 shows the sources and the corresponding noise levels used to estimate the noise impacts. Table 4.10-5 shows the results of the noise modeling for the peak noise levels at four different receptor classifications: residences, businesses, Lookout Park and Summerland Beach. Figure 4.10-2 shows the resulting noise contours for the sheet pile and cofferdam installation activities, along with the receptors at residences, businesses, Lookout Park and Summerland Beach.

The peak noise levels associated with the Project activities would occur during the sheet pile installation associated with installing the cofferdam. Peak noise levels at a residence would occur at the beach-front residences located immediately adjacent to Summerland Beach. Peak noise levels at residences located within the Summerland community north of U.S. Highway 101 are lower, but would still constitute significant increases (see Table 4.10-5). The CNEL, as measured in the Community Plan along Whitney Avenue, would increase by almost 10 dBA during the period of the sheet piling and cofferdam construction.

Table 4.10-4. Sound Levels of Project Equipment

Equipment/Activity	Percent Usage, Peak Hour	Sound Level, dBA, at 50 feet	Source
Sheet pile vibratory hammer, diesel	50	101	USEPA 1971
Crane, diesel	100	81	FTA 2006, diesel IC engine
Generator, diesel	100	81	FTA 2006, diesel IC engine
Well workover rig engine, diesel	100	81	FTA 2006, diesel IC engine
Shaker tables, vibratory	100	80	FTA 2006, vibratory mixer
Cement pump engines, diesel	100	81	FTA 2006, diesel IC engine

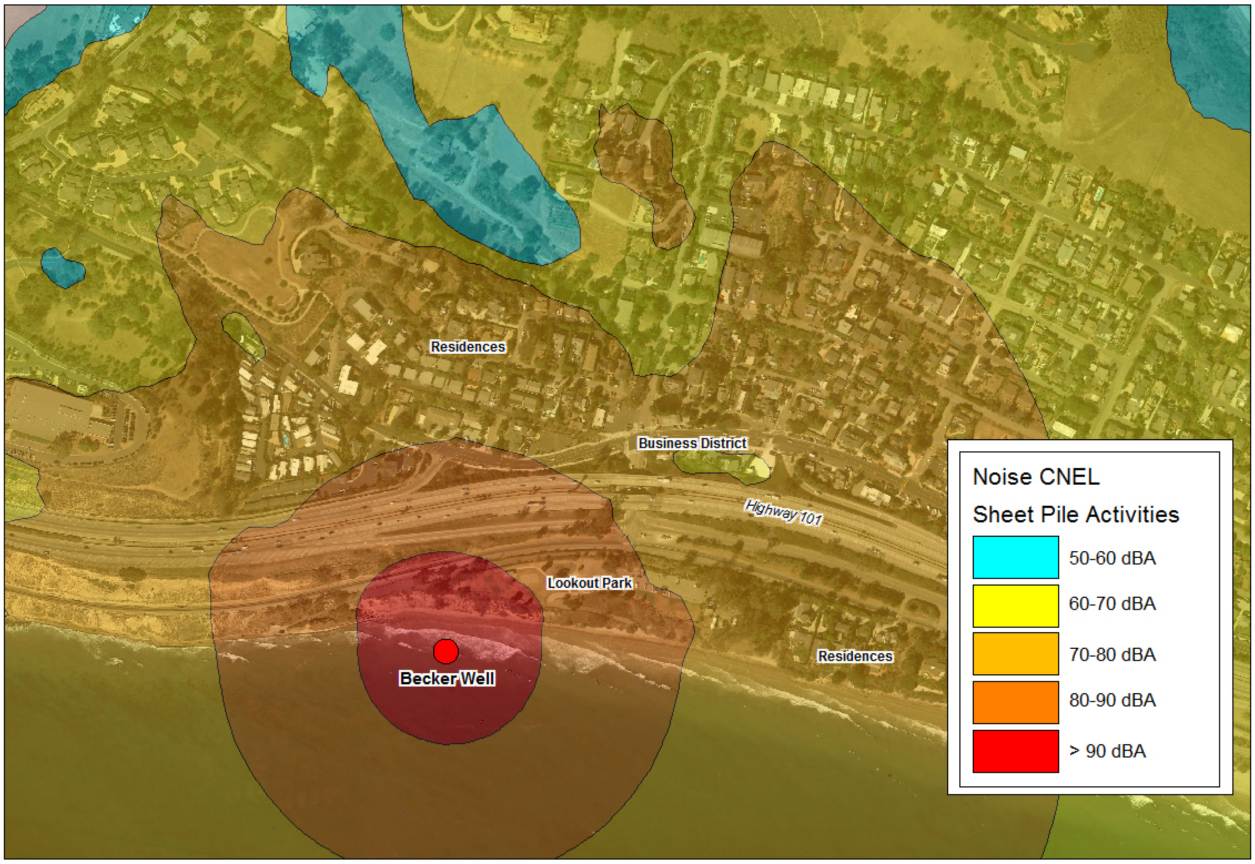
Notes: FTA = Federal Transit Administration; IC = Internal Combustion

Table 4.10-5. Modeled Impacts of Project Activities – Peak Levels

Location	Sheet Piling		Well Workover	
	Peak CNEL	Leq, Peak Hour	Peak CNEL	Leq, Peak Hour
Residences: on the beach	88.2	81.5	71.0	64.4
Residences: within Summerland (North of Hwy 101)	79.7	73.0	62.6	55.9
Businesses	81.2	74.5	64.1	57.4
Lookout Park	95.2	88.5	77.6	71.0
Beach Areas	91.2	84.5	74.5	67.8

Note: Sound levels are only the project contribution and does not include background noise levels.

Figure 4.10-2. Sound Level Contours, Sheet Pile Activities



Nighttime quietest hour noise levels associated with U.S. Highway 101 traffic between 2 a.m. and 4 a.m. would produce an hourly noise level of 59 to 60 dBA at the beach-front residences and 62 to 63 dBA at the closest residences north of U.S. Highway 101. Minimum hour levels at residences would therefore increase by 10 to 20 dBA during sheet pile installation. Noise level increases are compared to the minimum hour produced by U.S. Highway 101 in order to estimate the maximum noise increases, thereby estimating the extent to which residences may be disturbed by construction noise. This increase would be a significant impact at night. During the day, U.S. Highway 101 noise levels are much higher, so noise increases over baseline conditions would be low. And, temporary, short-term construction activities are generally allowed during the daytime hours, regardless of noise levels.

During well work activities, noise levels would be lower by 16 to 17 dBA for both CNEL and peak hourly noise levels than during sheet pile installation. Well work activities would therefore cause a nominal increase in noise levels for most receptors and would be less than significant during both daytime and nighttime hours.

Implementation of time limits on the noisiest nighttime activities would prevent noise disturbances at night, thereby causing fewer impacts to sensitive receptors, particularly relating to sleep disturbances. This in addition to the use of vibratory hammer installation techniques to reduce peak noise, an Applicant Proposed Measure (APM) (see Section 2, *Project Description*) would reduce impacts to sensitive receptors to less than significant.

Applicant Proposed Measure

APM-4. Use of Vibratory Pile Driver. Preliminary information obtained from contractors indicated that the use of a vibratory pile driver would be feasible, but that it was not proposed by all of the contractors contacted. Generally, a geotechnical assessment is needed in order to ensure that high-force methods (impact pile drivers) are not needed. However, due to the beach location and the presence of sand, a geotechnical analysis is not considered necessary. The use of a vibratory pile driver would substantially lower the noise levels, both in-air and in-water, and would reduce impacts, both to humans and to biological resources.

Mitigation Measures

MM NOI-1. Construction Time Limits. Construction activities involving the installation of sheet pile shall be conducted only between the hours of 8 a.m. and 5 p.m. Monday through Friday.

Impact NOI-2: Construction Vibration Impacts to Sensitive and Recreational Receptors

Short-term temporary vibration levels would increase during Project construction potentially affecting sensitive and recreational receptors **(Less than Significant)**.

Impact Discussion

Potential increases in construction activities could cause vibrations due to the use of the vibratory hammer used to install sheet pile for the cofferdam walls. The distances at which vibrations could cause disturbances to residences are a function of the level of vibration and the geology of the soils. Generally, high vibration activities combined with rock substrate would cause vibration impacts at the greatest distance. Distances to “residential annoyance” levels and resulting impacts would be less than 200 to 300 feet. Therefore, impacts would be less than significant.

Mitigation Measures

No mitigation measures are recommended.

4.10.5 Summary of Proposed Mitigation Measures

Table 4.10-6 provides a summary of the mitigation measures proposed for potential Project impacts.

Table 4.10-6. Noise Impact/Mitigation Summary

Impact	Mitigation Measures
NOI-1: Construction Impacts to Sensitive and Recreational Receptors	**APM-4.** Use of Vibratory Pile Driver **NOI-1.** Construction Time Limits
NOI-2: Construction Vibration Impacts to Sensitive and Recreational Receptors	None recommended

4.10.6 Cumulative Impacts

As none of the industrial or marine transportation projects would occur in the Project vicinity, noise from the construction or operation of the cumulative industrial or marine transportation projects would not affect the same receptors as those affected by the Project and cumulative impacts associated with industrial or marine transportation projects would be less than significant. Noise from onshore construction and operation of onshore development, including residential construction and the construction activities associated with the U.S. Highway 101 HOV Lanes Project could affect the same receptors as the Project if the construction activities are occurring at the same time. However, construction associated with these cumulative projects would not be occurring at night (construction noise is allowed during the daytime), and the noise impacts associated with the Project would be short term and localized; therefore, cumulative noise impacts would be less than significant.

4.11 RECREATION

This section describes recreational resources in the Project area, including major coastal recreation areas, open space, and parks. The section then evaluates the type and significance of impacts that may occur as a result of the Project, and identifies measures to avoid or substantially lessen any impacts found to be potentially significant. Potential impacts are evaluated based on anticipated changes to existing conditions. Information included in this section incorporates by reference data from the California Coastal Act, Summerland Community Plan, and County of Santa Barbara County Coastal Land Use Plan (CLUP) and Comprehensive Plan.

4.11.1 Environmental Setting

The coast and offshore waters within the Project area are located in a region that offers a wealth of recreational opportunities due to its natural beauty, beaches and open space, topography, and climate. These include beach and recreational facilities within the Summerland area, more distant beaches and facilities in the cities of Santa Barbara and Carpinteria, and State parks up- and down-coast along the Gaviota Coast and in Ventura County. These areas support beach, boating, and a variety of other recreational activities associated with the coast and Pacific Ocean including surfing, commercial and recreational fishing, free and scuba diving, beach sports, hiking, and bird watching.

The Becker well and Summerland Beach are located directly to the south below Lookout Park, a 4-acre County Park situated on the bluffs above the beach area. The original 1.9 acres of park land were donated to Santa Barbara County in 1890 by Mr. H. L. Williams, which launched a Countywide program to obtain land for public use. Lookout Park features barbecue grills, beach access, benches, picnic tables, two group picnic areas, and restrooms. Recreational activities include hiking trails, a playground, horseshoes, volleyball, and bird watching. Access to Summerland Beach below the park is via a paved road that winds down the bluff to the sand. Lookout Park has 89 total parking spaces with one handicapped space and one space for electric vehicles.

Recreation has historically been adversely affected by the ongoing leakage of crude oil and associated gasses and odors at the Becker and legacy wells. As detailed in Section 1, *Introduction*, reports have included “strong odor, causing headache and nausea,” and “very very strong gas odor on beach” and closure of the Summerland Beach in August 2015 for 4 days due to health concerns over the oil on the beach and odors (see Appendix F).

4.11.2 Regulatory Setting

Protection and use of recreational resources within the Project area are governed by a variety of federal, state, and local laws and regulations. Federal and state laws that may be relevant to the Project are identified in Appendix A. Local laws, regulations, and policies are discussed below.

4.11.2.1 Santa Barbara County

Local agencies along the Santa Barbara coast have policies that promote public access to and along the shoreline to promote use and enjoyment of beaches and offshore waters reflective of directives provided in the California Coastal Act. The County of Santa Barbara CLUP includes elements of the Coastal Act (§§ 30210, 30211, 30212, 30213, 30214, 30220, 30221, and 30223) intended to protect and maintain the overall quality of the coastal environment and to provide maximum opportunities for recreation, public use and enjoyment of the coast. The policies include objectives for public access, permanent development, parking, and low visitor cost for public recreational opportunities. CLUP Policies 7-1 through 7-8 include recommendations for the provision of recreational development and public access. Coastal Zoning Ordinance Section 35-61 prohibits permanent above-ground structures on the dry sandy beach except for facilities necessary for “public health and safety” and provides for easements for all new development between the first public road and the ocean. The County Land Use Element includes five policies specific to parks and recreation: provision of bikeways (Policy 1), opportunities for commercial and sport fishing (Policy 2), future development of parks (Policy 3), preservation and expansion of hiking and equestrian trails (Policy 4), and joint recreational use of schools and other public-owned lands (Policy 5).

4.11.2.2 Summerland

The CLUP contains a policy specific to the Summerland Planning Area as follows:

> *Policy 7-9: Additional opportunities for coastal access and recreation shall be provided in the Summerland planning area. Parking, picnic tables, bike racks, and restrooms shall be provided where appropriate.*

The CLUP acknowledges Loon Point and Wallace Avenue in the Summerland planning area as areas for “moderate recreational use.” Wallace Avenue is an east/west access road located above the Project site between Lookout Park and U.S. Highway 101. Loon Point is a recreational area east of the Project site with public access parking adjacent to Padaro Lane.

The Summerland Community Plan provides Policies PRT-S-1 through PRT-S-6 and OS-S-1 “intended to enhance the present and future need for outdoor and indoor recreation resources for both Summerland residents and visitors.” These policies encourage outdoor recreational activities and public trails, discourage new development from impacting existing recreational uses, provide direction for the future Greenwell Park, and provide for public space in Summerland. The Community Plan identifies the following areas as public park or recreational areas: Lookout Beach Park; Loon Point Beach; Greenwell Avenue Park; Wallace Avenue beach access and parking; and 1.54 miles of existing off-road trails and 1.67 miles of on-road trails. The recreational areas located along the coastline are shown in Figure 4.11-1.

Figure 4.11-1. Summerland Community Plan Coastline Recreational Areas

4.11.3 Significance Criteria

Recreational impacts would be considered significant if the Project would:

- Cause an increase in the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the park would occur or be accelerated.
- Prevent access to recreational sites or disturb users of recreational facilities, due to a release of oil, during times of peak use.

4.11.4 Environmental Impact Analysis and Mitigation

Potential direct and indirect construction-related impacts on recreational resources are evaluated below.

ENVIRONMENTAL IMPACT ANALYSIS

Impact REC-1: Impacts to Recreation and Recreational Access from Abandonment Activities

Use of a jack-up barge for abandonment activities and staging of equipment at Lookout Park would create temporary beach area closures and potential loss of parking spaces. **(Less than Significant with Mitigation)**.

Impact Discussion

The Project does not involve any permanent development (no permanent structures would be installed) and impacts to beach access and beach use, and other recreational activities would be short-term. Staging and installation of equipment and safe operation of the abandonment activities would require the use of public parking spaces at Lookout Park and a temporary closure of a section of the beach around the Becker well, the surrounding beach, and offshore area (see Figure 2-4). The Project would expose recreational users to short-term noise impacts (see 4.10, *Noise*). However, the eastern portion of Summerland Beach and most of the Lookout Park parking spaces would remain accessible and open to the public. Due to the short-term (estimated 3-week), temporary Project schedule, a less than significant impact to recreational users is anticipated. Potential recreational impacts to Summerland residents could occur if they are not aware of the Project or Project timelines. Mitigation Measure (MM) HAZ-1 provides notice of the Project to local Summerland residences prior to the beginning of the beach closure. Project activities could also impact recreational activities through the deterioration of infrastructure. Required repair of area infrastructure provided in MM REC-1, including Lookout Park and the access road, to pre-Project conditions would ensure that impacts due to construction damage are less than significant. Impacts to recreation policies or land use plans and recreational resources would also be less than significant due to the short-term nature of the Project.

Offshore recreation includes recreational boating, most likely originating out of the nearby harbors at Santa Barbara, approximately 6 miles to the north of the Project site. Section 4.12, *Transportation (Marine)*, discusses marine vessel traffic associated with the Project. Implementation of ~~Mitigation Measure (~~MM~~)~~ TRM-1 would reduce impacts to recreational boating vessels and local recreational users to less than significant.

Mitigation Measures

MM REC-1. Repair of Damaged Infrastructure. The contractor shall ensure that any damage inflicted on Lookout Park infrastructure and access road be repaired and returned to pre-Project status.

The following MMs from Section 4.12, *Transportation (Marine)* and Section 4.1, *Hazardous Materials and Risk of Upset,* would also apply:

- **MM TRM-1. Publication of U.S. Coast Guard (USCG) Local Notice to Mariners.**
- **MM HAZ-1. Construction Zone Restricted Area.**

Impact REC-2: Inadvertent Oil Releases Associated with Construction Activities would Impact Surrounding Recreational Resources

Water and non-water recreation located in the Project area may be impacted by an accidental release related to the Project during short-term temporary construction activities. Shoreline and water-related uses would be disrupted by oil on the shoreline and in the water, which would impact recreational users, would be inconsistent with State and local policies, and would result in potentially significant impacts **(Less than Significant with Mitigation)**.

Impact Discussion

Project construction and abandonment operations would increase the potential for releases of crude oil or construction materials to the environment. This analysis considers the potential for offshore and land-based oil spill impacts to recreational resources, including closure of the beach, Lookout Park and open space. Potential spill volumes and the number of scenarios that could cause releases of crude oil or construction materials to the environment are described in Section 4.1, *Hazardous Materials and Risk of Upset*. The potential spill scenarios would be short-term as they would only be associated with the construction and abandonment activities projected to last 3 weeks. Potential spill volumes would also be limited as discussed in Section 4.1, *Hazardous Materials and Risk of Upset.*

Accidental well-related releases to the environment could be minimized with the use of contingency planning and emergency response procedures (see Applicant Proposed Measures [APMs] APM-1 through APM-3). A release could close recreational areas to the public for a significant duration for cleanup and restoration activities. However, due to the relatively small spill size potential and the ready availability of response equipment, and measures to handle contaminated stands and water (MMs HAZ-2a and HAZ-2b), spills and other contaminants would have only a minor effect on recreational resources, one that would not exceed the periodic beach closures and impacts on recreational resources that the current well leakage presents. Impacts would be less than significant with mitigation.

Mitigation Measures

Mitigation measures related to an oil release are included in Section 4.1, *Hazardous Materials and Risk of Upset*. The following APMs and MMs would apply:

APM-1. Abandonment and Contingency Plan.
APM-2. Barge System Engineering.
APM-3. Emergency Response Equipment Availability.
MM HAZ-2a. Removal of Contaminated Sands.
MM HAZ-2b. Water Handling.

Impact REC-3: Long-term Oil Spill Impacts to the Environment

Project activities would reduce the long-term leakage and releases of hazardous materials to the environment **(Beneficial)**.

Impact Discussion

Once well abandonment is completed, the Project would eliminate or reduce the leakage rate of crude oil from the well into the environment with long-term beneficial impacts. If the abandonment is successful, and the well is abandoned to DOGGR standards, the leakage from the well would be eliminated. If the well is not able to be abandoned to current regulatory standards, the potential for leakage may still exist, but at a reduced rate; therefore, the Project impact would remain beneficial.

Mitigation Measures

No mitigation measures are recommended.

4.11.5 Summary of Proposed Mitigation Measures

Table 4.11-1 provides a summary of the mitigation measures proposed for potential Project impacts.

Table 4.11-1. Recreation Impact/Mitigation Summary

Impact	Mitigation Measures
REC-1: Impacts to Recreation and Recreational Access from Abandonment Activities	<u>**REC-1.** Repair of Damaged Infrastructure</u> **TRM-1.** Publication of U.S. Coast Guard (USCG) Local Notice to Mariners <u>**HAZ 1.** Construction Zone Restricted Area</u>
REC-2: Inadvertent Oil Releases Associated with Construction Activities would Impact Surrounding Recreational Resources	**APM-1.** Abandonment and Contingency Plan **APM-2.** Barge System Engineering **APM-3.** Emergency Response Equipment Availability **HAZ-2a.** Removal of Contaminated Sands **HAZ-2b.** Water Handling
REC-3: Long-term Oil Spill Impacts to the Environment	None recommended

4.11.6 Cumulative Impacts

Cumulative projects that could exacerbate Project impacts include any projects that could increase the risks of oil spills or result in closure of Summerland Beach or other recreational areas. Of the cumulative projects listed in Section 3, *Cumulative Projects*, none would introduce additional populations into the area. Industrial projects such as the Carpinteria Offshore Field Redevelopment and Paredon projects would involve oil development and transportation of increased oil volumes within the marine environment and would increase the cumulative spill risk to the same marine environment that could be impacted by the Project. Since the proposed Project would eliminate or reduce the historical leakage of crude oil to the environment and has a relatively small spill size potential and readily availability response equipment during the short-term construction period, cumulative impacts to recreational resources from oil spills would be beneficial.

The Ellwood Marine Terminal Demolition and Reclamation Project may require beach closures during removal of the offshore portion of the terminal. However, this project is located significantly to the north of the Project and any closures would most likely occur at a different time than the Project, and thus would not constitute a cumulative impact.

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4.12 TRANSPORTATION (MARINE)

This section addresses marine transportation in the Project area, evaluates the type and significance of impacts that may occur as a result of the Project, and identifies measures to avoid or substantially lessen any impacts found to be potentially significant. The impact area analyzed is the area immediately offshore Summerland including proposed anchoring and sheet pile-driving areas and along vessel routes to and from ports used by Project vessels. Potential impacts are evaluated based on anticipated changes to existing conditions. As provided in Section 4, *Environmental Impact Analysis*, the Project would have no impact on land-based (onshore) transportation or traffic, and this issue is not analyzed in this EIR.

4.12.1 Environmental Setting

Marine vessel traffic is often measured in numbers of port calls per vessel. According to the Port of Long Beach (POLB) 2015 Air Emissions Inventory (POLB 2016), in 2015:

- 1,988 ocean-going vessels (commercial vessels of 300 gross registered tons or more calling on California ports or places, excluding active military vessels), including large containerships, auto carriers, tankers, cruise ships and other miscellaneous bulk carriers) departed the POLB an average of 5.4 per day
- 87 harbor craft (including tugboats, crew boats, ferries, and other work boats) actively operated out of the Port

Marine vessel traffic within and approaching the POLB and Port of Los Angeles is managed through a Vessel Traffic Service (VTS), operated jointly by the U.S. Coast Guard (USCG) and Marine Exchange of Southern California (MXSocal). The purpose of the VTS "is to improve vessel transit safety by providing vessel operators with advance information of other reported marine traffic and any additional information, advice and recommendations which may affect vessel traffic safety within the VTS area" (MXSocal and USCG 2015). Regional vessel traffic is also coordinated using Traffic Separation Schemes (TSSs), defined as a "routing measure aimed at the separation of opposing streams of traffic by appropriate means and by the establishment of traffic lanes" (MXSocal and USCG 2015). The TSS that controls access to and from the POLB is divided into two approaches: western and southern. Each approach has a 1-mile-wide traffic lane, established on each side of the TSS.

The Project site is 90 nautical miles from the POLB. Marine traffic in the immediate area consists primarily of recreational boating, most likely out of the nearby harbors at Santa Barbara, approximately 6 miles to the north of the Project site, Casitas Pier (private only) located approximately 6 miles to the south, and Port Hueneme, approximately 30 miles to the south. Other vessel traffic includes offshore fishing and dive-vessel traffic and supply and crew boat traffic to area oil platforms.

4.12.2 Regulatory Setting

Appendix A summarizes relevant federal and state regulations. County and city regulations are discussed below.

County of Santa Barbara Section 26-79.1 designates the swim beach area and specifies that no boats are allowed within 100 feet except for the purpose of loading, unloading, launching or removing such boat.

City of Carpinteria section 12.24.050 specifies that within the limits of any bathing beach in the city and within 300 feet seaward of the mean high tide line, it is unlawful for any person or persons to ride, float on, or otherwise use any surfboard; to use or operate any motorized vessel or to launch or land any motorized vessel; or to moor, store or otherwise maintain any raft, motorized vessel, boat or other privately owned equipment except as such may be specifically authorized by the city manager or his authorized representatives.

4.12.3 Significance Criteria

Criteria set forth for transportation and traffic in the State CEQA Guidelines Appendix G Checklist apply primarily to onshore transportation (e.g., effects to intersections, streets, highways and freeways, pedestrian and bicycle paths, mass transit, congestion management programs [including, but not limited to level of service (LOS) standards], air traffic patterns, etc.) and are thus not applicable to the analysis of the marine transportation portion of the Project. Consistent with other Environmental Impact Reports prepared by the CSLC for offshore projects in its jurisdiction, the following criterion would apply.

- Marine transportation impacts would be considered significant if the Project would reduce the existing level of safety for navigating vessels or increase the potential for marine vessel accidents.

4.12.4 Environmental Impact Analysis and Mitigation

Potential direct and indirect construction-related impacts on marine transportation are evaluated below.

ENVIRONMENTAL IMPACT ANALYSIS

Impact TRM-1: Marine Vessel Safety

Project activities have the potential to reduce the existing level of safety for marine vessels **(Less than Significant with Mitigation)**.

Impact Discussion

As described in Section 2, *Project Description*, Project activities would generate marine vessel traffic between the POLB and the Project site, between the Project site and the Santa Barbara Harbor and in the portion of the Project area immediately offshore Summerland. Construction would require up to three trips with multiple tug boats to deliver and remove the barge to and from, respectively, the POLB and the Project site. Project activities would not require any change in port areas, the regional VTS, other established marine traffic systems in the Project area, or existing aids to navigation.

An additional two or three vessels per day would shuttle crews to the site, deliver equipment and supplies, and be available for emergency response and biological monitoring. These trips would have minimal effect on existing boat traffic during the short-term construction period, which is estimated to last 3 weeks. Vessel traffic would be confined to the Project area, to and from the Santa Barbara Harbor and to and from the POLB.

Vessels transiting to and from the POLB and used onsite during the Project must meet USCG requirements for navigation safety (e.g., navigation systems, minimum crew, and COLREGS [International Regulations for Preventing Collisions at Sea] day shapes and night lights) and vessel operators would communicate with the USCG and VTS where applicable. Project activities are not likely to reduce the existing level of safety for navigating marine vessels in and around the POLB due to the small vessel sizes, small number of trips per day, the use of existing vessel traffic services for coordinating movements into and out of the POLB, and short-term duration of construction. Thus, potential impacts at and transiting to and from the POLB would be less than significant.

At the Project site, vessel safety could be further increased with the publication of a Local Notice to Mariners to ensure that other vessels in the area, as well as the USCG and area harbor personnel, would be advised of the location of moored vessels, likely transit routes, and approximate dates, durations, and working hours. Noticing would provide for advanced planning and would ensure coordination with any other activities that are ongoing or planned. The USCG has a Local Notice to Mariners program and publishes weekly emails and notices for each USCG District (California is District 11). The Local Notice to Mariners addresses discrepancies in navigational aids (charts, etc.), advanced notices of projects (such as dredging, etc.) and other areas of potential concern (surveys, fireworks displays, sunken ships, etc.). The absence of advanced planning and failure to provide adequate notification to affected mariners or the USCG could cause a significant impact.

Upon completion of construction, the Becker well would be lower than or at approximately the same depth as the existing structures below the ocean surface at high water conditions. This would not result in a significant impact to marine vessel safety due to obstructions.

Mitigation Measures

MM TRM-1. Publication of U.S. Coast Guard (USCG) Local Notice to Mariners. The CSLC shall ensure that its contractor submits to the USCG District 11 (as stated at www.uscg.mil/D11/DP/LnmRequest.asp), a request to publish a Local Notice to Mariners, at least 14 days prior to operation, that includes the following information:

- Type of operation (i.e., dredging, diving operations, construction)
- Location of operation including Latitude and Longitude and geographical position if applicable;
- Duration of operation including start and completion dates (if these dates change, the Coast Guard needs to be notified)
- Vessels involved in the operation;
- VHF-FM Radio Frequencies monitored by vessels on scene;
- Point of Contact and 24-hour phone number; and
- Chart Number for the area of the operation.

The above information shall also be provided to the Santa Barbara Harbormaster and USCG Marine Safety Detachment in Santa Barbara.

4.12.5 Summary of Proposed Mitigation Measures

Table 4.12-1 provides a summary of the mitigation measures proposed for potential Project impacts.

Table 4.12-1. Marine Transportation Impact/Mitigation Summary

Impact	Mitigation Measures
TRM-1: Impacts to Marine Vessel Safety	**TRM-1.** Publication of U.S. Coast Guard (USCG) Local Notice to Mariners

4.12.6 Cumulative Impacts

Cumulative projects that could exacerbate Project impacts include any projects that could increase vessel traffic and the risks of reduced vessel safety in the Project area.

Of the cumulative projects listed in Section 3, *Cumulative Projects*, all are located at a remote distance from the Project, and the nature of these onshore projects would not be cumulatively considerable with the nature of the proposed Project; the projects listed in Table 3-2 would, therefore, not contribute to Project-related impacts to marine transportation. Construction-related Project activities would be short-term, would be limited to the small offshore work area, and would result in a minor short-term increase in the number of vessels traveling to and from the POLB compared to the number of existing port calls (POLB 2015, 2016). Therefore, the Project is not expected to make a significant contribution to cumulative impacts to marine vessel traffic, and effects would not be cumulatively considerable.

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5.0 PROJECT ALTERNATIVES ANALYSIS

5.1 INTRODUCTION

As noted in Section 1, *Introduction*, the California State Lands Commission (CSLC) is preparing this Environmental Impact Report (EIR) for the Becker and Legacy Wells Abandonment and Remediation Project (Project). The Project discussed in Section 2, *Project Description*, provides information on abandoning the Becker well and other legacy wells in a location that is accessible to a barge. The California Environmental Quality Act (CEQA) requires the CSLC, as the CEQA lead agency, to describe and evaluate the comparative merits of a reasonable range of alternatives to a proposed project or its location, that would feasibly attain most of the basic objectives of the project while avoiding or substantially lessening any significant environmental effects (State CEQA Guidelines, § 15126.6, subd. (a)). This section describes the screening methodology to identify reasonable alternatives, identifies alternatives eliminated from further consideration, and provides descriptions and impact analyses of each Project alternative considered. Section 6 identifies the environmentally superior alternative.

In order to provide additional information to decision-makers, this EIR also provides information on methods for abandoning legacy wells from locations that are not accessible to a barge-type system.

5.2 SELECTION OF ALTERNATIVES

5.2.1 Guidance on Alternatives Development and Evaluation

The State CEQA Guidelines provide the following guidance for evaluating alternatives.

- An EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation. An EIR is not required to consider alternatives which are infeasible. (§ 15126.6, subd. (a).)
- The discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly. (§ 15126.6, subd. (b).)
- In selecting a range of potential reasonable alternatives to the Project, the lead agency shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects. Among the factors that a lead agency may use to eliminate alternatives from detailed consideration are: (i) failure to meet most of the basic

project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts. (§ 15126.6, subd. (c).)

- The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the Project. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed. (§ 15126.6, subd. (d).)

CEQA also requires an EIR to evaluate a "no project" alternative, the purpose of which is to allow decision-makers to compare the impacts of approving the Project to the impacts of not approving the project. The analysis of a "no project" alternative must discuss the baseline conditions, identified in Table 1-5 in Section 1.4.1, *Baseline and Future Conditions*,[1] as well as what would be reasonably expected to occur in the foreseeable future if the Project were not approved.

5.2.2 Alternatives Screening Methodology

Alternatives to the Project were identified, screened, and either retained for further analysis or eliminated as described below. Alternatives were developed based on: input received from comments on the NOP; information presented by the CSLC; comments received on other projects in the area; and information provided by CSLC consultants. The Alternatives screening process consisted of the following steps:

Step 1: Define a wide range of alternatives to allow for a comparative evaluation

Step 2: Evaluate each alternative using the following criteria:

- The extent to which the alternative would accomplish most of the basic goals and objectives of the Project (see Section 2.2, *Project Objectives*)
- The feasibility of the alternative, considering site suitability, economic viability, availability of infrastructure, General/Local Coastal Plan consistency, and consistency with other applicable plans and regulatory limitations
- The extent to which the alternative would avoid or lessen one or more of the significant environmental impacts of the Project

Step 3: Determine the suitability of the proposed alternative for full analysis in the EIR based on Steps 1 and 2 above. Alternatives considered unsuitable were eliminated, with appropriate justification, from further consideration. The State CEQA Guidelines require

[1] Potential impacts are often analyzed in the context of the local and regional physical environmental conditions existing at the time the Notice of Preparation (NOP) is released for a Project EIR (in this case, October 2016).

the consideration of a "no project" alternative and to identify, under specific criteria, an "environmentally superior" alternative. If the environmentally superior alternative is determined to be the "no project" alternative, the EIR must identify an environmentally superior alternative among the other alternatives (State CEQA Guidelines, § 15126.6).

At the screening stage, potential impacts of the alternatives or the Project cannot be evaluated with any measure of certainty; however, elements of the Project that are likely to be sources of impacts can be identified. The results of the preliminary assessment of potential significant effects of the Project are provided in Table 5-1.

Table 5-1. Preliminary Assessment of Potential Project Effects

Potential Impact	Environmental Issue Areas (see Sections 4.1 through 4.12)
Potential for spills of crude oil or construction materials	HAZ, AES, CR, WQ, BIO, REC
Potential for impacts to biological resources due to construction activities in the intertidal zone	BIO
Potential for impacts due to construction activities 24 hours per day for a period of 3 weeks	NOI, REC, AES
Potential for construction related air quality emissions	AQ

Notes: AES = Aesthetics/Visual Resources; AQ = Air Quality; BIO = Biological Resources; CR = Cultural Resources; HAZ = Hazards/Hazardous Materials; NOI = Noise; REC = Recreation; WQ = Hydrology/Water Quality

For the screening analysis, the technical and regulatory feasibility of potential alternatives was assessed at a general level. The assessment of feasibility was conducted by using "reverse reason" to identify anything about the alternative that would be infeasible on technical or regulatory grounds. CEQA does not require elimination of a potential alternative based on cost of construction and operation/maintenance. For the Project, characteristics used to eliminate alternatives from further consideration included:

- Limited effectiveness in reducing environmental impacts
- Engineering feasibility and safety
- Permitting feasibility
- Potential adverse effects on marine and terrestrial resources
- Potential adverse effects on public health and safety
- Potential for inconsistency with adopted agency plans and policies
- Feasibility when compared to other alternatives under consideration

An alternative with infeasible characteristics, and feasible alternatives that did not clearly offer the potential to reduce significant environmental impacts were eliminated from further analysis. In the final screening step, environmental advantages and disadvantages of the remaining alternatives were carefully weighed with respect to their potential for overall environmental advantage, technical feasibility, and consistency with Project and public objectives.

5.2.3 Summary of Screening Results

Alternatives found to be technically feasible and consistent with the Project objectives were then reviewed for their ability to reduce the potentially significant environmental impacts associated with the Becker well and with abandoning other legacy wells. For abandonment of the Becker well, which is located in the surf zone with sufficient depth of water at high tide, the use of a barge system is feasible. However, other legacy wells at Summerland Beach are in locations where a barge might not be feasible (located more inland). In addition, pending the results of a bathymetric analysis, the Becker well might not be able to directly use a barge. Therefore, this EIR also provides information on methods for abandoning legacy wells from locations that are not accessible to a barge-type system.

Table 5-2 identifies potential Project alternatives, which are described and evaluated in detail in Sections 5.3 through 5.5 below. As this EIR may be used as a tool in assessing the feasibility and environmental impacts of abandoning other legacy wells in the future in other locations on Summerland Beach, an additional analysis is conducted to evaluate the comparable merits of alternatives related to legacy wells that are not accessible by barge. Please see Section 5.5 for further discussion. Generally, the same conclusions would be reached as those reached under the Becker well analysis for any well, including the Becker well, that is accessible by a barge.

Table 5-3 shows each alternative and their respective components.

Table 5-2. Summary of Alternatives Screening Results

Role in EIR	Alternative	Issue Areas Affected Compared to Proposed Project
Alternatives Evaluated in this EIR for the Becker well Project (Section 5.4)	No Project Alternative	*Continued Impacts: AQ, BIO, CR, HAZ, REC, WQ*
	Enhanced barge and materials transport	*Impacts* ↓: AES, AQ, BIO *Impacts* ↑: None
Alternatives Eliminated from Consideration for the Becker well (Section 5.3) **but** **Evaluated in this EIR for other legacy wells (Section 5.5)**	Small Cofferdam, Pier	*Impacts* ↓: None *Impacts* ↑: BIO, NOI, REC
	Large Cofferdam, Platform	*Impacts* ↓: None *Impacts* ↑: BIO, NOI, REC
	Enhanced Barge and Pier	*Impacts* ↓: AES, AQ, BIO *Impacts* ↑: None
Alternatives Eliminated from Further Consideration in this EIR	Small Cofferdam, Barge	*Impacts* ↓: None *Impacts* ↑: BIO, NOI, REC

Notes: ↑ = increased; ↓ = reduced; AES = Aesthetics/Visual Resources; AQ = Air Quality; BIO = Biological Resources; CR = Cultural Resources; HAZ = Hazards/Hazardous Materials; NOI = Noise; REC = Recreation, WQ = Hydrology/Water Quality

Table 5-3. Summary of Major Components: Project and Alternatives

Project Component	Proposed Project - Offshore	Project Alternatives				
		No Project	Small Cofferdam with Pier	Large Cofferdam, Work Platform	Small Cofferdam with Barge	Enhanced Barge**
Well abandonment duration (days)	3	None	3	3	3	3
Total duration (weeks)	3.3+*	None	10.6	10.2	6.7	3.3
Cofferdam installation location	From barge	None	From shore	From shore	From shore	From barge
Cofferdam length (feet)	140	None	124	600	140	140
Pier length (feet)	None	None	130	None	None	None**
Beach Road	None	None	Berm and road base	Sheet pile and steel plates	Berm and road base	None
Employee access from	Tugs & SB Harbor	None	Lookout Park	Lookout Park	Lookout Park & SB Harbor	Tugs & SB Harbor
Peak Number of Employees	25	None	17	17	25	25
Fluids Handling	On barge	None	Piped to Park	Piped to Park	On barge	On barge

* Depending on tides, duration could be longer due to accessibility of the barge.
** Includes Enhanced Barge with Pier. For legacy wells not accessible by barge, the pier length would be dependent on the location of the well.

5.3 BECKER WELL ALTERNATIVES ELIMINATED FROM CONSIDERATION

5.3.1 Small Cofferdam and Pier Alternative

Under this alternative, a workover (abandonment) rig would access the Becker well from onshore along a new, temporary access road and pier (see Figure 5-1). The 15-foot-wide temporary road would be built from the base of the paved access road from Lookout Park, along the beach below the bluff approximately 600 feet in a westerly direction, to the location where pier construction would begin. The road would have an 8- to 12-inch crushed rock base and be built with a sand berm on the ocean side.

The temporary pier would be constructed of driven steel piles, welded steel caps, welded steel strings and a timber deck, and would be 17 feet above the sand and 25 feet wide by 105 feet long. From there, a 25-foot-wide doubled-walled cofferdam and work area would be built around the Becker well fully exposing the well to a depth of 10 feet below the ~~mudline~~ surface of the sand (depending on the depth of sand cover). The cofferdam/work area would be structurally tied into the pier to provide added stability. The overall length of the pier and cofferdam/work area would be 130 feet. Most of the equipment used in the abandonment of the Becker well would be driven onto the pier by vehicles using the new bluff access road.

Figure 5-1. Small Cofferdam and Pier Alternative Schematic

All tanks and pumps needed to abandon and seal the well would be located in Lookout Park, and hoses would be run down the beach access road, along the temporary construction road and out on the pier to the work area. Upon completion of the Becker well abandonment, the pier and access road would be completely removed, and the beach would be returned to its original condition. Table 5-4 identifies the advantages and disadvantages of this alternative. For these reasons, this Project alternative has been eliminated from further consideration.

Table 5-4. Advantages/Disadvantages of Small Cofferdam/Pier Alternative

Advantages	• Provides protection against extreme weather/surf related risks • All equipment is above the water and, if necessary, could be de-mobilized to Lookout Park in less than 1 day prior to the expected occurrence of dangerously high surf conditions • Double-walled cofferdam adds stability against high surf conditions and should minimize water intrusion around the well
Disadvantages	• Larger project footprint and potentially greater biological resources impacts to the Summerland Beach • Longer period of construction would increase the potential for impacts to recreational resources and noise to the community from extended use of the access road, the beach and Lookout Park • Installation of the pier increases the potential for scheduling issues due to the possibility that extreme hardness of the bedding or buried remnants from historical operations would be encountered

5.3.2 Large Cofferdam and Work Platform Alternative

Under this alternative, a large, single-walled cofferdam would be constructed along the beach from the access road to the Becker well site to provide protected access to the Becker well site and a work platform. The abandonment rig would access the Becker well from onshore within the newly constructed area within the large cofferdam (Figure 5-2).

Figure 5-2. Large Cofferdam and Work Platform

About 600 feet of sheet pile would be installed from the base of the paved access road from Lookout Park along the bluff to block the water and provide space for a 25-foot-wide access road to the start of the cofferdam. From there, sheet pile would be installed out to and around the Becker well. The Becker well would then be excavated and exposed from inside the cofferdam, and a working platform would be built on top of the cofferdam. The platform would be erected 5 feet above the water line and would provide a working surface area of 130 feet by 25 feet (same as the alternative above). Most of the equipment used in the abandonment of the Becker well would be driven onto the platform using the bluff access road. All tanks and pumps would be located in Lookout Park, and hoses would be run down the beach access road, along the temporary construction road and out on to the working platform to the well. Upon completion of the Becker well abandonment and backfilling of the excavation material, the cofferdam and access road would be completely removed and the beach returned to its original condition.

Table 5-5 identifies the disadvantages of this alternative. For these reasons, this Project alternative has been eliminated from further consideration.

Table 5-5. Advantages/Disadvantages of Large Cofferdam/Platform Alternative

Disadvantages	• Single-walled cofferdam would most likely leak during use, so sea water would need to be pumped from the well sump area back into the ocean • Larger project footprint has the potential for greater biological resource impacts to Summerland Beach • Working platform would not be as high off the water as the barge approach resulting in less tolerance for wave heights above 5 feet, thereby increasing the potential for the Project to be interrupted • Longer period of construction would increase the potential for impacts to recreational resources and noise to the community from extended use of the access road, the beach and Lookout Park • Installation of pier increases the potential for scheduling issues due to potential conflicts with extreme hardness of the bedding and/or buried remnants from historical operations

5.3.3 Small Cofferdam and Barge Access Alternative

This alternative would be similar to the Project in that a jack-up barge would be used for well abandonment, but dissimilar in that the cofferdam would be constructed from the beach. A small, double-walled cofferdam would be built around the well from the beach with cranes and construction equipment accessing the area during low tides. The construction equipment would access the beach area from the access road from Lookout Park. A 15-foot-wide temporary road would be built from the base of the paved access road from Lookout Park, along the beach below the bluff approximately 600 feet in a westerly direction, to the location where pier construction would begin. The road would have an 8- to 12-inch crushed rock base and be built with a sand berm on the ocean side.

The workover rig and all abandonment equipment would be mobilized onto the jack-up barge in the Port of Long Beach (POLB). The barge would then be towed to the Becker well location adjacent to the cofferdam during high tide and then jacked-up into position at a safe distance above the water. Following completion of the abandonment, the jack-up barge would be lowered back into the water at high tide and towed back to the POLB. The cofferdam would then be removed and backfilled with sand using construction equipment on the beach during low tide periods and the beach returned to its original condition.

Table 5-6 identifies the advantages and disadvantages of this alternative. For these reasons, this Project alternative has been eliminated from further consideration.

5.4 ALTERNATIVES EVALUATED IN THIS EIR FOR THE BECKER WELL PROJECT

Two alternatives, including the No Project Alternative, are identified for full evaluation and comparison to the Project (see Tables 5-2 and 5-3 above). Remaining alternatives associated with other legacy wells are also included in Table 5-3 for comparison.

The Project evaluated in this EIR is the abandonment of the Becker well or any well located such that a barge can access it (located far enough into the water at high tide). The Becker well is located slightly offshore in the intertidal area; the area is partially exposed at very low tides, but is generally covered with seawater. The scope of this EIR also includes potential abandonment of other legacy wells on Summerland Beach.

Table 5-6. Advantages/Disadvantages of Small Cofferdam/Pier Alternative

Advantages	• Project footprint would be smaller (no pier or platform construction) and would therefore have fewer potential impacts to Summerland Beach biological resources • Work activities on the beach would be low compared to alternatives involving piers or working platforms, thereby reducing impacts to recreation and noise impacts to the community • Tanks and pumps would not be staged in Lookout Park and an extensive hose network to the well would not be needed, thereby reducing recreational impacts • Use of the jack-up barge would minimize extreme weather related risks (in extreme weather the jack-up can be moved to a safe harbor in nearby Santa Barbara) • Potential scheduling issues would be minimized due to the reduced sheet pile use or pier installation associated with the risk of encountering extreme hardness of the bedding and/or buried remnants from historical operations
Disadvantages	• There is some uncertainty associated with the use of a barge. The jack-up barge provider has determined that the use of a barge would be a viable method to position the Project equipment next to the well site. To confirm the feasibility of this option, a bathymetric survey of the ocean floor would be conducted to confirm that a fully loaded barge can be floated into position • Project timeframe could increase due to barge arrival and departure times being tide-dependent and cofferdam installation occurring only during low tides; time delays could also result due to major equipment failures associated with the barge or equipment • Daily crew change-outs and crew and equipment transport to the barge would potentially increase impacts to air quality • Additional construction activities related to installation of the Pier would affect biological resources and recreation

5.4.1 No Project Alternative

Under the No Project Alternative, the Becker well would not be abandoned, crude oil would continue to leak from the Becker well resulting in continued odor impacts, recreational impacts to the community, and impacts to biological resources due to crude oil released into the environment. Table 5-7 provides a summary of environmental impacts associated with the No Project Alternative.

Table 5-7. Impact Summary: No Project Alternative

HAZARDOUS MATERIALS AND RISK OF UPSET
Under the No Project Alternative, releases of crude oil into the environment due to the leaking Becker well would continue.
AESTHETICS
Impacts to aesthetics would continue to occur due to leaking oil.
AIR QUALITY
Under the No Project Alternative, odors, consistent with the historical odors emanating from the leaking crude oil due to the leaking Becker well, would continue.
BIOLOGICAL RESOURCES
Under the No Project Alternative, impacts to biological resources from crude oil due to the leaking Becker well would continue.
CULTURAL AND TRIBAL RESOURCES
Impacts to cultural resources would continue to occur from leaking oil.
GEOLOGY AND SOILS
Under the No Project Alternative, crude oil contamination of sands/soils due to the leaking Becker well would continue.
GREENHOUSE GAS EMISSIONS
Under the No Project Alternative, impacts to GHG from releases of methane gas from the leaking Becker well would continue.
HYDROLOGY AND WATER QUALITY
Under the No Project Alternative, impacts to water quality from crude oil due to the leaking Becker well would continue.
NOISE
No impacts to noise would occur.
RECREATION
Under the No Project Alternative, impacts to recreation from leaking crude oil, including odors and contaminated sands, would continue.
TRANSPORTATION (MARINE)
No impacts to marine transportation would occur.

5.4.2 Enhanced Barge Alternative

Under the Enhanced Barge Alternative, a larger barge, multiple barges or a single barge combined with supply boat trips would be used, reducing the number of barge trips needed from the POLB. This alternative would be used to access wells which are barge-accessible. Activities under this alternative would be the same as those under the

Project, except that additional engineering analysis would be implemented, providing the specifics for a single round trip from the POLB to the Project site for all equipment. This might include the following elements:

- Acquiring a larger barge that would allow for the transportation of the abandonment rig, associated equipment, the crane, and the sheet piles for installation of the cofferdam and the abandonment of the well in a single barge trip;
- Use of the same size barge as the barge proposed for use under the Project with the inclusion of the crane and the abandonment rig and associated equipment in the same barge trip. The addition of the crane to the same barge trip would remove the round trip back to the POLB to drop off the crane and pick up the abandonment rig. This option may require delivery of the sheet piles by a supply boat due to the weight of the sheet piles. The sheet piles are estimated to add more than 200,000 pounds of weight to the barge, or approximately 0.5 feet of barge displacement, thereby increasing the difficulty of positioning the barge at the Becker well site due to the limited water depth at high tide. Therefore, the sheet piles may be required to be delivered by a supply boat and offloaded onto the barge at high tide once the barge is jacked-up; or
- Use of multiple barges, where one barge contains the abandonment rig, associated equipment, and crane while a second barge carries the sheet piles and additional equipment. The sheet piles and associated equipment would be transferred to the jack-up barge with the crane. The second barge would not need to be a jack-up barge.

This alternative would allow for a single delivery of the barge or barges and then a single removal of the barge or barges, thereby facilitating the use of very high tides (above 6 feet), which have periodic occurrences approximately 3 to 4 weeks apart (see Section 2, *Project Description,* and Appendix H). While this alternative is very similar to the Project, it allows for a more refined movement of materials to and from the Project site, allowing for elimination of additional barge trips to and from the Becker well site and eliminating the scheduling issues associated with coordinating barge arrival and departure times with the tides. Eliminating the potential for schedule extensions due to tidal considerations would proportionately reduce the potential for impacts to air quality and recreational resources.

Table 5-8 provides a summary of environmental impacts associated with the Enhanced Barge Alternative. No further detailed analysis is required for any of the issue areas to address potential changes in impacts from the Project. No additional mitigation measures are identified as part of the Enhanced Barge Alternative that have not been proposed under the Project.

Table 5-8. Impact Summary: Enhanced Barge Alternative

HAZARDOUS MATERIALS AND RISK OF UPSET
As under the Project, the Enhanced Barge Alternative would reduce long-term crude oil leaks on Summerland Beach by abandoning the Becker well. As under the Project, some risk of spills to the environment exists during well abandonment due to upset conditions or spills of construction materials, but would be less than significant with mitigation. **MMs HAZ-1, HAZ-2a, HAZ-2b, APM-1, APM-2, APM-3** would be applicable.
AESTHETICS
Impacts to aesthetics would be the same as under the Project. **MM AES-4** would be applicable. **MMs HAZ-1, HAZ-2a, HAZ-2b, APM-1, APM-2, APM-3** would be applicable.
AIR QUALITY
As under the Project, the Enhanced Barge Alternative would reduce odors and emissions of hydrocarbons associated with leaking wells at Summerland Beach. Compared to the Project, the Enhanced Barge Alternative would reduce the air quality impacts of the construction phase due to the reduction in the barge and tug boat trips. **MMs AQ-1a, AQ-1b, AQ-1c and AQ-1d** would be applicable.
BIOLOGICAL RESOURCES
As under the Project, the Enhanced Barge Alternative would reduce long-term crude oil leaks on Summerland Beach by abandoning the Becker well, thereby reducing impacts to the biological resources. As under the Project, some risk of spills to the environment exists during well abandonment due to upset conditions or spills of construction materials. **MMs BIO-3, BIO-4 and BIO-5a, BIO-5b** would be applicable. **MMs HAZ-1, HAZ-2a, HAZ-2b, APM-1, APM-2, APM-3** would be applicable.
CULTURAL AND TRIBAL RESOURCES
Impacts to cultural resources would be the same as under the Project. **MMs CR-1 and CR-2** would be applicable. **MMs HAZ-1, HAZ-2a, HAZ-2b, APM-1, APM-2, APM-3** would also be applicable.
GEOLOGY AND SOILS
As under the Project, the Enhanced Barge Alternative would allow for the elimination of contaminated sands/soils at the Becker well site.
GREENHOUSE GAS EMISSIONS
As under the Project, the Enhanced Barge Alternative would reduce methane emissions associated with leaking wells at Summerland beach. Compared to the Project, the Enhanced Barge Alternative would reduce the GHG emissions of the construction phase due to the reduction in the barge and tug boat trips.
HYDROLOGY AND WATER QUALITY
As under the Project, the Enhanced Barge Alternative would reduce long-term crude oil leaks on Summerland Beach by abandoning the Becker well, thereby reducing impacts to the hydrological resources. As under the Project some risk of spills to the environment exists during well abandonment due to upset conditions or spills of construction materials. **MMs HAZ-1, HAZ-2a, HAZ-2b, APM-1, APM-2, APM-3** would be applicable.
NOISE
Impacts due to construction noise would be the slightly less than as under the Project

Table 5-8. Impact Summary: Enhanced Barge Alternative

due to reduced barge and associated tug boat activities. **MM NOI-1** would be applicable.
RECREATION
As under the Project, the Enhanced Barge Alternative would reduce long-term crude oil leaks on Summerland Beach by abandoning the Becker well, thereby reducing impacts to recreational resources. Impacts to recreational resources would be the same as under the Project. **MMs TRM-1, REC-1, HAZ-1, HAZ-2a, HAZ-2b, APM-1, APM-2, APM-3** would also be applicable.
TRANSPORTATION (MARINE)
As under the Project, vessel traffic would occur and the potential for impacting marine safety would still exist. Due to the reduced level of barge traffic under the Enhanced Barge Alternative, impacts to marine vessel safety would be less severe than under the Project. **MM TRM-1** would apply.

5.5 OTHER LEGACY WELL ALTERNATIVES EVALUATED IN EIR

5.5.1 Description

For abandonment of the Becker well, located in the surf zone with sufficient depth of water at high tide, the use of a barge system and conducting abandonment operations from a marine location would be feasible. However, other legacy wells in Summerland beach are in locations where a barge might not be feasible (located slightly more inland). To provide additional information to decision makers, this EIR also provides information on the environmentally preferred method for abandoning wells from locations that are not directly accessible to a barge-type system. It is possible that the Becker well, after a bathymetric survey is conducted, might not be directly accessible by a barge and then this approach would be applicable to the Becker well Project as well.

For these locations, the Small Cofferdam and Pier Alternative and Large Cofferdam and Work Platform Alternative would allow for abandonment of legacy wells located higher up on the beach than the Becker well by accessing the well from the beach. The Barge and Pier Alternative has been included which would allow for the use of a barge position seaward of the target well and with a pier built from the barge to the well to allow for abandonment. This alternative would allow for a completely marine alternative for wells that are not directly accessible by a barge. Table 5-9 shows a comparison of these alternatives in terms of issue area impacts.

For these alternatives, as under the Project, implementation would reduce the long-term crude oil leaks into the Summerland beach environment, as well re-abandonment is inherent to both alternatives. Correspondingly, the potential for impacts to biological and recreational resources and air quality would be reduced. Table 5-9 compares the alternatives to evaluate the comparable merits of alternatives for the removal of legacy wells not directly accessible by a barge.

Generally, the same conclusions would be reached as those reached under the Becker well analysis for any well, including the Becker well, that is accessible by a barge.

As Table 5-9 shows, the Enhanced Barge with Pier Alternative would be the preferred alternative for the abandonment of legacy wells that are not directly barge-accessible due to the greater impacts associated with the Small Cofferdam and Pier (from onshore) and the Large Cofferdam and Work Platform Alternatives installation requirements, including noise to residences from more sheet pile installation (vibratory hammers), noise-related recreational impacts, recreational impacts to Lookout Park and the beach, the need for transportation of additional materials and air quality impacts associated with more intensive construction activities (installation of the longer sheet pile wall). The Small Cofferdam and Pier (from onshore) and the Large Cofferdam and Work Platform Alternatives would provide an advantage only in the reduction in the potential for marine safety issues, although the Project and the Enhanced Barge Alternative would reduce these impacts to less than significant (see **MM TRM-1**). As with the Project and the Enhanced Barge Alternative, limiting the construction activities to an offshore approach minimizes impacts to Lookout Park and beach areas.

Table 5-9. Impact Summary: Alternatives for Legacy Wells

Issue Area	Small Cofferdam with Pier	Large Cofferdam with Work Platform	Enhanced Barge with Pier	Discussion
Hazardous Materials and Risk of Upset	Same	Same	Same	As under the Project, some risk of spills to the environment exists during Becker well abandonment due to upset conditions or spills of construction materials.
Aesthetics	Same	Same	Same	Impacts would be the same for aesthetics
Air Quality	-	-	Preferred	The Large Cofferdam Alternative would generate more air quality impacts due to the increased use of construction equipment to install the 600-foot sheet pile wall along the beach. Recreational impacts of both of the Small Cofferdam and Large Cofferdam Alternatives would be greater than the Enhanced Barge with Pier Alternative.
Biological Resources	Same	Same	Same	As under the Project, some risk of spills to the environment exists during Becker well abandonment due to upset conditions or spills of construction materials.
Cultural Resources	Same	Same	Same	Impacts to cultural resources would be the same.

Table 5-9. Impact Summary: Alternatives for Legacy Wells

Issue Area	Small Cofferdam with Pier	Large Cofferdam with Work Platform	Enhanced Barge with Pier	Discussion
Geology and Soils	Same	Same	Same	As under the Project, the alternative would allow for the elimination of contaminated sands/soils at the Becker well site.
Greenhouse Gas Emissions	-	-	Preferred	The Small Cofferdam and Large Cofferdam Alternatives would generate more GHG construction emissions due to the increased construction activities associated with installation of the large sheet pile wall or additional pier and road elements.
Hydrology and Water Quality	Same	Same	Same	As under the Project, some risk of spills to the environment exists during Becker well abandonment due to upset conditions or spills of construction materials.
Noise	-	-	Preferred	As both the Small and Large Cofferdam Alternatives would take a similar amount of time to implement, impacts due to the noise duration during the construction phase would be similar. However, due to the amount of sheet pile or pier elements installation, and corresponding high noise levels associated with sheet pile installation (vibratory hammers, etc.), the Small and Large Cofferdam Alternatives have greater impacts.
Recreation	-	-	Preferred	Both the Small and Large Cofferdam Alternatives would involve greater impacts to Lookout Park and the beach areas, producing impacts to recreational resources.
Transportation	-	-	Preferred	Both the Small and Large Cofferdam Alternatives would require the transportation of materials into Lookout Park, staged in Lookout Park and then moved down to the beach. However, the Large the Small and Large Cofferdam Alternatives would require more materials in order to construct the sheet pile wall along the roadway and a longer pier which would need to be trucked to Lookout Park, and would therefore generate greater impacts.

Table 5-9. Impact Summary: Alternatives for Legacy Wells

Issue Area	Small Cofferdam with Pier	Large Cofferdam with Work Platform	Enhanced Barge with Pier	Discussion
Transportation (Marine)	Preferred	Preferred	-	Both the Small and Large Cofferdam Alternatives would transport materials by land and would therefore produce minimal potential for marine vessel safety impacts.

5.5.2 Enhanced Barge with Pier Alternative

Under this alternative, a barge would be used as under the Enhanced Barge Alternative, but for wells that are located farther inland on the beach, a temporary pier would be constructed from the barge. The abandonment rig would access the legacy well from the barge along the new pier. Implementation would be the same as the Enhanced Barge Alternative, using either a large barge, multiple barges or a single barge and supply boats. The barge would be placed as close to the legacy well as possible. The barge would hold all of the well abandonment equipment, a crane, pier elements and sheet pile materials for the cofferdam (or these would be delivered by supply boats).

A temporary steel pier would be built from the barge edge to the wellhead, stretching anywhere up to 200 feet (depending on the exact location of the legacy wells). The pier would be constructed of driven steel piles or sheet piles, welded steel caps, welded steel strings and a timber deck. A double wall (25-foot by 25-foot outer wall, 6-foot by 6-foot inner wall) steel sheet pile cofferdam would be built around the well. Inside the inner wall, the well would be excavated to a depth of 10 feet below the ~~mudline~~ surface of the sand (depending on the depth of sand cover).

Pier construction would require installing steel piles or sheet piles in a formation that would support the pier structure above the beach. Installation of individual piles would take a similar amount of time as the installation of a single sheet pile. Individual piles or sheet piles would be installed approximately 12 feet apart and would support a platform system approximately 25 feet wide. Building the pier would take from 20 to 30 days depending on the length. For a 200-foot pier, approximately 30 piles would need to be installed, along with platform cross members.

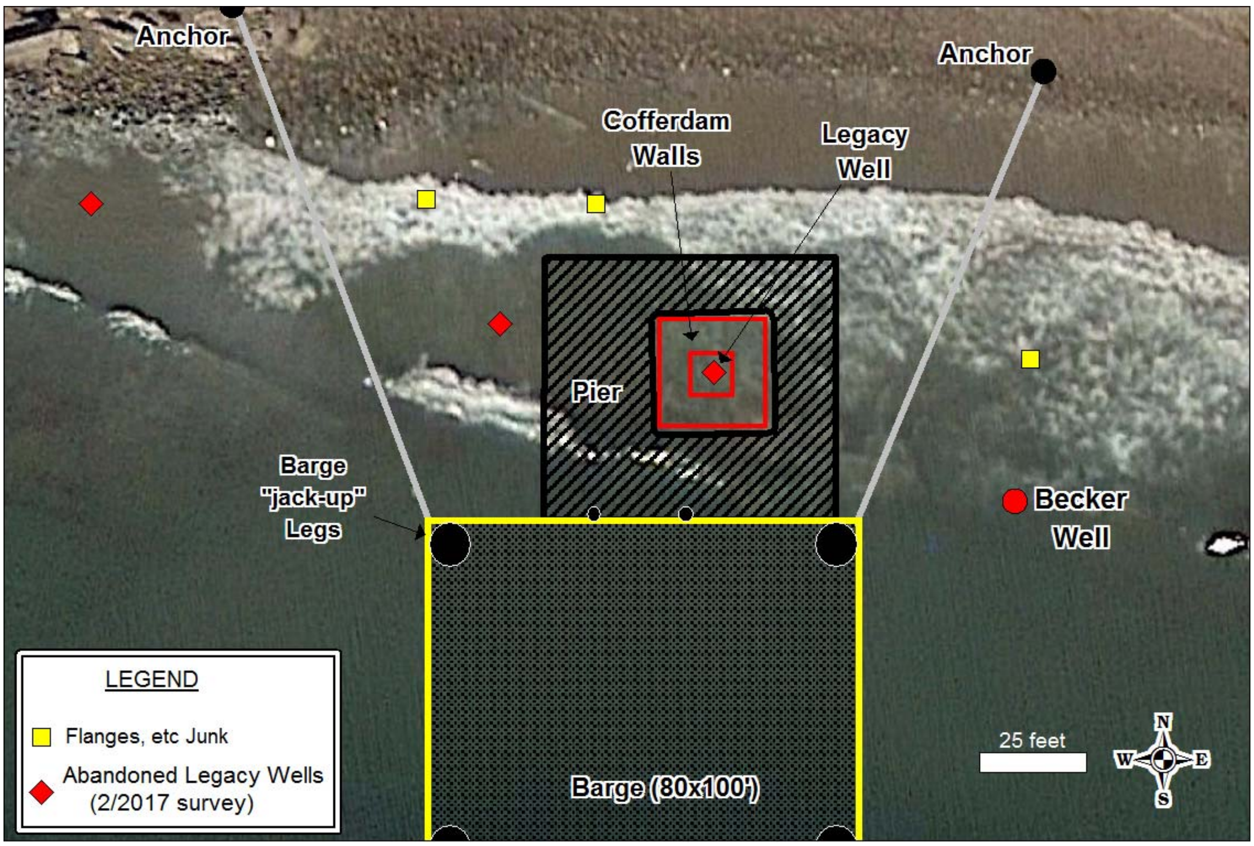
All sand removed from inside the cofferdam would be stored on site ~~unprocessed~~ and then filled back into the excavation area when work is completed.

Once the abandonment is completed, the entire pier and cofferdam would be deconstructed and removed including all pier piles and sheet pile. Construction would take place entirely from the barge. The beach would be returned to its original condition. The equipment to be used would be the same as the Enhanced Barge Alternative.

Additional pier elements would be included, such as pier pilings and supports which would be installed with the crane and vibrating hammer (see Figure 5-3). Eight workers would install the pier from the barge. Pier and cofferdam construction would take between 3 and 14 days, depending on the location of the well. Removal of the cofferdam, pier and beach access road would take between 3 and 14 days. Well abandonment activities would require up to 25 employees and take up to 3 days as under the Project.

All of the impacts with the Enhanced Barge and Pier Alternative would be the same as the Enhanced Barge Alternative. Table 5-10 provides a summary of environmental impacts associated with the Enhanced Barge with Pier Alternative.

Figure 5-3 Enhanced Barge with Pier Alternative Schematic



No further detailed analysis is required for any of the issue areas to address potential changes in impacts from the Project as impacts would be similar to the Project. No additional mitigation measures are identified as part of the Enhanced Barge with Pier Alternative that have not been proposed under the Project.

Table 5-10. Impact Summary: Enhanced Barge with Pier Alternative

HAZARDOUS MATERIALS AND RISK OF UPSET
As under the Project, the Enhanced Barge Alternative would reduce long-term crude oil leaks on Summerland Beach by abandoning the Becker well. As under the Project, there exists some risks of spills to the environment during well abandonment due to upset conditions or spills of construction materials, but would be less than significant with mitigation. **MMs HAZ-1, HAZ-2a, HAZ-2b, APM-1, APM-2 and APM-3** would be applicable.
AESTHETICS
Impacts to aesthetics would be the same as under the Project. **MM AES-4** would be applicable. **MMs HAZ-1, HAZ-2a, HAZ-2b, APM-1, APM-2, APM-3** would also be applicable.
AIR QUALITY
As under the Project, the Enhanced Barge with Pier Alternative would reduce odors and emissions of hydrocarbons associated with leaking wells at Summerland Beach. Compared to the Project, the Enhanced Barge with Pier Alternative would reduce construction air quality impacts due to the reduction in the barge and tug boat trips. Some additional emissions would occur due to the additional time needed to construct the pier, but peak day emissions would stay the same as the Project or the Enhanced Barge Alternative. **MMs AQ-1a, AQ-1b, AQ-1c and AQ-1d** would be applicable.
BIOLOGICAL RESOURCES
As under the Project, the Enhanced Barge Alternative would reduce long-term crude oil leaks on Summerland Beach by abandoning the Becker well, thereby reducing impacts to the biological resources. As under the Project, some risk of spills to the environment exists during well abandonment due to upset conditions or spills of construction materials. **MMs BIO-3, BIO-4, BIO-5a, and BIO-5b** would be applicable. **MMs HAZ-1, HAZ-2a, HAZ-2b, APM-1, APM-2, APM-3** would also be applicable.
CULTURAL RESOURCES
Impacts to cultural resources would be slightly more than under the Project due to the increased pier installation activities. **MMs CR-1 and CR-2** would be applicable. **MMs HAZ-1, HAZ-2a, HAZ-2b, APM-1, APM-2, APM-3** would also be applicable.
GEOLOGY AND SOILS
As under the Project, the Enhanced Barge with Pier Alternative would allow for the elimination of contaminated sands/soils at the Becker well site.
GREENHOUSE GAS EMISSIONS
As under the Project, the Enhanced Barge with Pier Alternative would reduce methane emissions associated with leaking wells at Summerland beach. Compared to the Project, the Enhanced Barge Alternative would reduce the GHG emissions of the construction phase due to the reduction in the barge and tug boat trips. Some additional emissions would occur due to the additional time needed to construct the pier.

Table 5-10. Impact Summary: Enhanced Barge with Pier Alternative

HYDROLOGY AND WATER QUALITY
As under the Project, the Enhanced Barge Alternative would reduce long-term crude oil leaks on Summerland Beach by abandoning the Becker well, thereby reducing water quality impacts. As under the Project, some risk of spills to the environment exists during well abandonment due to upset conditions or spills of construction materials. **MMs HAZ-1, HAZ-2a, HAZ-2b, APM-1, APM-2, APM-3** would also be applicable.
NOISE
Impacts due to construction noise would be the same as under the Project, although a longer duration of impacts would occur due to the additional time needed to construct the pier. **MM NOI-1** would be applicable.
RECREATION
As under the Project, the Enhanced Barge Alternative would reduce long-term crude oil leaks on Summerland Beach by abandoning the Becker well, thereby reducing impacts to recreational resources. Impacts to recreational resources would be the equal to or greater than under the Project due to the potential for longer construction timing needed to install additional pier elements. **MM TRM-1** <u>and **REC-1**</u> would apply. **MMs HAZ-1, HAZ-2a, HAZ-2b, APM-1, APM-2, APM-3** would also be applicable.
TRANSPORTATION (MARINE)
As under the Project, vessel traffic would occur and the potential for impacting marine safety would still exist. Due to the reduced level of barge traffic under the Enhanced Barge Alternative with Pier, impacts to marine vessel safety would be less severe than under the Project. **MM TRM-1** would apply.

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6.0 OTHER REQUIRED CEQA SECTIONS AND ENVIRONMENTALLY SUPERIOR ALTERNATIVE

As lead agency under the California Environmental Quality Act (CEQA), the California State Lands Commission (CSLC) has prepared this Environmental Impact Report (EIR) to evaluate the potential significant environmental effects of the Becker and Legacy Wells Abandonment and Remediation Project (Project). As discussed in Sections 6.1 through 6.4 below, the State CEQA Guidelines[1] state in part that an EIR shall:

- Identify and focus on the significant environmental effects of a proposed project (§ 15126.2, subd. (a))
- Describe any significant impacts, including those that can be mitigated but not reduced to a level of insignificance (§ 15126.2, subd. (b))
- Identify significant irreversible environmental changes that would be caused by a proposed project should it be implemented (§ 15126.2, subd. (c))
- Identify any growth-inducing impacts of a proposed project such as the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment (§ 15126.2, subd. (d))
- Identify any known areas of controversy or unresolved issues (§ 15123, subd. (b))
- Identify the environmentally superior alternative (§ 15126.~~2~~6, subd. (e)(2))

6.1 SIGNIFICANT ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED

The significant environmental impacts anticipated as a result of the Project and mitigation measures identified to reduce impacts are discussed in Section 4, *Environmental Impact Analysis*. The State CEQA Guidelines (§ 15126.2, subd. (b)) require that an EIR describe any significant impacts that cannot be avoided, even with the implementation of feasible mitigation measures. As shown in Table 6-1, only one significant unavoidable impact (i.e., an impact that cannot be reduced to a level of insignificance) of the Project was identified relating to tug boat emissions during the peak day within the South Coast Air Quality Management District (SCAQMD).

Table 6-1. Summary of Project Significant and Unavoidable Impacts

Issue Area (Section)	Impact No. and Impact
Air Quality (4.3)	• **AQ-1 – Increase in Emissions from Construction (within the SCAQMD only)**

[1] The State CEQA Guidelines are found in California Code of Regulations, title 14, section 15000 et seq.

Mitigation measures are identified that would reduce the air pollutant emissions, including the use of clean vessels (MM AQ-1b); however, even with the use of mitigation measures, emissions would not be reduced to a less than significant level. Due to this Significant and Unavoidable impact, approval of the Project would require the CSLC to adopt a Statement of Overriding Considerations stating the specific reasons to support its action, in compliance with State CEQA Guidelines section 15093.

6.2 SIGNIFICANT IRREVERSIBLE CHANGES CAUSED BY THE PROJECT IF IMPLEMENTED

Significant irreversible environmental changes that would be involved with a proposed project may include the following (State CEQA Guidelines, § 15126.2, subd. (c)):

- Uses of non-renewable resources during the initial and continued phases of the project, which would be irreversible because a large commitment of such resources makes removal or non-use thereafter unlikely
- Primary impacts and, particularly, secondary impacts which commit future generations to similar uses
- Irreversible damage, which may result from environmental accidents associated with the project

The purpose of the Project is to abandon a leaking legacy oil well at Summerland Beach. Numerous beneficial impacts were identified in Section 4, *Environmental Impact Analysis*, including those related to air quality (odors), recreation, hydrology and biological resources. Some non-renewable resources in the form of fuels would be used, but these would be nominal amounts. No commitment of future generation to impacts or irreversible damages would occur.

6.3 GROWTH-INDUCING IMPACT OF PROPOSED PROJECT

In general terms, should a project meet any one of the criteria listed below, it can be considered growth-inducing. A project may induce spatial, economic, or population growth in a geographic area if it meets any one of the four criteria identified below:

- Removal of an impediment to growth (e.g., establishment of an essential public service or the provisions of new access to an area)
- Economic expansion or growth (e.g., changes in revenue base or employment expansion)
- Establishment of a precedent-setting action (e.g., an innovation, a change in zoning, or general plan amendment approval)
- Development or encroachment in an isolated area or one adjacent to open space (i.e., being different from an “infill” type of project)

The impacts of the Project would not produce a removal of an impediment to growth as the current conditions on the beach do no limit growth in the area, would not produce an economic expansion or changes in revenue base or employment, would not establish a precedent setting action (no changes in zoning, etc.) and would not involve development or encroachment into an isolated area. Therefore, the Project would not have growth-inducing impacts.

6.4 KNOWN AREAS OF CONTROVERSY OR UNRESOLVED ISSUES

There are no known areas of controversy known to the CSLC, including issues raised by agencies and the public. During public scoping, concern was expressed about the urgency to properly abandon Becker well should inform the CEQA process to use for the Project (e.g., prepare a mitigated negative declaration instead of an EIR). See Appendix C for the NOP, transcripts from the public meeting, and copies of the NOP comment letters.

6.5 COMPARISON OF PROPOSED PROJECT AND ALTERNATIVES AND ENVIRONMENTALLY SUPERIOR ALTERNATIVE

State CEQA Guidelines section 15126.6, subdivision (e)(2), states, in part, that an EIR shall identify an environmentally superior alternative among the other alternatives *"if the environmentally superior alternative is the 'No Project' alternative"* (emphasis added). Table 6-2 compares the proposed Project impacts with those of the alternatives. Based on the analysis contained within the EIR, the CSLC has determined that the Enhanced Barge Alternative is the environmentally superior alternative.

6.5.1 PROPOSED PROJECT

The Project would involve the use of a jack-up barge towed to the site from the Port of Long Beach (POLB), which would provide access to the Project site from the ocean and would be used during all construction activities at the well, including well re-abandonment. Project construction activities would occur in three main phases: (1) construction of a double-walled cofferdam in the surf zone around the well to isolate it from ocean tides and provide access to the well; (2) well abandonment using the jack-up barge; and (3) cofferdam removal. In addition, staging of the barge and removal of the barge would take place. Employees would access the barge from crew boats traveling from the Santa Barbara Harbor.

6.5.2 NO PROJECT ALTERNATIVE

In contrast to the proposed Project, under the No Project Alternative, no activities would take place, and the Becker and legacy wells would continue to leak crude oil and gases into the environment. The No Project Alternative would avoid one significant and unavoidable impact. The need for a construction barge to properly abandon the Becker well and other legacy wells would generate a significant and unavoidable impact to air quality within the SCAQMD, since the barge would need to be transported from the Los Angeles area using two tug boats. The No Project Alternative would also avoid some significant impacts that can be mitigated to less than significant; these impacts are related to the potential for oil spills from the use of construction equipment in the marine environment and the potential for a release of oil from the well during abandonment. Historical information on the wells in the area indicates a very low production rate (on the order of a few barrels per day). Any accidental release of crude oil during the well abandonment process would be controllable through appropriate planning and staging of spill response equipment prior to the start of construction activities and the effective use of response measures should a spill occur.

Due to the elimination of or reduction in oil leakage into the marine environment, the Project would present long-term beneficial impacts in a number of issue areas, including aesthetics, air quality, biological resources, cultural and tribal resources and hydrology and water resources. Therefore, the Project would be environmentally superior to the No Project Alternative.

6.5.3 ENHANCED BARGE ALTERNATIVE

The Enhanced Barge Alternative, which is similar to the Project in that it would use a barge system to access the wells, would incorporate several additional features, including increased transportation of materials by supply boats and use of a different barge configuration to reduce the number of barge trips to and from the POLB. This would reduce the impacts from air emissions associated with the Project and likely reduce scheduling conflicts with tides and other elements of the marine environment, since the barge can only be brought into the beach during specific high tide periods and under calm wave conditions.

The Enhanced Barge Alternative would present the same long-term beneficial impacts as under the Project in a number of areas due to the elimination of or reduction in oil leakage into the marine environment. Under the Enhanced Barge Alternative, the less than significant with mitigation impacts related to potential for oil spills would be the same as under the Project. In addition, as the barge would need to be transported from the Los Angeles area using two tug boats, the significant and unavoidable air emissions that would occur within the SCAQMD would be the same as under the Project as the thresholds for the SCAQMD are based on peak day pollutant emissions, and these would be the same regardless of how many barge trips are taken. However, there would be a reduction in severity of air quality impacts under the Enhanced Barge Alternative as the peak day would only occur during the single round trip (once coming north and once returning) as opposed to during three round trips as under the Project. Therefore, due to the advantages in air emissions, the Enhanced Barge Alternative would be environmentally superior to the Project.

The Enhanced Barge with Pier Alternative would be the environmentally preferable alternative to access legacy wells that are not accessible directly by a barge. Implementation of this alternative would have the benefits of allowing for legacy well abandonment, and the inclusion of pier capabilities on the barge would reduce biological impacts associated with extensive pier and roadway installation on the beach and eliminate impacts to recreation and traffic that would occur due to transportation of materials and beach access by land.

Table 6-2 below compares the Project to the alternatives. Under the No Project Alternative, many of the impacts that are currently and have been historically ongoing are shown as significant and unavoidable as those impacts would continue into the future. These impacts are associated with the leakage of crude oil into the marine environment, affecting aesthetics, air quality, biological resources, hydrology and water quality and recreation.

Table 6-2. Summary of Impacts: Proposed Project and Alternatives

Impact	Impact Class[1]		
	Proposed Project	No Project	Enhanced Barge Alternative[3]
SECTION 4.1 HAZARDOUS MATERIALS AND RISK OF UPSET			
HAZ-1: Impacts to Public Health and Environment	LTSM	NI	LTSM
HAZ-2: Construction-related Spill Impacts To Environment	LTSM	NA	LTSM
HAZ-3: Long-term Oil Spill Impacts to the Environment	B	SU	B
SECTION 4.2 AESTHETICS			
AES-1: Visual Impacts from Abandonment Activities	LTS	NI	LTS
AES-2: Visual Impacts from Accidental Oil Spills During Abandonment Activities	LTSM	NA	LTSM
AES-3: Long-term Oil Spill Impacts to the Environment	B	SU	B
AES-4: Visual Impacts from Nighttime Illumination during Abandonment Activities	LTSM	NA	LTSM
SECTION 4.3 AIR QUALITY			
AQ-1: Air Emissions from Construction	SU[2]	NA	SU[2]
AQ-2: Long-term Air Quality Impacts	B	SU	B
AQ-3: Creation of Objectionable Odors Affecting a Substantial Number of People	LTS	NA	LTS
AQ-4: Consistency with Regional Air Quality Plan	NI	NI	NI
SECTION 4.4 BIOLOGICAL RESOURCES			
BIO-1: Impact of Temporary construction-related Oil Spills to Biological Resources	LTSM	NA	LTSM
BIO-2: Long-term Oil Spill Impact to Marine Biological Resources	B	SU	B
BIO-3: Collision-Related Vessel Traffic Impacts on Marine Mammals and Turtles	LTSM	NA	LTSM
BIO-4: Noise Impacts on Marine Mammals, Sea Turtles, Birds, and Fish	LTSM	NA	LTSM
BIO-5: Construction and Lighting Impacts on Kelp, Birds, Fish,	LTSM	NA	LTSM

Table 6-2. Summary of Impacts: Proposed Project and Alternatives

Impact	Impact Class[1]		
	Proposed Project	No Project	Enhanced Barge Alternative[3]
and Zooplankton			
SECTION 4.5 CULTURAL RESOURCES			
CR-1: Impacts to Onshore or Offshore Archaeological Resources from Well Abandonment and Remediation Activities	LTSM	NA	LTSM
CR-2: Impacts to Cultural Resources Due to Construction-Related Oil Spill Risks	LTSM	NA	LTSM
CR-3: Disturb Unidentified Human Remains	LTSM	NA	LTSM
CR-4: Impacts to Previously Unidentified Paleontological Resources	LTS	NA	LTS
SECTION 4.6 CULTURAL RESOURCES – TRIBAL			
TCR-1: Impacts to Previously Identified or Unidentified Tribal Cultural Resources from Project Implementation	LTSM	NA	LTSM
TCR-2: Impacts to Tribal Cultural Resources Due to Construction-Related Oil Spill Risks	LTSM	NA	LTSM
SECTION 4.7 GEOLOGY AND SOILS			
GEO-1: Potential Increase in Instability in Soils, Seismic Related Activities and Substantial Soil Erosion	LTS	NA	LTS
SECTION 4.8 GREENHOUSE GAS EMISSIONS			
GHG-1: Increased GHG Emissions from Project Activities	LTS	NA	LTS
GHG-2: Consistency with Applicable GHG Plan, Policy or Regulation	LTS	NA	LTS
SECTION 4.9 HYDROLOGY AND WATER QUALITY			
WQ-1: Impacts to Marine Water Quality from Inadvertent Oil Spill during Abandonment Operations	LTSM	NA	LTSM
WQ-2: Marine Water Quality from Eliminating Becker Well Oil Releases	B	SU	B
SECTION 4.10 NOISE			
NOI-1: Construction Impacts to Sensitive and Recreational Receptors	LTSM	NA	LTSM
NOI-2: Construction Vibration Impacts to Sensitive and Recreational Receptors	LTS	NA	LTS
SECTION 4.11 RECREATION			
REC-1: Impacts to Recreation and Recreational Access from Abandonment Activities	LTSM	NA	LTSM
REC-2: Inadvertent Oil Releases Associated with Construction Activities would Impact Surrounding Recreational Resources	LTSM	NA	LTSM
REC-3: Long-term Oil Spill Impacts to the Environment	B	SU	B
SECTION 4.12 TRANSPORTATION (MARINE)			
TRM-1: Marine Vessel Safety	LTSM	NA	LTSM

[1] Impact Class: SU = Significant and unavoidable; LTSM = Less than significant with mitigation; LTS = Less than significant; NI = No impact; NA = Not Applicable; B = Beneficial
[2] In the SCAQMD only
[3] Also includes the Enhanced Barge with Pier Alternative applicable to legacy wells not directly accessible by barge.

7.0 MITIGATION MONITORING PROGRAM

As the lead agency under the California Environmental Quality Act (CEQA), the California State Lands Commission (CSLC) is required to adopt a program for reporting or monitoring regarding the implementation of mitigation measures. As proponent for the Becker and Legacy Wells Abandonment and Remediation Project (Project), the CSLC will also ensure the implementation of the adopted mitigation measures defined in this Environmental Impact Report (EIR). This lead agency responsibility originates in Public Resources Code section 21081.6, subdivision (a) (Findings), and the State Guidelines for Implementing CEQA sections 15091, subdivision (d) (Findings), and 15097 (Mitigation Monitoring or Reporting).

7.1 MONITORING AUTHORITY

The purpose of a Mitigation Monitoring Program (MMP) is to ensure that measures adopted to mitigate or avoid significant impacts are implemented. A MMP can be a working guide to facilitate the implementation of the mitigation measures and associated monitoring, compliance and reporting activities. The CSLC staff may delegate duties and responsibilities for monitoring to environmental monitors or consultants as deemed necessary, and some monitoring responsibilities may be assumed by responsible agencies, such as affected jurisdictions and cities. The number of construction monitors assigned to the Project will depend on the number of concurrent construction activities and their locations. The CSLC staff will ensure that appropriate agency reviews and approvals are obtained, that each person delegated any duties or responsibilities is qualified to monitor compliance, and that it is aware of and has approved any deviation from the MMP.

7.2 ENFORCEMENT RESPONSIBILITY

The CSLC, as lead agency, is responsible for enforcing the procedures adopted for monitoring through the environmental monitor. Any assigned environmental monitor shall note problems with monitoring, notify appropriate agencies or individuals about any problems, and report the problems to the CSLC staff or its designee.

7.3 MITIGATION COMPLIANCE RESPONSIBILITY

The CSLC is responsible for successfully implementing all the mitigation measures in the MMP, and shall ensure that these requirements are met by all construction contractors and field personnel. Standards for successful mitigation also are implicit in many mitigation measures that include such requirements as obtaining permits or avoiding a specific impact entirely. Other mitigation measures include detailed success criteria. Additional mitigation success thresholds may be established by applicable agencies with jurisdiction through the permit process and through the review and approval of specific plans for the implementation of mitigation measures.

7.4 GENERAL MONITORING PROCEDURES

7.4.1 Environmental Monitors

Many of the monitoring procedures will be conducted prior to or during the construction phase of the Project. The CSLC staff and its environmental monitor(s) are responsible for integrating the mitigation monitoring procedures into the construction process in coordination with the contractor. To oversee the monitoring procedures and to ensure success, the environmental monitor must be on site during that portion of construction that has the potential to create a significant environmental impact or other impact for which mitigation is required. The environmental monitor is responsible for ensuring that all procedures specified in the monitoring program are followed.

7.4.2 General Reporting Procedures

Site visits and specified monitoring procedures performed by other individuals will be reported to the environmental monitor. A monitoring record form will be submitted to the environmental monitor by the individual conducting the visit or procedure so that details of the visit can be recorded and progress tracked by the environmental monitor. A checklist will be developed and maintained by the environmental monitor to track all procedures required for each mitigation measure and to ensure that the timing specified for the procedures is adhered to. The environmental monitor will note any problems that may occur and take appropriate action to rectify the problems.

7.4.3 Public Access to Records

The public is allowed access to records and reports used to track the monitoring program. Monitoring records and reports will be made available for public inspection by the CSLC or its designee on request.

7.5 MITIGATION MONITORING TABLE

This section presents the mitigation monitoring table (Table 7-1) for each environmental discipline that requires mitigation measures. Impacts that do not require mitigation are not included (see *Executive Summary* for summary description of all Project impacts). Each table lists the following information, by column:

- Impact (impact number, title, and impact class);
- Mitigation Measure (full text of the measure);

- Location (where the impact occurs and the mitigation measure should be applied);
- Monitoring/reporting action (the action to be taken by the monitor or lead agency);
- Effectiveness criteria (how the agency can know if the measure is effective);
- Responsible agency; and
- Timing (before, during, or after construction; during operation, etc.).

Applicant Proposed Measures (APMs) are presented at the end of the table.

Table 7-1. Mitigation Monitoring Program

Impact (Class)	Mitigation Measure (MMs)	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
HAZARDOUS MATERIALS AND RISK OF UPSET						
Impact HAZ-1: Project Impacts to Public Health and Environment Project activities could increase risk above existing baseline operations and could produce a significant hazard to the public through the use or disposal of hazardous materials (Less than Significant with Mitigation).	**MM HAZ-1. Construction Zone Restricted Area.** Before commencement of construction or abandonment activities, the construction contractor shall ensure that all areas within 300 feet of the construction and abandonment activities are marked as closed to the public with appropriate fencing or "no entry" barrier tape or equivalent. Personnel shall be stationed to prevent entrance by members of the public into the restricted area. The CSLC staff shall provide noticing to Summerland residences at least 2 weeks prior to the beginning of beach closure. The notice shall indicate the location of the beach closure, the estimated timeline of Project activities and the estimated dates of beach closure, as well as contact information for the public to request additional information. Posting of beach closures shall also be installed at least 2 weeks prior to activities at major beach access point locations, including Lookout Park, Wallace Avenue and Loon Point. A notice shall also be provided in a local newspaper, such as the Coastal View, describing the beach access interruptions, closures, safety concerns and Project duration.	Project Site	Project monitor confirms fencing is installed and personal stationed at appropriate beach areas to prevent public exposure.	Personal will ensure the public is prevented access to the restricted area.	Contractor and CSLC	Project construction
Impact HAZ-2: Construction-Related Oil Spill Risks of Impacts to the Environment Project activities could	**MM HAZ-2a. Removal of Contaminated Sands.** All contaminated sands and/or soils encountered during the excavation around the well shall be removed from the site and disposed of at an appropriate facility.	Project Site	Project monitor confirms any contaminated material is removed and disposed of	Implementing MM will reduce construction-related contaminated soils and oil	Contractor and CSLC	Project construction

Table 7-1. Mitigation Monitoring Program

Impact (Class)	Mitigation Measure (MMs)	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
temporarily increase spill volumes of crude oil given a release during the construction or well abandonment activities (Less than Significant with Mitigation).			properly.	spill impacts to the environment		
	MM HAZ-2b. Water Handling. All contaminated water encountered during the construction and abandonment shall be removed from the site and disposed of at an appropriate facility. Either tanks shall be used, which could be hauled away by supply boats or stored on the barge, or, if larger volumes of contaminated water are anticipated, the use of oil-water separation equipment, such as separation tanks or skimmers, or equivalent, shall be used before discharging the water to the marine environment. Use of a sheet pile sealant system such as Decaseal, as approved by the California State Lands Commission (CSLC), shall be utilized during the installation of the cofferdam walls to minimize the water intrusion and/or contaminated water releases to the marine environment.	Project Site	Project monitor confirms all contaminated water is removed and disposed of properly.	Implementing MM will reduce construction-related oil spill impacts to the environment	Contractor and CSLC	Project construction
AESTHETICS						
Impact AES-2: Visual Impacts from Accidental Oil Spills during Abandonment Activities A spill of crude oil during construction or well abandonment activities could cause temporary adverse visual impacts from the oil spill and cleanup efforts (Less than	**Implementation of MM HAZ-1, HAZ-2a, HAZ-2b, and APM-1 though APM-3.**	See specific MMs and APMs in MMP for details on Location, Monitoring/Reporting, Action, Effectiveness Criteria, Responsible Agency, and Timing.				

Table 7-1. Mitigation Monitoring Program

Impact (Class)	Mitigation Measure (MMs)	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
Significant with Mitigation).						
Impact AES-4: Visual Impacts from Nighttime Illumination during Abandonment Activities Nighttime illumination could cause temporary adverse visual impacts (Less than Significant with Mitigation).	**MM AES-4. Nighttime Illumination Shielding.** Project lighting shall be as low an intensity as allowed by safety requirements and located, designed and equipped so as to provide shielding and minimize glare from light sources and diffusers, and to minimize halo and spillover effects.	Project Site	Project monitor confirms lighting is shielded as specified and observes level of shielding at site and at area residences.	Implementing MM will reduce the potential for halo and spillover light effects.	Contractor and CSLC	Project construction
AIR QUALITY						
Impact AQ-1: Air Emissions from Construction Construction would increase emissions in offshore areas, and from onshore vehicular traffic (Less than Significant in Santa Barbara and Ventura Counties and Significant and Unavoidable in the SCAQMD).	**MM AQ-1a. Prohibit Unnecessary Truck Idling.** The construction contractor should limit unnecessary truck idling on site in excess of 5 minutes.	Project Site	Project monitor confirms that unnecessary truck idling is prohibited.	Implementing MM will reduce emissions from truck idling.	Contractor, CSLC, and in coordination with APCD	Project construction
	MM AQ-1b. Use of Emission Reduction Measures. The construction contractor shall implement the following measures, unless determined to be infeasible by California State Lands Commission (CSLC) staff in consultation with the applicable Air Pollution Control District. • Diesel construction equipment meeting the California Air Resources Board (CARB) Tier 3 or the CARB Commercial Harbor Craft Tier 3 (17 CCR § 93118.5) emission standards shall be used. • Diesel powered equipment shall be replaced by electric equipment whenever feasible. • If feasible, diesel construction equipment shall be equipped with	Project Site	Project monitor confirms that all equipment meets the emission standards and carpooling is utilized. Submit Form-38M to APCD for marine engine exemption.	Implementing MM will reduce emissions from construction equipment and vehicles.	Contractor, CSLC, and in coordination with APCD	Project construction

Table 7-1. Mitigation Monitoring Program

Impact (Class)	Mitigation Measure (MMs)	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	selective catalytic reduction systems, diesel oxidation catalysts and diesel particulate filters as certified or verified by the U.S. Environmental Protection Agency or CARB. • Catalytic converters shall be installed on gasoline-powered equipment, if feasible. • All construction equipment shall be maintained in tune per the manufacturer's specifications. • The engine size of construction equipment shall be the minimum practical size. • The number of construction equipment operating simultaneously shall be minimized through efficient management practices to ensure that the smallest practical number is operating at any one time. • Construction worker trips shall be minimized by requiring carpooling and by providing for lunch onsite. • Tanks used to store hydrocarbon contaminated water shall be vented through carbon canister or other equivalent odor reduction devices. • Drilling muds potentially contaminated with hydrocarbons shall be passed through degassing or other equivalent odor control mechanisms. • Containers used to store contaminated sands/soils shall be covered when not in use. • All applicable provisions of SBCAPCD Regulation III shall be implemented to					

Table 7-1. Mitigation Monitoring Program

Impact (Class)	Mitigation Measure (MMs)	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	the extent feasible.					
	MM AQ-1c. Compliance with State Portable Air Toxics Control Measure. Any portable diesel engines greater than 50 horsepower used in construction shall comply with the State Portable Air Toxics Control Measure and be certified to CARB Tier ~~1, 2, or~~ 3 non-road engine standards or higher to the maximum extent feasible.	Project Site	Project monitor confirms contractors use ultra-low sulfur fuel as specified.	Implementing MM will reduce the equipment emissions.	Contractor, CSLC, and in coordination with APCD	Project construction
	MM AQ-1d. Establish On-Site Equipment Staging Area and Worker Parking Lots. The staging area and worker parking lots shall be restricted to either paved surfaces or soil stabilized unpaved surfaces only.	Project Site	Project monitor to confirm parking lot use at ports.	Implementing MM will reduce fugitive dust.	Contractor, CSLC, and in coordination with APCD	Project construction
BIOLOGICAL RESOURCES						
Impact BIO-1: Impact of Temporary Construction-Related Oil Spill Impacts to Biological Resources Inadvertent discharge of petroleum hydrocarbons into marine waters would adversely affect marine biological resources (Less than Significant with Mitigation).	**Implementation of MM HAZ-2a, HAZ-2b, APM-1, APM-2, and APM-3.**	See specific MMs and APMs in MMP for details on Location, Monitoring/Reporting, Action, Effectiveness Criteria, Responsible Agency, and Timing.				
Impact BIO-3: Collision-Related Vessel Traffic Impacts on Marine Mammals and Turtles Construction-related vessel interactions with marine mammals and turtles may occur (Less	**MM BIO-3. Marine Mammal Avoidance and Response Training.** Vessel operators shall develop, submit for approval, and implement a contingency and training plan that focuses on avoidance and response procedures when marine mammals and sea turtles are encountered at sea by crew or supply	NA	Completion of training for all boat crew members; incident reporting to Fish and Wildlife Service. Monitor to confirm that vessels crew	Implementing MM will reduce the potential for impacts to marine mammals.	Contractor and CSLC	Prior to starting Project construction activities and during all marine vessel use.

Table 7-1. Mitigation Monitoring Program

Impact (Class)	Mitigation Measure (MMs)	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
than Significant with Mitigation).	boats at the Project site. All boat crew members shall be provided training prior to the onset of construction activities that focuses on the identification of marine mammal and sea turtle species and the specific behavior of species common to the Project area, including when species can be expected to occur in the Project area. New crew members shall receive such training upon hire. All crew members shall serve as lookouts during boat trips so that collisions with marine mammals and sea turtles can be avoided. Minimum components of the training plan include: • Vessel operators shall make every effort to maintain a distance of 1,000 feet from sighted whales and federally threatened or endangered or otherwise protected marine mammals or sea turtles. • Supply vessels shall not cross directly in front of migrating whales or any other threatened or endangered marine mammals or sea turtles. • When paralleling whales, support vessels shall operate at a constant speed that is not faster than the whales. • Female whales shall not be separated from their calves. • Vessel operators shall not herd or drive whales. • If a whale engages in evasive or defensive action, support vessels shall drop back until the animal moves out of the area. • Any collisions with marine wildlife shall		members onsite have completed training.			

Table 7-1. Mitigation Monitoring Program

Impact (Class)	Mitigation Measure (MMs)	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	be reported promptly to the Federal and State agencies listed below pursuant to each agency's reporting procedures.					
Impact BIO-4: Noise Impacts on Marine Mammals, Sea Turtles, Birds, and Fish Noise from sheet pile installation, drilling, excavation, vessel support, and transit activities may potentially disturb marine mammals, sea turtles, birds and fish in the Project area (Less than Significant with Mitigation).	**Implementation of APM-4.**	See specific APM in MMP for details on Location, Monitoring/Reporting, Action, Effectiveness Criteria, Responsible Agency, and Timing.				
	MM BIO-4a. Marine Resources Noise Reduction. Installation of sheet pile shall utilize H-type, or equivalent, and smaller sized sheet piles to the extent feasible, and shall be scheduled to concur with the ocean-facing sheet piles installed at the lowest tides feasible during the construction phase to reduce the potential for behavioral impacts on marine mammals, sea turtles, and nearshore fish species.	Project Site	Project monitor to confirm type of sheet pile use.	Implementing MM will reduce Project noise impacts to marine resources.	Contractor and CSLC	Project construction
	MM BIO-4b. Soft Start. A "soft start" shall be used during vibratory pile driving to give marine mammals, sea turtles, birds and nearshore fish species an opportunity to move out of the area away from the sound source. Soft starts would be implemented at the start of each day's pile driving and at any time following the cessation of pile driving for a period of 30 minutes or longer. For vibratory pile drivers, the sound shall be initiated for 15 seconds at reduced energy followed by a 30-second waiting period; this procedure shall then be repeated two additional times.	Project Site	Project monitor to confirm written soft start procedures and use of soft start during driving activities.	Implementing MM will reduce Project noise impacts to marine resources.	Contractor and CSLC	Project construction
	MM BIO-4c. Marine Mammal/Sea Turtle Monitoring. To ensure that no harassment occurs during vibratory pile driving activities, site-	Project Site	Project monitor to confirm presence of marine monitor and recording of	Implementing MM will reduce Project noise impacts to	Contractor and CSLC<ins>.</ins> <ins>Submit copies of the Marine</ins>	Project construction

Table 7-1. Mitigation Monitoring Program

Impact (Class)	Mitigation Measure (MMs)	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	specific marine mammal/sea turtle observations shall be conducted using qualified marine wildlife monitors (MWMs) stationed on the existing response boats (no additional boats should be used for marine observers) and approved by California State Lands Commission (CSLC) staff, in consultation with National Marine Fisheries Service (NMFS) and California Department of Fish and Wildlife (CDFW) staffs. Such monitoring shall include at least the following elements. • The MWMs shall monitor an area within 150 meters (exclusion/shutdown zone) of the construction area for the presence of marine mammal species. • Prior to the start of pile driving operations, if a marine mammal or sea turtle is sighted within or approaching the exclusion/shutdown zone, MWMs shall notify the on-site construction lead (or other authorized individual) to delay pile driving until the animal has moved out of the exclusion/shutdown zone or the animal has not been re-sighted within 15 minutes (for pinnipeds and small cetaceans) or 30 minutes (for large cetaceans). • If a marine mammal or sea turtle is sighted within or on a path toward the exclusion/shutdown zone during pile driving activities, pile driving shall cease until that animal has moved out of the exclusion/shutdown zone or 15 minutes (pinnipeds and small cetaceans)/30 minutes (for large cetaceans) has lapsed since the last sighting.		information and availability of communication methods to alert construction crew of biological resources spotting.	marine resources.	<u>Wildlife Monitoring Report to CDFW-OSPR.</u>	

Table 7-1. Mitigation Monitoring Program

Impact (Class)	Mitigation Measure (MMs)	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	• MWMs shall have authority to temporarily halt in-water project activities if those activities pose a threat to individuals of a special-status species, and to suspend project activities until the animals have left the area. If due to fog, rain, or other periods of limited visibility the exclusion/shutdown zone cannot be monitored, MWMs have the authority to direct cessation (or continuation) of construction activities based on observed abundance of marine mammals and sea turtles and their ability to view the exclusion/shutdown zone. Periodic reevaluation of weather conditions and reassessment of the continuation/cessation recommendation shall be completed by the MWMs. • MWMs shall record sightings and animal behavior within the zone during pile driving activities. At a minimum, MWMs shall collect the following information daily: (1) general location(s) of MWMs and marine wildlife observations; (2) date/time monitoring begins/ends; (3) activities occurring during each observation period; (4) weather parameters (e.g., percent cover, visibility) and conditions (e.g., sea state); (5) species observed and number of individuals; (6) description of any marine wildlife behavior patterns, including bearing and direction of travel and distance from pile driving activities; (7) other human activity in the area. MWMs shall keep a log book of notes					

Table 7-1. Mitigation Monitoring Program

Impact (Class)	Mitigation Measure (MMs)	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	about sightings of marine mammals, special-status birds or sea turtles. Entries in the log shall be made at least hourly, even if the entry is "None observed." Reports shall be emailed to CSLC staff daily. • Within 30 days of completion of pile driving, the MWMs shall submit to CSLC staff for approval a Final Marine Wildlife Monitoring Report and copies of log books prepared by the qualified MWMs that include at a minimum: o an evaluation of the effectiveness of monitoring protocols/procedures o reporting of all marine mammal, sea turtle, and other wildlife sightings (including species and numbers) o any wildlife behavioral changes that may be attributed to project construction or operations o all project changes (e.g., delays, work stoppages, etc.) due to the presence in the area of marine wildlife species.					
Impact BIO-5: Construction and Lighting Impacts on Kelp, Birds, Fish, and Plankton. ~~Lighting~~ Construction and lighting associated with from sheet piling, re-drilling activities and vessel support and transit activities may potentially disturb kelp, marine birds, fish, and zooplankton in	**MM BIO-5a. Project Lighting.** All lighting associated with the Project, as well as any additional light required for the existing parking area and adjacent roads, drilling rig, barge, and sheet pile driver rig, shall be directed and shielded in such a way as to eliminate any direct light towards the ocean and immediate nearshore waters, as well as to minimize reflection and glare from such light in the same areas. As much as is allowable under Federal Aviation Administration (FAA) regulations, the red flashing light at	Project Site	Project monitor to confirm lighting per specified criteria.	Implementing MM will reduce lighting impacts to birds, fish, and plankton.	Contractor and CSLC	Project construction

Table 7-1. Mitigation Monitoring Program

Impact (Class)	Mitigation Measure (MMs)	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
the Project area (Less than Significant Impact with Mitigation).	the top of the drilling rig shall also be shielded from view from the immediate nearshore waters.					
	MM BIO-5b. Kelp Avoidance. Support vessel pilots shall avoid kelp forest areas to the extent feasible and shall utilize a similar corridor in repeat visits to the Project site.	Project Site and Vessel Approach Area	Project monitor to confirm vessel approach and location of kelp, and to report on the effectiveness of kelp avoidance activities.	Implementing MM will reduce impacts to kelp with minimal kelp dislocation.	Contractor and CSLC	Project construction
CULTURAL RESOURCES						
Impact CR-1: Impacts to Onshore or Offshore Archaeological Resources from Well Abandonment and Remediation Activities The proposed Becker well abandonment and remediation activities would not directly affect any known or suspected onshore or offshore archaeological resources. However, similar activities for other legacy wells along Summerland Beach could impact archaeological resources during construction (Less than Significant with Mitigation).	**MM CR-1. Pre-Construction Review of Legacy Well Abandonment and Remediation Plans.** Prior to abandonment and remediation activities at legacy wells along Summerland Beach, the California State Lands Commission (CSLC) will review and approve all construction plans to ensure that staging and offshore activities will avoid previously identified and unidentified archaeological resources. • If a staging area is located in a developed area (e.g., parking lot), then no impacts would occur. • If a staging area is located on an undeveloped and undisturbed area, then CSLC staff will ensure that location has been adequately surveyed for archaeological resources and that all staging activities will avoid impacts. • For offshore activities, a qualified maritime archaeologist will analyze remote sensing survey data (from side-scan sonar, sub- bottom profiler, or	NA	Approval of remediation plans.	Implementing MM will reduce the potential for impacts to archaeological resources.	Contractor and CSLC	Prior to starting Project construction activities

Table 7-1. Mitigation Monitoring Program

Impact (Class)	Mitigation Measure (MMs)	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	magnetometer as appropriate), or video from a remotely (or autonomous) operated vehicle, or conduct a diver inspection to locate previously unidentified cultural resources in areas of proposed ground disturbance to ensure avoidance. In addition, CSLC staff will ensure offshore ground disturbance will avoid known shipwrecks and other known submerged cultural resources. • <u>All construction plans shall have measures and protocols in place in the event of an inadvertent find, along with notification requirements for Tribal leadership or their designees, and appropriate experts, and shall include stop-work requirements until appropriate assessments are completed.</u>					
Impact CR-2: Impacts to Cultural Resources Due to Construction-Related Oil Spill Risks Well remediation and abandonment activities could result in a temporary release of crude oil that could impact onshore or offshore archaeological resources (Less than Significant with Mitigation).	**MM CR-2. Prepare a Spill Response Plan for Archaeological Resources.** Prior to issuance of permits for the Project, an oil spill response plan for onshore and offshore archaeological resources shall be prepared. The plan's response measures shall contain protocols for the identification, protection, and mitigation of impacts on cultural resources in the event of any increase in seepage from well abandonment and remediation activities. The plan shall provide for collection, analysis, reporting, and curation of significant surface or subsurface archaeological deposits at risk of damage or destruction due to a spill and/or subsequent clean-up efforts. The	NA	Approval of Spill Response Plan.	Implementing MM will reduce the potential for impacts to cultural archaeological resources.	Contractor and CSLC	Prior to starting Project construction activities

Table 7-1. Mitigation Monitoring Program

Impact (Class)	Mitigation Measure (MMs)	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	plan shall be prepared by a qualified archaeologist who has prior experience with spill-related emergency response procedures and shall be reviewed and approved by CSLC staff and the County prior to approval of permits. These measures could be added to the Project's oil spill contingency plan or could reside in a stand-alone document.					
Impact CR-3: Disturb Unidentified Human Remains Human remains have not been identified within the Proposed Project area; however, ground disturbing activities could adversely impact presently unidentified human remains, including those interred outside of dedicated cemeteries (Less than Significant with Mitigation).	**MM CR-3: Appropriate Treatment of Human Remains.** In accordance with Health and Safety Code section 7050.5 and Public Resources Code section 5097.98, if human remains are found, all ground disturbing activities shall halt within 165 feet (50 meters) of the discovery. The County Coroner will be notified within 24 hours of the discovery. No further excavation or disturbance of the discovery or any nearby area reasonably suspected to overlie potential remains shall occur until the County Coroner has determined whether the remains are subject to his or her authority. The County Coroner must make this determination within 2 working days of notification of the discovery pursuant to Health and Safety Code section 7050.5 subdivision (b). If the County Coroner determines that the remains do not require an assessment of cause of death and that the remains are, or are believed to be Native American, the Coroner must notify the Native American Heritage Commission (NAHC) by telephone within 24 hours. In accordance with Public Resources Code section	Project Site	Project monitor oversees site excavation. <u>Construction contracts and plans to include appropriate treatment of human remains notes.</u>	Implementing MM will reduce the potential for impacts to cultural archaeological resources.	Contractor and CSLC	Project construction

Table 7-1. Mitigation Monitoring Program

Impact (Class)	Mitigation Measure (MMs)	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	5097.98, the NAHC must immediately notify those persons it believes to be the Most Likely Descendant (MLD) of the deceased Native American. The MLD shall complete their inspection and make recommendations within 48 hours of being granted access to the site. The MLD may recommend means for treatment or disposition, with appropriate dignity, of the human remains and any associated grave goods. CSLC staff will discuss and confer with the MLD regarding their recommendations pursuant to Public Resources Code section 5097.98 subdivisions (b) and (c).					
CULTURAL RESOURCES – TRIBAL						
Impact TCR-1: Impacts to Previously Identified or Unidentified Tribal Cultural Resources from Project Implementation The proposed well remediation and abandonment activities would not directly affect any known or suspected Tribal cultural resources (Less than Significant with Mitigation).	**Implementation of MM CR-1.**	See specific MM in MMP for details on Location, Monitoring/Reporting, Action, Effectiveness Criteria, Responsible Agency, and Timing.				
Impact TCR-2: Impacts to Tribal Cultural Resources Due to Construction-Related Oil Spill Risks Well remediation and abandonment activities	**Implementation of MM CR-2.**	See specific MM in MMP for details on Location, Monitoring/Reporting, Action, Effectiveness Criteria, Responsible Agency, and Timing.				
	MM TCR-2. Incorporate Coordination with Native American Tribes into the Spill Response Plan for Archaeological Resources. During development of the Spill Response	NA	Approval of Spill Response Plan.	Implementing MM will reduce the potential for impacts to cultural	Contractor and CSLC	Prior to starting Project construction activities

Table 7-1. Mitigation Monitoring Program

Impact (Class)	Mitigation Measure (MMs)	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
could result in a temporary release of crude oil that could impact Tribal cultural resources (Less than Significant with Mitigation).	Plan for Archaeological Resources (MM CR-2), a protocol shall be incorporated regarding coordination with Native American Tribes culturally affiliated with the Project area prior to the commencement of Project activities as well as a protocol to notify Tribal designees within 48 hours of a spill emergency, consistent with the California State Land Commission's (CSLC) Tribal Consultation Policy.			archaeological resources.		
HYDROLOGY AND WATER QUALITY						
Impact WQ-1: Impacts to Marine Water Quality from Inadvertent Oil Spill During Abandonment Operations Accidental discharge of petroleum hydrocarbons into marine waters would adversely affect water quality (Less than Significant with Mitigation).	**Implementation of MM HAZ-2a, MM HAZ-2b, APM-2, and APM-3.**	See specific MMs and APMs in MMP for details on Location, Monitoring/Reporting, Action, Effectiveness Criteria, Responsible Agency, and Timing.				
NOISE						
Impact NOI-1: Construction Impacts to Sensitive and Recreational Receptors. Short-term noise levels would increase during Project construction potentially affecting sensitive and recreational receptors (Less than Significant with Mitigation).	**Implementation of APM-4.**	See specific APM in MMP for details on Location, Monitoring/Reporting, Action, Effectiveness Criteria, Responsible Agency, and Timing.				
	MM NOI-1. Construction Time Limits. Construction activities involving the installation of sheet pile shall be conducted only between the hours of 8 a.m. and 5 p.m. Monday through Friday.	Project Site	Project monitor to confirm and observe sheet pile installation schedule.	Implementing MM will reduce nighttime noise levels.	Contractor and CSLC	Project construction

Table 7-1. Mitigation Monitoring Program

<table>
<tr><th>Impact (Class)</th><th>Mitigation Measure (MMs)</th><th>Location</th><th>Monitoring/ Reporting Action</th><th>Effectiveness Criteria</th><th>Responsible Agency</th><th>Timing</th></tr>
<tr><td colspan="7">RECREATION</td></tr>
<tr><td rowspan="2">Impact REC-1: Impacts to Recreation and Recreational Access from Abandonment Activities
Use of a jack-up barge for abandonment activities and staging of equipment at Lookout Park would create temporary beach area closures and potential loss of parking spaces. (Less than Significant with Mitigation).</td><td>MM REC-1. Repair of Damaged Infrastructure.
The contractor shall ensure that any damage inflicted on Lookout Park infrastructure and access road be repaired and returned to pre-Project status.</td><td>Project Site</td><td>Project monitor to review infrastructure and document condition prior to and after Project activities.</td><td>Implementing MM will ensure infrastructure is not damaged by Project activities.</td><td>Contractor, County Parks and CSLC</td><td>Notify County Parks at least 2 weeks prior to Project construction</td></tr>
<tr><td>Implementation of MM TRM-1 and MM HAZ-1.</td><td colspan="5">See specific MM in MMP for details on Location, Monitoring/Reporting, Action, Effectiveness Criteria, Responsible Agency, and Timing.</td></tr>
<tr><td>Impact REC-2: Inadvertent Oil Releases Associated with Construction Activities would Impact Surrounding Recreational Resources
Water and non-water recreation located in the Project area may be impacted by an accidental release related to the Project during short-term temporary construction activities. Shoreline and water-related uses would be disrupted by oil on the shoreline and in the water, which would impact recreational users, would be inconsistent with State and local policies,</td><td>Implementation of MM HAZ-2a, MM HAZ-2b, and APM-1 though APM-3.</td><td colspan="5">See specific MMs and APMs in MMP for details on Location, Monitoring/Reporting, Action, Effectiveness Criteria, Responsible Agency, and Timing.</td></tr>
</table>

Table 7-1. Mitigation Monitoring Program

Impact (Class)	Mitigation Measure (MMs)	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
and would result in potentially significant impacts (Less than Significant with Mitigation).						
TRANSPORTATION (MARINE)						
Impact TRM-1: Marine Vessel Safety Project activities have the potential to reduce the existing level of safety for marine vessels (Less than Significant with Mitigation).	**MM TRM-1. Publication of U.S. Coast Guard (USCG) Local Notice to Mariners.** The CSLC shall ensure that its contractor submits to the USCG District 11 (as stated at www.uscg.mil/D11/DP/LnmRequest.asp), a request to publish a Local Notice to Mariners, at least 14 days prior to operation, that includes the following information: • Type of operation (i.e., dredging, diving operations, construction); • Location of operation including Latitude and Longitude and geographical position if applicable; • Duration of operation including start and completion dates (if these dates change, the Coast Guard needs to be notified); • Vessels involved in the operation • VHF-FM Radio Frequencies monitored by vessels on scene; • Point of Contact and 24-hour phone number; and • Chart Number for the area of the operation. The above information shall also be provided to the Santa Barbara Harbormaster and USCG Marine Safety Detachment in Santa Barbara.	Area harbors and vessel routes	Project monitor to confirm notification to area harbors and Coast Guard.	Implementing MM will ensure effective coordination and response.	Contractor and CSLC	Project construction

Table 7-1. Mitigation Monitoring Program

Impact (Class) / Mitigation Measure (MMs)	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
APPLICANT PROPOSED MEASURES					
APM-1. Abandonment and Contingency Plan. Before the commencement of construction activities, the CSLC staff shall prepare, or shall write into any contracts that the contractor shall prepare, a plan detailing the abandonment procedures, including: 1) the use of appropriate circulation fluids and/or drilling muds; 2) the type and sizing of circulation fluid pumps; 3) details of all abandonment contingencies, including contingencies for the failure to meet Division of Oil, Gas, and Geothermal Resources (DOGGR) abandonment standards, such as not reaching the DOGGR prescribed depth, failure to circulate to the surface, and including procedures such as removing of casing, variation in perforation depths, cement top caps, etc. The plan shall be designed to ensure that the abandonment operations would be capable of handling any loss of well control or change in abandonment procedures encountered during the abandonment activities. The Plan shall include equipment requirements, equipment availability and procedures for delivering the equipment associated with all contingency scenarios.	N/A	Approval of Abandonment Contingency Plan	Implementing APM will reduce construction impacts.	Contractor and CSLC	Prior to starting Project construction activities
APM-2. Barge System Engineering. Before the commencement of construction activities, the CSLC staff shall prepare, or shall write into any contracts that the contractor shall prepare, a plan detailing measures to reduce the potential for releases to the environment, and to ensure that the shortest scheduling associated with the Project is achieved. An engineering study shall be conducted prior to mobilization, which shall address at least 1) Barge configuration and optimization with regards to tides and scheduling, including the use of supply boats and additional barges if needed and the use of offloading of equipment (including pumps, tanks, materials, etc.) to reduce the barge draft, allow for removal of the barge at lower high tides, and thereby reduce the potential for an extended schedule. This analysis shall be coordinated with the bathymetric survey to determine barge scheduling under different scenarios, including an extended schedule due to well abandonment complications; 2) Equipment needs for the barge, including the need for pier equipment, sheet pile installation materials and equipment, and installation capabilities; 3) Fluids containment	N/A	Approval of the Barge System Engineering Study	Implementing APM will reduce the potential for releases to the environment.	Contractor and CSLC	Prior to starting Project construction activities

Table 7-1. Mitigation Monitoring Program

Impact (Class)	Mitigation Measure (MMs)	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
and handling, including oil-water separation requirements, oily water storage and transport, and barge containment of spilled construction materials <u>or storm water</u> through the use of a barge sump and barge-edge spill containment walls, with the containment volume being greater than the largest tank on the barge; 4) Barge weight and draft fully loaded as well as the capacity for fluids handling and storage, and a determination along with the bathymetric study, of the scheduling for tides; 5) Equipment arrangement on the barge to allow for equipment movement and use between tasks; 6) Refueling procedures and spill containment measures and equipment to prevent spills of fuel from reaching the marine environment.						
APM-3. Emergency Response Equipment Availability. During the installation of the cofferdam and the well abandonment activities, a tender boat with sufficient boom shall be placed immediately offshore of the operations to ensure that any spills which occur and enter the marine environment are immediately contained. Contracting with Clean Seas, or another equivalent organization experienced in on-sea oil spill containment and recovery operations, shall be established before construction commences. In addition, the barge shall be equipped with<u>, and deploy in advance within or around the cofferdam area as feasible,</u> sufficient sorbent pads and booms<u>, or snare or pom-pom fencing or other effective strategies,</u> to provide immediate containment of oil released into the cofferdam areas. These would be in addition to the response trailer located at Lookout Park.		Project Site	Project monitor confirms contract with Clean Seas or equivalent organization is in place and emergency response equipment is onsite and on a response vessel offshore.	Implementing APM will reduce the potential for releases to the environment.	Contractor and CSLC. <u>Submit copies of the Spill Contingency Plan to CDFW-OSPR.</u>	Prior to starting Project construction activities
APM-4. Use of Vibratory Pile Driver. Preliminary information obtained from contractors indicated that the use of a vibratory pile driver would be feasible, but that it was not proposed by all of the contractors contacted. Generally, a geotechnical assessment is needed in order to ensure that high-force methods (impact pile drivers) are not needed. However, due to the beach location and the presence of sand, a geotechnical analysis is not considered necessary. The use of a vibratory pile driver would substantially lower the noise levels, both in-air and in-water, and would reduce impacts, both to humans and to biological resources.		Project Site	Project monitor to confirm sheet pile installation method and equipment onsite and in construction contracts.	Implementing APM will reduce noise levels.	Contractor and CSLC	Project construction and deconstruction

8.0 OTHER COMMISSION CONSIDERATIONS

In addition to the environmental review required pursuant to the California Environmental Quality Act (CEQA), a public agency may consider other information and policies in its decision-making process. This section presents information relevant to the California State Lands Commission's (CSLC's) consideration of the Becker and Legacy Wells Abandonment and Remediation Project (Project). The considerations included below address:

- Climate Change and Sea-Level Rise
- Commercial Fishing
- Environmental Justice

Other considerations may be addressed in the Calendar Item staff report presented at the time of the CSLC's consideration of the Project.

8.1 CLIMATE CHANGE AND SEA-LEVEL RISE CONSIDERATIONS

Climate change impacts, including sea-level rise, are now recognized as known geophysical components of California coastal and ocean sites. Climate change and sea-level rise accelerate and exacerbate natural coastal processes, such as intensity and frequency of storms, erosion and sediment transport, and currents, wave action, and ocean chemistry. Sea-level rise is driven by the melting of polar ice caps and land ice, as well as thermal expansion of sea water. Accelerating rates of sea-level rise are attributed to increasing global temperatures due to climate change. Estimates of projected sea-level rise vary regionally and are a function of different greenhouse gas emissions scenarios, rates of ice melt, and local vertical land movement. Compared to year 2000 levels, the southern California region could see up to 1 foot of sea-level rise by the year 2030, 2 feet by 2050, and possibly over 5 feet by 2100 (National Research Council 2012). The range in potential sea-level rise indicates the complexity and uncertainty of projecting these future changes, particularly in the second half of the century, that depend on the rate and extent of ice melt. The state of California is coordinating research efforts to understand more about the individual influences of certain contributing factors, such as ice melt, and will issue findings and new planning guidance related to sea-level rise by 2018.

Along with higher sea levels, higher intensity and more frequent winter storms due to climate change will further impact coastal areas. The combination of these conditions will likely result in increased wave run up, storm surge, and flooding in coastal and near coastal areas. In rivers and tidally-influenced waterways, more frequent and powerful storms can result in increased flooding conditions and damage from storm created debris. Climate change and sea-level rise will also affect coastal and riverine areas by changing erosion and sedimentation rates. Beaches, coastal landscapes, and near-coastal riverine areas exposed to increased wave force, run up, and total water levels could potentially erode more quickly than before. However, rivers and creeks are also predicted to experience flashier sedimentation pulse events from strong winter storms, punctuated by periods of drought. Therefore, depending on precipitation patterns, sediment deposition and accretion may accelerate along some shorelines and coasts.

Weather systems and extreme storms can also cause dangerous coastal hazards to surface on shore. The CSLC, when funding is available, implements a program to remove coastal hazards along California's coast (see www.slc.ca.gov/Programs/Coastal Hazards.html). Examples of hazards are remnants of coastal structures, piers, oil wells and pilings, and deteriorated electric cables and old pipelines. Many coastal hazards are located on Public Trust lands set aside for commerce, navigation, fishing, and recreation, and can impede coastal uses as well as threaten public health and safety.

Governor Brown's Executive Order B-30-15 instructed all State agencies to take climate change into account in their planning and investment decisions and to give priority to actions that build climate preparedness The preceding discussion of climate change and sea-level rise is intended to provide the local/regional overview and context that the Commission staff considered pursuant to this Executive Order; it additionally will facilitate the Commission's consideration of the Project. Overall, in the longer term future, sea-level rise may mean the Becker well and other legacy wells may no longer be visible at extremely low tides; however, given the very short duration of the Project and because no permanent infrastructure is proposed for the Project, sea-level rise as a function of the global climate change process will not have any effect on the Project and is not a factor affecting the Commission's jurisdiction at this time and location.

8.2 COMMERCIAL FISHING

Impacts to commercial and recreational fisheries would not be considered significant because any spill or release of petroleum hydrocarbons is expected to be relatively small based on the historic volumes produced from the well (up to 2 - 4 bpd) and the volumes of oil measured leaking from the well. As a result, the Project is not expected to (1) temporarily or permanently reduce any fishery in the vicinity by 10 percent or more during the season or reduce any fishery by 5 percent or more for more than one season; (2) affect kelp and aquaculture harvest areas by 5 percent or more; (3) damage commercial fishing or kelp harvesting equipment; or (4) decrease harvesting time due to harbor closures, impacts on living marine resources and habitat, or equipment or vessel loss, damage, or subsequent replacement.

8.3 ENVIRONMENTAL JUSTICE

Environmental justice is defined by California law as "the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies." This definition is consistent with the Public Trust Doctrine principle that the management of trust lands is for the benefit of all people. The CSLC adopted an environmental justice policy in October 2002 to ensure that environmental justice is an essential consideration in the agency's processes, decisions, and programs. Through its policy, CSLC reaffirms its commitment to an informed and open process in which all people are treated equitably and with dignity, and in which its decisions are tempered by environmental justice considerations.

In keeping with its commitment to environmental sustainability and access to all, California was one of the first states to codify the concept of environmental justice in statute. Beyond the fair treatment principles described in statute, environmental justice leaders work to include in the decision-making process those individuals disproportionately impacted by project effects. The goal is that through equal access to the decision-making process, everyone has equal protection from environmental and health hazards and can live, learn, play, and work in a healthy environment.

In 2016, legislation was enacted to require local governments with disadvantaged communities, as defined in statute, to incorporate environmental justice into their general plans when two or more general plan elements (sections) are updated. The Governor's Office of Planning and Research, the lead state agency on planning issues, is developing updated guidance for local jurisdictions to incorporate environmental justice matters into their general plans and will be working with state agencies, local governments, and many partners in 2017 to create a technical assistance document.

The U.S. Council on Environmental Quality's (CEQ) Environmental Justice Guidance defines "minorities" as individuals who are members of the following population groups: American Indian or Alaskan Native, Asian or Pacific Islander, Black not of Hispanic origin, or Hispanic (CEQ 1997). Total minority population is calculated by subtracting the white alone, not Hispanic or Latino population from the total population. According to the CEQ environmental justice guidelines, minority populations should be identified if:

- A minority population percentage exceeds 50 percent of the population of the affected area
- The minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (for example, a governing body's jurisdiction, neighborhood census tract, or other similar unit)

In addition, the CEQ Environmental Justice Guidance defines "low-income populations" as populations with mean annual incomes below the annual statistical poverty level (CEQ 1997). The CEQ does not provide a discrete threshold for determining when a low-income population should be identified for environmental justice, however, for this analysis, an environmental justice population is identified if the low-income percentage of a census tract is equal to or greater than those of Santa Barbara County.

From a regional standpoint, the Project is located in an area with relatively high income levels. The Project area is located adjacent to Summerland, which has a higher median household income and higher median housing values compared to Santa Barbara County and the State of California (see Table 4-2). Summerland is supported by a large number of management, professional, entertainment professionals and related occupations, when compared to California and County statistics.

By race, persons who identified as white were the largest racial group in Summerland (see Table 4-2). Asian comprised the largest racial minority group (the Census Bureau classifies Hispanic as an origin, not a race). Those who identified as Hispanic could be categorized under any of the classification groups designated by the U.S. Census Bureau, including “other,” in addition to Hispanic. Hispanic comprised 13.3 percent of the population in Summerland and 42.9 percent of Santa Barbara County.

For poverty, as presented in Table 8.3-1, 7.2 percent of the individuals in Summerland had income levels below the poverty level. In contrast, 16.3 percent of Santa Barbara County residents had income levels below the poverty level. Therefore, the Project activities at the Summerland Beach would not be expected to disproportionately affect minority or low-income communities.

Table 8-1. Environmental Justice Statistics

Subject	California	Santa Barbara County	Summerland
Income and Employment			
Total Population	37,253,000	423,895	1,448
Median household income	$61,094	$62,779	$76,973
Median value of owner-occupied housing	$366,400	$453,000	$1,011,000
Percent below the Poverty level	16.3%	16.3%	7.2%
Percent employed within farming, fishing, and forestry occupations	1.3	4.9	2.9
Percent employed within construction, extraction, and maintenance occupations	8.4	7.7	0.0
Percent employed within service occupations	17.4	20.9	22.9
Percent employed within professional, management, arts, entertainment, and related occupations	36.0	35.4	72.1
Race			
White	57.6	73.6	91.8
Black	7.2	2.8	0.9
American Indian	1.9	2.4	2.0
Asian	14.9	6.5	3.6
Other	19.7	19.8	5.3
Hispanic	37.6	42.9	13.3

Source: 2010 census data, https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml#

Potential impacts to nearby residents due to Project activities are discussed in detail in Section 4.3, *Air Quality*. However, since the percentage of these populations in the nearest communities are not disproportionately higher than in the surrounding area, impacts from Project activities would not disproportionately affect minority or low-income populations. In addition, the distance from the Project site to residential communities, and small scale and short-term Project duration ensures that impacts to all nearby residential communities would be minor, regardless of their socioeconomic makeup.

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9.0 REPORT PREPARATION SOURCES AND REFERENCES

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