

APPENDICES

CC-079-06
(BHP Billiton LNG International, Inc.)

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PUBLIC LETTERS
Regarding CC-079-06
BHP Billiton Cabrillo Port

APPENDIX A

SUBSTANTIVE FILE DOCUMENTS

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SUBSTANTIVE FILE DOCUMENTS

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- January 8, 2007. From Jackalyne Pfannenstiel, California Energy Commission to Meg Caldwell, CCC.
- December 12, 2006. From Michael Peevey, California Public Utilities Commission to Meg Caldwell, CCC.
- December 12, 2006. Memorandum. From Richard A. Myers, Energy Division and Harvey Y. Morris, Legal Division to President Peevey, California Public Utilities Commission.

APPENDIX B

BHP LETTER of March 27, 2007, AMENDING CONSISTENCY CERTIFICATION



BHP Billiton LNG International Inc.
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Oxnard, California 93036 USA
Tel 805 604 2790 Fax 805 604 2799
www.bhpbilliton.com

March 27, 2007

Alison Dettmer, Manager
Energy and Ocean Resources Unit
45 Fremont, Suite 2000
San Francisco, CA 94105-2219

H. Keith Lesnick
Commandant (G-MSO-5)
U.S. Coast Guard Headquarters
2100 Second Street, SW
Washington, D.C. 20593-0001

**Re: Deepwater Port License and Coastal Consistency Certification for BHP
Billiton's Cabrillo Port**

Dear Ms. Dettmer and Mr. Lesnick:

In an effort to further reduce impacts and assist the Coastal Commission's coastal consistency review process for the proposed Cabrillo Port deepwater LNG port, BHP Billiton LNG International, Inc. (BHP) agrees to include the following measures as part of the project description in its application for the Cabrillo Port MARAD license:

1. **Marine Noise.** BHP has incorporated a number of avoidance, monitoring, and mitigation measures, consisting of marine mammal monitoring, avoiding construction during the gray whale migration season, for construction activities, cessation of activities if marine mammals or sea turtles are within a designated safety range, and for operation activities, installation of noise reducing devices. While the monitoring plans have not been fully developed, the commitments include:

- Avoiding offshore construction during the gray whale migration season;
- Gathering baseline data, including obtaining: (a) pre-construction, site-specific data on the presence, species composition, abundance, frequency, and seasonality of marine mammals specific to the project site (twice-monthly aerial line transect surveys for one to

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two years); (b) physical oceanographic information (e.g. seasonal conductivity (density/salinity), temperature, and depth information); and (c) ambient sound at different depths and in different sea state conditions; and including measuring sounds of various vessels passing through the nearby shipping lane (sound pressure level recordings four times a year for one to two years);

- Preparing monitoring plans by independent, third-party monitors (to be reviewed by the USFWS, NMFS, and CDFG); the monitoring plans would include:
 - a. Measuring: (a) operational sound at various depths, distances and directions from the Project site (sound pressure level recordings); (b) seasonal conductivity (density/salinity), temperature, and depth measurements at all sampling stations; (c) comparisons of cold and warm water influx periods; and (d) all operational modes with varying sound conditions;
 - b. Documenting behaviors of marine mammals exposed to operational noise (passive tracking and observations four times a year for one to two years), and measuring sound levels from project operations received by the marine mammals (sound pressure level recordings);
 - c. Evaluating mitigation monitoring results against NOAA Fisheries (NMFS)-accepted sound thresholds as results become available, and, in consultation with resource agencies, making recommendations as to whether noise levels can be reduced and whether continued or future monitoring is necessary;
 - d. The noise monitoring will include installing and operating an array of autonomous recording units to monitor and evaluate underwater sound output from project operations for at least five years after the start of operations.
- A safety zone of 1,000 ft will be established around construction activities. If a marine mammal/turtle enters or appears likely to enter the safety zone before construction activities begin, then construction should cease or be delayed until the marine mammal/turtle exits the safety zone. If the animal is seen at the surface and then dives, construction activities shall be delayed for 15 minutes to allow time for the animal to exit the safety zone. If a marine mammal/turtle enters the safety zone during construction activities, the observer shall closely monitor and record the animal's behavior. If it appears that the animal is at risk of injury, then construction activities, to the extent possible, will cease until the animal can safely exit the safety zone.
- Maintaining two trained, NMFS-approved marine mammal monitors on construction vessels, and one on operation vessels;

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- Assuring that helicopters maintain a flight altitude of at least 2,500 feet (762 m), except during takeoff and landing;
- Installing vibration isolators and working with marine architects, acoustic experts and mechanical engineers and the USCG, among others, to design the FSRU and its equipment to reduce, to the maximum extent feasible, the output of cumulative noise from the facility.

In addition, at the request of the Commission staff, BHP has agreed to: (1) include the Commission staff in the development of the monitoring plans, for its review and approval prior to finalizing; (2) provide all monitoring plan results to the Commission staff; (3) evaluate monitoring results against Commission-recommended thresholds as well as NMFS-approved thresholds for underwater noise; and (4) seek Commission staff approval for any changes to or cessation of any monitoring efforts.

2. Entrainment Monitoring. BHP commits to performing the entrainment study described herein. The purpose of this study is to gather data on entrainment losses caused by the use of seawater for the FSRU and LNG carriers.

The entrainment study design will be developed by a qualified contractor and an independent technical advisory group as described below. The study will include sampling and data collection, data compilation, and modeling, and will be designed to provide credible estimates of entrainment losses caused by the proposed project. The study protocols will be based on those used in several recent entrainment studies done at California coastal power plants, including Diablo Canyon, Huntington Beach, and others.

Entrainment Study Design: At least six months before the start of operations for Cabrillo Port, BHP will submit for timely review and approval by the Executive Director of the California Coastal Commission ("Executive Director"):

- The name(s) and qualifications of the contractor(s) proposed to implement the study; and,
- The names and qualifications of proposed members of an independent Technical Advisory Group (TAG). The TAG shall consist of up to five members with a demonstrated scientific background in marine entrainment impacts. The TAG will evaluate the proposed study design, will meet regularly during each of the study steps listed below to review study implementation, and will provide recommendations to the Executive Director regarding study design and implementation. The Executive Director may modify the study protocols described below if the TAG recommends changes intended to improve the accuracy or applicability of the study.

Entrainment Study Sampling Plan: At least three months before the start of operations for Cabrillo Port, BHP will submit an entrainment study sampling plan for timely review and

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approval by the Executive Director. The proposed sampling plan will be submitted only after review and concurrence by the TAG. The plan will include, at minimum, the following components:

- **Sampling:** Within 30 days of starting commercial operation at the FSRU, BHP will start a one-year entrainment and source water sampling program. Entrainment samples will be taken once per week for at least a year, and source water samples will be taken once per month for at least a year. Sampling will be extended for an additional year if an oceanographic anomaly (e.g., an El Nino Southern Oscillation, or ENSO) coincides with the initial year of sampling. Anomalies such as the ENSO can be detected using the network of NOAA operated buoys in the Pacific that measure temperature, currents, and winds on a real time basis. The TAG would be responsible for determining whether ocean conditions warrant an additional year of sampling.

Sampling for both entrainment and source water will be done using the same type of equipment and similar protocols. Samples will be taken using a 333 μ m mesh plankton net attached to a bongo frame fitted with 71-centimeter diameter rings and with a Dacron sleeve and cod-end container to retain the organisms. Each net will be equipped with a calibrated flowmeter to calculate the amount of water filtered during sample collection. The entrainment samples will be taken as close as feasible to the FSRU. The source water samples will be taken within a 10 kilometer by 5 kilometer rectangle centered on the FSRU. Each sampling event will consist of a 24-hour period broken into six four-hour blocks. The monthly source water sampling event will occur during, immediately before, or immediately after a weekly entrainment sampling event.

The TAG may recommend any other necessary sampling protocols in addition to those listed above (e.g., determining random locations for source water sampling, appropriate sampling depths, additional target species, etc.) and may recommend modifications to the study protocols if deemed necessary to improve sampling results. During the sampling period, BHP will provide quarterly data reports for ongoing TAG review.

- **Source water identification/oceanographic data:** Before and during the sampling year, BHP will compile data from existing sources (e.g., buoys or meters used by the NOAA Ocean Observing System, Scripps Institution of Oceanography, California Cooperative Oceanic Fisheries Investigations (CalCOFI), etc.). Data to be collected include wind and water speed and direction, water temperature, and the historic type and frequency of planktonic blooms and plumes in the proposed project area. BHP may need to deploy additional buoys or meters to fill data gaps if determined necessary by the TAG.
- **Data compilation:** Organisms collected during sampling will be identified to the lowest possible taxa. Species to be enumerated include, but are not limited to, those identified in Attachment 1. The list in Attachment 1 was derived from the CalCOFI dataset and other sources and includes species known to be in the area that are commercially valuable, subject

to Essential Fish Habitat protections, or are otherwise significant species. Enumeration will also include noting the length and/or age of the identified organisms.

BHP will also identify, to the extent feasible, the natural history of the planktonic life stages of the species subject to entrainment, including their range and dispersal, their location in the water column, vertical and horizontal migration patterns, and the habitat of adult populations.

- **Modeling:** BHP will use the above data to apply the Empirical Transport Model (ETM), a modeling method used to determine the probability that organisms within the source water will be subject to entrainment mortality. This method will also be used to estimate the amount of habitat needed to replace the production lost to entrainment (Area Production Foregone, or APF).

In addition to the ETM method, BHP will conduct Fecundity Hindcasting (FH) and Adult Equivalent Loss (AEL) modeling to provide verification of the ETM modeling results and to provide a more robust assessment of project-related impacts.

- **Final Report:** Within 180 days of completing the sampling described above, BHP will submit to the Executive Director a final report describing the entrainment impacts and the estimated amount of Area Production Foregone.

3. Entrainment Mitigation. Along with the entrainment study described above, BHP commits to the following mitigation steps:

- At least one year before the start of Cabrillo Port operations, BHP will submit evidence to MARAD and to the Executive Director that it has deposited funds into the California Department of Fish and Game "Hard Bottom Mitigation Fund" (Bank of America Account #05273-11349) to be used for the design, permitting, construction, and monitoring of seven acres of artificial reef in the Southern California Bight.¹ The deposited funds shall be sufficient to cover the estimated actual costs to design, permit, construct and monitor the artificial reef, not to exceed \$5.4 million plus 10% for every full year following 2010 that

¹ Basis of Amount of Mitigation from Commission staff: This proposed mitigation is based on reviewing monitoring data obtained from the California Cooperative Oceanic Fisheries Investigations (CalCOFI) program that describes plankton populations near the proposed Cabrillo Port site, and then applying a mitigation approach used in recent California coastal power plant entrainment studies (e.g., the Energy Commission's entrainment study for the Huntington Beach Generating Station). Based on that approach and using several conservative assumptions, the Cabrillo Port seawater withdrawals would likely cause an average annual loss of productivity equal to that provided in a surface area of offshore waters no larger than about 3.5 acres. Results of entrainment studies describe this as the "Area of Production Foregone" (APF). A seven-acre mitigation reef would be twice the size of this area of lost productivity, thus it would provide a 2:1 mitigation ratio based on area. However, because a properly designed and sited reef is substantially more productive than open ocean waters, seven acres of reef would likely provide mitigation at somewhat greater than a 2:1 ratio.

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funds have not been deposited into the Hard Bottom Mitigation Fund.² Estimated actual costs of the reef shall be determined by the California Department of Fish and Game and approved by the Executive Director. If the actual costs of the reef design, permit, construction and monitoring are less than the deposited funds, then the difference shall be returned to BHP. Based on currently available data, seven acres of reef habitat is believed to provide mitigation at no less than a 2:1 ratio for the "Area of Production Foregone" (APF) caused by Cabrillo Port's use of about three billion gallons per year of seawater.

- If the Technical Advisory Committee determines that the entrainment study results in an APF larger than 3.5 acres, BHP will within 60 days of study completion provide to the "Hard Bottom Mitigation Fund" any additional funds needed to design, permit, construct, and monitor the additional acreage of artificial reefs needed to provide at least 2:1 mitigation for the APF – for example, if the entrainment study shows the APF is 5 acres instead of the currently anticipated 3.5 acres and therefore requires 10 acres of mitigation instead of the currently anticipated 7 acres, BHP will deposit funds needed to provide an additional 3 acres of reef. The amount of any additional funds needed will be based on the per-acre costs of similar artificial reef projects as determined by the California Department of Fish and Game and as approved by the Executive Director.

4. Seabird Mitigation. On or before January 1, 2010, BHP shall submit documentation to the Executive Director of the Coastal Commission ("Executive Director") showing that it has provided \$300,000 to the National Park Service to augment and extend seabird nesting habitat restoration and population enhancement projects within the Channel Islands National Park, unless the Cabrillo Port Deepwater Port license is not active. Specifically, this funding shall be used for nest box installations, disturbance reduction efforts (the placement of signs, additional enforcement presence and the deployment of light meters at seabird colonies), erosion control and native plant restoration efforts, exotic plant removal activities, and the use of social attraction techniques to help augment and re-establish historic nesting colonies of Cassin's auklets, Xantus's murrelets and ashly storm-petrels on Santa Barbara Island, San Miguel, Anacapa Island and Scorpion and Orizaba Rocks offshore of Santa Cruz Island.

In addition, on or before January 1, 2010, BHP shall submit documentation to the Executive Director that it has provided \$100,000 to the U.S. Geological Survey's Western Ecological Research Center to develop and implement site specific research efforts within the project location to document and quantify the effects on seabirds from the Cabrillo Port's use of artificial lighting at night, unless the Cabrillo Port Deepwater Port license is not active.

² Basis of Cost from Commission staff: In 2006, the Department of Fish and Game estimated the cost of a one-acre artificial reef at Pitas Point to be \$523,311. This includes design, permitting, construction, monitoring, and administrative costs. Assuming that the funds for the Cabrillo Port mitigation reefs are deposited by 2010 and assuming a 10% annual cost increase between 2006 and 2010, the cost per acre at that time would be approximately \$766,180. That cost per acre multiplied by seven acres is \$5,363,260, or approximately \$5.4 million.

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5. Geology.

a. Prior to commencement of construction, BHP shall submit, for timely review and approval by the Executive Director of the California Coastal Commission (Executive Director") in consultation with CSLC and MARAD, the final designs for the Horizontal Directional Bore, including bore alignment in plan and cross section.

b. BHP will commit to implement the recommendations contained in the previously submitted report prepared by D.G. Honegger Consulting, 2004 entitled "Assessment of potential seismic hazards to Cabrillo Port facilities" (94 p. report dated 5 November 2004 and signed by D.G. Honegger and P.B. Summers (SE 003725)).

c. Prior to commencement of construction, BHP shall submit, for the timely review and approval of the Executive Director in consultation with CSLC and MARAD, the final designs for the Pipelines, Pipeline End Terminations, Pipeline End Manifold, and Umbilical Anchor, demonstrating compliance with the recommendations in the Honegger Consulting Report entitled "Assessment of potential seismic hazards to Cabrillo Port facilities", dated 5 November 2004.

6. Commercial Fishing. If a pilotage waiver is not granted, BHP, in its consistency certification, will commit to scheduling the Port Hueneme tugboats trips in advance, to inform affected fishermen of the schedule, and to hold outside the entrance to Port Hueneme or at the dock to allow fishing vessels that are already offloading to finish offloading.

7. Cultural Resources.

a. BHP will commit to implement the recommendations contained in the previously submitted Unanticipated Discoveries Plan prepared by Entrix Inc. Environmental Consultants included as Appendix A to the Cultural Resources Inventory of the BHP Billiton LNG International Inc. Cabrillo Port Pipeline, dated June 2005.

b. BHP will commit to recommendations contained in the final version of the Cultural Resources Avoidance Plan for the Offshore Pipeline Route Associated with Cabrillo Port prepared by Macfarlane Archaeological Consultants (MAC).

c. BHPB will commit to provide an archaeological monitor for all HDB and trenching activities in the coastal zone. BHPB will attempt to utilize a qualified Native American archaeological monitor for these activities, provided that sufficient qualified Native American archeological monitors are available.

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8. **EIS/EIR Mitigation Measures.** BHP agrees to comply with the mitigation measures required in the Mitigation Monitoring and Reporting Program included in the Cabrillo Port Liquefied Natural Gas Deepwater Port Final EIS/EIR.

Sincerely,

A handwritten signature in black ink, appearing to read "Renee Klimczak", with a long horizontal flourish extending to the right.

Renee Klimczak, President
BHP Billiton LNG International, Inc.

cc: Dwight Sanders, CSLC
Mark Prescott, USCG

Attachment 1 – Partial List of Species

Fish

Fish eggs

Cabezon, *Scorpaenichthys marmoratus* (EFH)

California Halibut, *Paralichthys californicus*

California tonguefish, *Symphurus atricauda*

Longspine Thornyhead, *Selastolobus altivelis*

Northern Anchovy, *Engraulis mordax* (EFH)

Pacific Hake, *Merluccius productus* (EFH)

Pacific mackerel, *Scomber japonicus* (EFH)

Pacific Sardine, *Sardinops sagax* (EFH)

Shortspine Thornyhead, *Sebastolobus alascanus*

Rockfish species, *Sebastes* spp. (EFH)

Aurora Rockfish, *Sebastes aurora* (EFH)

Bank Rockfish, *Sebastes rufus*

Black Rockfish, *Sebastes melanops*

Blue Rockfish, *Sebastes mystinus*

Bocaccio, *Sebastes paucispinis* (EFH)

Brown Rockfish, *Sebastes auriculatus*

Calico Rockfish, *Sebastes dalli*

Canary Rockfish, *Sebastes pinniger*

Chilipepper Rockfish, *Sebastes goodei* (EFH)

Copper Rockfish, *Sebastes caurinus*

Cowcod, *Sebastes levis* (EFH)

Gopher Rockfish, *Sebastes carnatus*

Grass Rockfish, *Sebastes rastrelliger*

Kelp Rockfish, *Sebastes atrovirens*

Mexican Rockfish, *Sebastes macdonaldi*

Olive Rockfish, *Sebastes serranoides*

Shortbelly Rockfish, *Sebastes jordani*

Speckled Rockfish, *Sebastes ovalis*,

Splitnose Rockfish, *Sebastes diploproa* (EFH)

Starry Rockfish, *Sebastes constellatus*

Widow Rockfish, *Sebastes entomelas*

Yellowtail Rockfish *Sebastes flavidus*

Invertebrates

Spiny Lobster, *Panulirus interruptus* - commercially valuable

Sand crabs, *Emerita analoga* - ecologically important

Yellow rock crab, *Cancer anthonyi*

Brown rock crab, *Cancer antennarius* - commercially valuable

Red rock crab, *Caner productus*

Squid paralarvae, *Loligo opalescens* - commercially valuable

Other cancer crabs, *Cancer* sp.

Other crab megalope and zoea larvae

APPENDIX C

MITIGATION MEASURES of the FINAL EIS/EIR

Table ES-5 Summary of Impacts and Mitigation Measures

Note: Impact classes are defined in Table ES-4. Acronyms for each resource are defined at the end of Table ES-5. Many of the measures listed apply to more than one resource; however, each measure is described only once under its primary resource. For example, AM MT-3a, Patrol Safety Zone, applies to Impacts PS-1, PS-2, MT-3, MT-4, BioMar-6, and BioMar-8, but is described in full only under Impact MT-3.

Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
PUBLIC SAFETY [PS] (Section 4.2)			
FSRU or LNG Carrier			
Impact PS-1: <i>Potential Minor Release of LNG due to Operational Incident or Natural Phenomena at the FSRU or an LNG Carrier</i> An incident at the FSRU or LNG carrier due to human error, upsets, or equipment failures, or as a result of natural phenomena (severe wave conditions, high winds, etc.) could cause a release of LNG from the FSRU or an LNG carrier that would have a limited area of effect.	CEQA Class II; NEPA minor adverse, long-term	AM PS-1a. Applicant Engineering and Project Execution Process. The Applicant would undertake—regardless of any less stringent regulatory requirements—the following steps to design, build, and operate the proposed Project: 1. Prior to final internal Project funding, undertake a full Front End Engineering Design (FEED) exercise with a suitably qualified and experienced contractor under the management of an Applicant technical team. This would define the engineering requirements for the complete Project and identify sources for all remaining detailed information and data in order to be ready for internal Project sanction and final detailed engineering. 2. Undertake a comprehensive offshore site survey to determine bathymetry, geology, and geotechnical characteristics of the area in and immediately around the locations of each element of the Project. This would require mobilization of specialized marine vessels and crews to perform the acoustic surveying and soil coring for the shallow water horizontal directional boring (HDB) of the pipelines crossing under the beach to the FSRU mooring in deep water. The survey results would provide additional information for the final detailed design of the HDB, pipelines, cable crossings, pipeline end manifolds, and mooring system anchors. 3. Fully implement the proposed Project under a self-imposed “Safety Case” process for the detailed design of the proposed Project. This would begin with the FEED but could be completed only when the level of the facility definition is in the advanced detailed design phase. This would require a complex series of additional detailed safety checks and balances be put into place, including hazard identification and analysis (HAZID, hazard and operability studies (HAZOPs), quantitative risk analyses (QRA), formal safety assessments (FSAs), and associated safety engineering exercises such as process plant modeling and analyses. This would be finalized during the detailed design of the FSRU safety systems, the process plant and deck	Less than significant

Table ES-5 Summary of Impacts and Mitigation Measures

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
		layouts, and the associated systems such as piping and utilities, and the control systems and procedures. Upon start-up, the safety case would become a “living tool” for the facility operating team—one that would be updated and reanalyzed as needed based on operational experience—to ensure that the proposed Project meets or exceeds required standards during all phases of operation. 4. Upon internal Project sanction/funding, ensure detailed engineering would be conducted for all components by suitably qualified and experienced contractors under the management of an Applicant technical team and in accordance with demanding technical requirements that would be carefully defined in contractual documents. The selected qualified engineering contractors would likely be different for the contractor designing the hull, regasification topsides, mooring, pipelines, etc. Using this process, the Applicant would ensure that all engineering is executed to meet or exceed the regulatory and Applicant’s internal requirements. 5. Commission a series of model tests of the FSRU facility at an experienced and well-established model test basin. More advanced detailed theoretical analyses would be completed first to identify the governing criteria and cases to be modeled in the basin. These model tests would cover both the survival sea states without an LNG carrier moored alongside and the operational sea states with the carrier moored alongside the FSRU. FSRU motions and mooring system loads would be measured under survival storm conditions to confirm the calculated results. Similarly, relative and absolute motions of and between the FSRU and the berthed carrier would be measured to confirm the operability limits of the berth mooring, fender, and loading arm systems. This would also provide information about FSRU motions for the detailed design of the topsides equipment. 6. The Applicant would require independent third-party verification of detailed engineering, procured equipment, fabrication, construction, and offshore installation and commissioning of all Project components. Where such independent third-party verification would be required by a regulatory agency, or in order to obtain class certification, a single verification process would be conducted to ensure efficiency of this verification.	

Table ES-5 Summary of Impacts and Mitigation Measures

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
		7. During the construction phases of the proposed Project, both quality and safety audits at major fabrication/construction sites would be undertaken by the Applicant to ensure quality and safety of the Project components. Actual safety and quality performance during construction would be a contractual obligation for the various contractors selected by the Applicant. 8. Before releasing the FSRU from its inshore commissioning, i.e., before towing to the proposed Project site, and after offshore installation of all components, but before facility start-up, the Applicant would conduct a formal pre-startup review. The status of the facility, quality assurance, “outstanding items,” operational preparedness, and compliance with legal and regulatory commitments would be carefully reviewed in a team session with final checks before proceeding first with the tow and second with initial start-up of LNG operations. A number of action items would generally be identified in such sessions; some would require closure before proceeding to the next step, and others would be identified for action by specific deadlines or milestones. This process and any findings would be formally documented. AM PS-1b. Class Certification and a Safety Management Certificate for the FSRU. Class certification and a safety management certificate are required under international agreements, i.e., through the IMO, for vessels engaged in international voyages. Although this would not be required for the stationary FSRU, the Applicant would obtain class and safety management certification for the facility, including the subsea pipelines, pipeline end manifold, and risers. The Applicant would voluntarily provide a documented management system that would comply with the International Safety Management Code and the Applicant’s internal health, safety, engineering, and construction standards. When operational, the FSRU would be certifiable under International Safety Management, International Organization for Standardization (ISO) ISO-9000 quality standards and ISO-14000 environmental standards. AM PS-1c. Periodic Inspections and Surveys by Classification Societies. The Applicant would conduct periodic inspections of the FSRU by classification societies, including annual inspections and a full survey after five years of facility operation and every five years thereafter. This would help ensure that shipboard procedures are regularly reviewed and updated and that processing and	

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
		emergency equipment would be maintained appropriately and repaired or upgraded as necessary. AM PS-1d. Designated Safety Zone and Area to be Avoided. The Applicant would monitor a 1,640-foot (500 m) radius safety zone to be designated by the USCG around the FSRU where public maritime traffic would be excluded. The Applicant has also proposed designating an Area to be Avoided with a radius of 2 NM (2.3 miles or 3.7 km) around the FSRU. Each of these zones would be marked on nautical charts and would serve as part of the Notice to Mariners to avoid this area. AM MT-3a. Patrol Safety Zone (see Section 4.3, "Marine Traffic"). AM MT-3d. Control Room Team Management Techniques (see Section 4.3, "Marine Traffic"). AM MT-3e. Broadcast of Navigational Warnings (see Section 4.3, "Marine Traffic"). MM PS-1e. Cargo Tank Fire Survivability. The Applicant shall provide safety engineering, HAZIDs, HAZOPs, and QRA supporting the detailed engineering design, including cases where cargo tank insulation is presumed to fail in the event of a fire. MM PS-1f. Structural Component Exposure to Temperature Extremes. The Applicant shall provide safety engineering, HAZIDs, HAZOPs, and QRA supporting the detailed engineering design, including cases where decking, hulls, and structural members are exposed to both cryogenic temperatures from spilled LNG and exposure to extreme heat from a fire, e.g., the Moss storage tanks would be designed with a steel outer shell to provide a barrier against excessive heat and fire in the event of an emergency in the regasification area, and to minimize impacts on multiple tanks. MM PS-1g. Pre- and Post-Operational HAZOPs. The Applicant shall conduct HAZOPs that address all LNG operations prior to beginning operation and after one year of operation. The results of these reviews shall be used to improve and refine operations practices and emergency response procedures. After the initial and first post-operational HAZOPs, additional HAZOPs shall be conducted every two years unless there has been a change in equipment or other significant change. The results of these reviews shall be reviewed as part of configuration	

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
		management when any equipment, operational, or procedural changes have been undertaken that would necessitate conducting an additional HAZOP review for the new configuration. HAZOPs may be conducted by the Applicant or by a qualified third party, including participation by the CSLC. MM MT-3f. Live Radar and Visual Watch (see Section 4.3, "Marine Traffic").	
Impact PS-2: Potential Release of LNG due to High-Energy Marine Collision or Intentional Attack A high-energy collision of another vessel with the FSRU or an LNG carrier or an intentional attack could cause a rupture of the Moss tank(s) holding LNG, leading to a release of an unignited flammable vapor cloud that could extend beyond the 1,640-foot (500 m) radius safety zone around the FSRU, impact any members of the boating public in the identified potential impact area, and impact boats traveling in the Traffic Separation Scheme.	CEQA Class I; NEPA major adverse, short-term	AM PS-2a. AIS, Radar, and Marine VHF Radiotelephone. The Applicant would equip the FSRU with an AIS and with real-time radar and marine VHF radiotelephone capabilities. AM PS-1a. Applicant Engineering and Project Execution Process. AM PS-1b. Class Certification and a Safety Management Certificate for the FSRU. AM PS-1c. Periodic Inspections and Surveys by Classification Societies. AM PS-1d. Designated Safety Zone. AM MT-3a. Patrol Safety Zone (see Section 4.3, "Marine Traffic"). AM MT-3b. LNG Carrier Monitoring by the FSRU (see Section 4.3, "Marine Traffic"). AM MT-3c. One LNG Carrier in Approach Route (see Section 4.3, "Marine Traffic"). AM MT-3d. Control Room Team Management Techniques (see Section 4.3, "Marine Traffic"). AM MT-3e. Broadcast of Navigational Warnings (see Section 4.3, "Marine Traffic"). MM PS-1e. Cargo Tank Fire Survivability. MM PS-1f. Structural Component Exposure to Temperature Extremes. MM PS-1g. Pre- and Post-Operational HAZOPs. MM MT-3f. Live Radar and Visual Watch (see Section 4.3, "Marine Traffic"). MM MT-3g. Information for Navigational Charts (see Section 4.3, "Marine Traffic").	Significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
Offshore Pipelines			
Impact PS-3: <i>Potential Release of Odorized Natural Gas due to Damage to Subsea Pipelines</i> Fishing gear could become hung up on the pipelines and potentially damage one or both of the subsea pipelines. Similar damage may occur due to a seismic event or subsea landslide.	CEQA Class I; NEPA major adverse, short-term	AM PS-3a. More Stringent Pipeline Design. The Applicant would design and install pipelines to meet seismic criteria to ensure that pipeline integrity is maintained during severe seismic events that might be expected to bend or bow the pipelines. MM PS-3b. Emergency Communication/ Warnings. The Applicant shall institute emergency plans and procedures that require immediate notification of vessels in any offshore area, including hailing and Securite broadcasts, and immediate notification of local police and fire services whenever the monitoring system indicates that there might be a problem with subsea pipeline integrity. MM PS-3c. Areas Subject to Accelerated Corrosion, Cathodic Protection System. The Applicant shall identify any offshore or onshore areas where the new transmission pipelines may be subject to accelerated corrosion due to stray electrical currents, and implement precautions and mitigation measures as recommended in a November 12, 2003, Federal OPS pipeline safety advisory (68 FR 64189). Cathodic protection systems shall be installed and made fully operational as soon as possible during pipeline construction. MM MT-1d. Securite Broadcasts (see Section 4.3, "Marine Traffic"). MM MT-3g. Information for Navigational Charts (see Section 4.3, "Marine Traffic").	Significant
Impact PS-4: <i>Potential Release of Odorized Natural Gas due to Accidental Damage to Onshore Pipelines</i> The potential exists for accidental or intentional damage to the onshore pipelines or valves carrying odorized natural gas. Damage, fires and explosions may occur due to human error, equipment failure, natural phenomena (earthquake, landslide, etc.). This would result in the release of	CEQA Class I; NEPA major adverse short-term	AM PS-4a. Class 3 Pipeline Design Criteria. The Applicant or its designated representative would construct all pipeline segments to meet the minimum design criteria for a USDOT Class 3 location, which would improve safety and reduce the need to reconstruct the pipeline segments as additional development and population densities increase along the onshore pipeline corridor. MM PS-4b. Pipeline Integrity Management Program. The Applicant shall develop and implement a pipeline integrity management program, including confirming all potential High Consequence Areas (including identification of potential sites from "licensed" facility information [day care, nursing care, or similar facilities] available at the city and county level) and ensuring that the public education program is fully implemented before beginning pipeline operations.	Significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
an odorized natural gas cloud at concentrations that are likely to be in the flammable range.		MM PS-4c. Install Additional Mainline Valves Equipped with Either Remote Valve Controls or Automatic Line Break Controls. The Applicant shall install five approximately equally spaced sectionalizing valves with appropriately sited and sized blowdown stacks on the Center Road Pipeline. The Applicant shall install three approximately equally spaced sectionalizing valves with appropriately sited and sized blowdown stacks on the Line 225 Pipeline Loop. The number of valves includes the station valves at each end of these pipelines. All valves shall be equipped with either remote valve controls or automatic line break controls. MM PS-4d. Treat Shore Crossing as Pipeline HCA. The Applicant shall treat any onshore public beach area, under which is located a pipeline(s) that is carrying natural gas, as an HCA. MM PS-4e. Safety Marker Indicating the Presence of Buried Natural Gas Pipeline at Ormond Beach. Prior to the operation of the shore crossing pipelines, the Applicant shall install signage indicating the presence of the buried natural gas pipelines at Ormond Beach. The sign shall list the Operator's name and shall include a toll free number to call for information in case of plans to dig in the area, or to report a leak, or an emergency. MM PS-4f. Emergency Response. The Applicant shall implement emergency plans and procedures as specified in its operations plan and shall immediately dispatch trained personnel to the area to investigate the emergency and secure the area until the release has been stopped and pipeline integrity under the beach is assured as verified by the Applicant. The emergency plans shall be in compliance with OPS Advisory Bulletin ADB-05-03, which requires preplanning with other utilities for coordinated response to pipeline emergencies. MM PS-3c. Areas Subject to Accelerated Corrosion, Cathodic Protection System.	
Onshore Operation			
Impact PS-5: <i>Increased Potential for Injury, Fatality, and Property Damage Due to Fire or Explosion in Areas with Less Robust Housing Construction and Outdoor Activity.</i> In the event of an accident, there is a	CEQA Class I; NEPA major adverse, short-term	AM PS-4a. Class 3 Pipeline Design Criteria. MM PS-5a. Treat Manufactured Home Residential Community as a High Consequence Area. The Applicant shall treat as an HCA those areas where the potential impact radius includes part or all of a manufactured-home residential community, including outdoor gardens and areas with one or more normally occupied mobile homes or travel trailers used as temporary or semi-permanent	Significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
greater likelihood of injury, fatality, and property damage near Center Road Pipeline MP 4.1, an HCA.		housing. The Applicant shall enact for these areas the pipeline safety requirements contained in 49 CFR Part 192 Subpart O.	
MARINE TRAFFIC (Section 4.3)			
Offshore Construction			
Impact MT-1: <i>Temporary Increase in Maritime Traffic during Installation of the Mooring System, FSRU Mooring, Offshore Pipeline Construction, and Shore Crossing Resulting in Increased Safety Risks</i> Marine activities associated with site preparation, transportation, and installation of the mooring system, FSRU, and subsea pipelines could temporarily increase maritime traffic congestion and increase the risk of vessel collision.	CEQA Class II; NEPA minor adverse, short-term	AM MT-1a. Safety Vessel Warnings. During offshore construction, a safety vessel would be stationed 3 to 5 NM (3.5 to 5.8 miles or 5.6 to 9.3 km) from the pipelaying barge in the direction of predominant traffic flow to warn vessels approaching construction that deviation from their course and speed is necessary. AM MT-1b. Automatic Identification System. The pipelaying barge and associated vessels would be equipped with AIS. MM MT-1c. Notices to Mariners. The Applicant shall ensure that Notices to Mariners contain planned positions of vessels for the entire construction period, planned traffic lane closures, speed restrictions in the vicinity of vessels, and alternative routes and radio channels that Project vessels shall monitor and work. These notices shall include vessel names, if available, and shall mention the presence of the safety vessel(s) identified in MM MT-1e. The Applicant shall submit unforeseen short-notice changes to the USCG for dissemination as a Broadcast Notice to Mariners and shall include such changes in the Securite broadcasts identified in MM MT-1d. MM MT-1d. Securite Broadcasts. The Applicant shall ensure that a Project vessel in the construction area makes Securite broadcasts on VHF-FM at half-hour intervals, informing mariners about the current construction location, any lane restrictions, and preferred speed and standoff distances from the Project vessels and trailing pipeline. The vessel could be the safety vessel identified in MM MT-1e. MM MT-1e. Safety Vessel. The Applicant shall ensure that the safety vessel is present at all times during construction, be equipped with radar and marine VHF radio, be of sufficient size and type, and have a sufficiently trained crew to respond to emergencies. This vessel's captain shall instruct intercepted vessels as to the location of construction vessels and the standoff distances from vessels and the pipelines to ensure that the intercepted vessel safely avoids the	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
		construction zone. This vessel shall be of sufficient speed to intercept vessels failing to alter course or answer radio hails. Alternatively, more than one vessel of this type shall be used and stationed in various positions around the construction site to ensure full coverage of the construction area. MM MT-1f. Guard Boats. The Applicant shall station two guard boats, in addition to the safety vessel identified in MM MT-1e, on watch while construction takes place in waters less than 656 feet (200 m) deep where trawling occurs to warn or intercept commercial fishing vessels before they reach the construction area. These smaller guard boats shall be stationed on either side of the construction vessels to intercept the faster recreational vessels that may not have marine radios. The guard boats shall be equipped with spotlights for identification of non-answering vessels at night and loud hailer or bullhorns to warn these vessels about the construction area. MM MT-1g. Construction Schedule Signs. The Applicant shall post signs at local marinas and ports to inform the public of the nearshore construction schedule at least one month prior to the first day of construction. One week prior to construction the Applicant shall replace any signs that are no longer present.	
Impact MT-2: Long-Term Increase in Maritime Traffic during Offshore Operations LNG carriers, tugs, and attending vessels transiting to and from the FSRU, could increase maritime traffic congestion during Project operations.	CEQA Class II; NEPA minor adverse, long-term	AM MT-2a. Provisions for Delays. Project vessels for Project operations (including LNG carriers) would not use anchorages except possibly in emergency situations. If there is a delay in docking, LNG carriers would slow their speed to arrive at a suitable time or stop or drift between 100 and 200 NM (115 and 230 miles or 185 and 370 km) offshore. AM MT-2b. Established Routes to and from Port Hueneme. Vessels would use the routes depicted on Figure 4.3-3 to travel to and from Port Hueneme. AM MT-2c. Compliance with JOFLO Vessel Traffic Corridors. The Applicant would abide by the JOFLO corridors that direct traffic into specified patterns within 30 fathoms (180 feet) of shore established by JOFLO. Although JOFLO is not a governmental agency and has no jurisdiction to set marine traffic corridors, the Applicant would respect its established corridors. MM MT-2d. Incorporation of Procedures for Delays. To formalize AM MT-2a, the Applicant shall incorporate procedures that mandate early notification of possible delays into the facility operations manual for LNG carriers so that a carrier might reduce transit speed in order to arrive at a later time and shall	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
		contact the incoming ship once it is determined that a delay may occur to instruct them to stay at least 100 NM (115 miles or 158 km) offshore. MM MT-2e. Evaluation of Routes to and from Port Hueneme. After operating for six months, the Applicant and the Port of Hueneme Safety Committee shall assess the volume of vessel traffic, types of vessels, frequency of encounters, if any, and any reported incidents to determine whether Project vessel operations should be modified. The Applicant shall be required to comply with any requested modifications.	
Impact MT-3: Long-Term Increase in Safety Hazards due to the Presence of the FSRU and LNG Carriers The FSRU mooring location would be situated approximately 2 NM (2.3 miles or 3.7 km) from the Southbound Coastwise Traffic Lane of the Santa Barbara Channel TSS, which has relatively high levels of maritime traffic. In addition, vessels entering/leaving Port Hueneme or other local marina could pass nearby; thus, maritime traffic could be substantially increased with Project operations and the risk of vessel collision could be increased.	CEQA Class II; NEPA minor adverse, short-term	AM MT-3a. Patrol Safety Zone. Two tugboats on standby duty would patrol Cabrillo Port's designated safety zone, except during docking and undocking operations. Dedicated personnel aboard the FSRU would monitor marine traffic. AM MT-3b. LNG Carrier Monitoring by the FSRU. LNG carriers inbound and outbound would be monitored by the FSRU's own marine traffic management system. Specific required reporting and traffic information exchange protocols would be implemented. Appropriate adjustments to scheduling of LNG carriers would be in place to avoid routine collision possibilities. AM MT-3c. One LNG Carrier in Approach Route. Only one LNG carrier would be permitted to transit the approach route at any given time (see Figure 4.3-2). Minimum distances between LNG carriers when enroute on the LNG carrier approach route would be prescribed. AM MT-3d. Control Room Team Management Techniques. The Applicant would ensure that all members of the control room team are aware of possible dangers of upcoming operations and would inform all crew members that it is their responsibility to bring indication of danger to the attention of higher authorities. AM MT-3e. Broadcast of Navigational Warnings. The FSRU would broadcast navigational warnings of arriving and departing LNG carriers on radio, TOR, NAVTEX, and Sat-C. MM MT-3f. Live Radar and Visual Watch. The Applicant shall ensure that a live radar and visual watch is maintained at all times on board the FSRU. The watch supervisor shall be an experienced and qualified officer in charge of the navigation watch and have a STCW endorsement. The watch supervisor and all watchstanding support personnel shall be qualified in accordance with the criteria outlined in Sections II and VIII of the STCW-95 Code with demonstrated	Less than significant

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		proficiency in the use of all electronic navigational and communications equipment. The watchstanders shall properly operate equipment in order to detect and identify approaching vessels and note approaching aircraft at all times. The watchstanders shall provide a full-time radio watch, which shall monitor VHF-FM frequencies commonly used for emergency and normal ship-to-ship communications, and contact approaching vessels to inform them of the FSRU's location, intentions, and the nature of safety and/or security zones in effect. Guidance for these FSRU positions shall be included in the facility operations and security manuals. MM MT-3g. Information for Navigational Charts. The Applicant shall ensure that all required information is provided to the USCG and other agencies, as necessary, to place the FSRU location, safety zone information, and subsea pipeline locations and warnings on navigational charts. This shall include a Notice to Mariners for chart correction and inclusion on the next edition of applicable navigation charts. These data shall be provided sufficiently early to allow these changes to be made on charts when FSRU mooring occurs. The Applicant shall coordinate with the USCG to identify acceptable deadlines currently in place.	
Impact MT-4: <i>FSRU or LNG Carrier Accident Impact on Marine Traffic</i> An incident at the FSRU or on an LNG carrier could adversely affect marine traffic.	CEQA Class II; NEPA minor adverse, short-term	AM PS-2a. AIS, Radar, and Marine VHF Radiotelephone. The Applicant would equip the FSRU with an AIS and with real-time radar and marine VHF radiotelephone capabilities. AM MT-3a. Patrol Safety Zone. AM MT-3b. LNG Carrier monitoring by the FSRU. AM MT-3c. One LNG Carrier Approach Route. MM PS-3b. Emergency Communication/ Warnings. The Applicant shall institute emergency plans and procedures that require immediate notification of vessels in any offshore area, including hailing and Securite broadcasts, and immediate notification of local police and fire services whenever the monitoring system indicates that there might be a problem with subsea pipeline integrity. MM MT-3f. Live Radar and Visual Watch.	Less than significant
Impact MT-5: <i>Temporary Interference with Operations in the Point Mugu Sea Range or the SOCAL Range Complex</i>	CEQA Class II; NEPA minor adverse, short-term	MM MT-5a. Avoid Point Mugu Sea Range. The Applicant shall ensure that Project-related vessels, unless such vessels are related to pipeline construction, do not intrude into the waters in the Point Mugu Sea Range. When construction must take place in a Point Mugu Sea Range warning area, such as where the	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
<i>during Offshore Construction</i> Marine activities associated with site preparation, transportation, and installation of the mooring system, FSRU, or subsea pipelines could temporarily burden maritime traffic tracking systems or make clearing of some warning areas impossible; thus, temporary disruption of operations in the Point Mugu Sea Range or the SOCAL Range Complex could occur.	term	subsea pipelines cross the range, the Applicant shall give notice of at least one month, and preferably six months, to the U.S. Navy to allow for adequate coordination. MM MT-5b. Daily Safety Briefs. The Applicant shall ensure that daily safety briefs aboard all Project vessels include instructions to avoid use of Point Mugu Sea Range waters. MM MT-5c. Daily Coordination with the U.S. Navy. The Applicant shall coordinate daily (or at an interval that the U.S. Navy deems sufficient) with the U.S. Navy to ensure that no conflicts exist between Navy operations and Project construction when Project vessels would be expected to be in any warning area. If a Navy warning area needs to be used by construction vessels, construction shall be postponed until the situation is resolved to the satisfaction of Project management and the U.S. Navy. Coordination with the U.S. Navy shall be completed at least one month prior to the date that construction begins. MM MT-5d. Monitor U.S. Navy Securite Broadcasts. The Applicant shall ensure that Project vessels monitor all U.S. Navy Securite warning broadcasts on VHF-FM. This would likely require switching from normally monitored frequencies, when prompted by a preliminary broadcast by the U.S. Navy, for additional information. Instructions to do so shall be included in daily safety briefs. Conflicts, actual or perceived, shall be addressed immediately by the Project person-in-charge on site, or by individual Project vessel captains via VHF communications with the U.S. Navy.	
Impact MT-6: Long-Term Interference with Operations in the Point Mugu Sea Range and the SOCAL Range Complex Marine activities associated with Project operations could burden maritime traffic tracking systems or could make clearing of some warning areas impossible; thus, disruption of operations in the Point Mugu Sea Range or the SOCAL Range Complex could occur.	CEQA Class II; NEPA minor adverse, long-term	MM MT-6a. Follow U.S. Navy Securite Broadcasts. The Applicant shall heed U.S. Navy Securite broadcasts and coordinate with the U.S. Navy range scheduling authorities regarding LNG carrier shipments to ensure that they do not conflict with range operations. MM MT-6b. LNG Carrier Schedules. The Applicant shall provide long-range LNG carrier schedules in advance and master schedules at least quarterly to the U.S. Navy so that transits can be coordinated. MM MT-6c. Coordinate with the U.S. Navy. The Applicant shall notify the U.S. Navy range scheduling authorities when approaching LNG carriers are 24 to 48 hours from the FSRU.	Less than significant

Table ES-5 Summary of Impacts and Mitigation Measures

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
Impact MT-7: <i>Long-Term Interference with Operations at Port Hueneme</i> Activities associated with Project operations could increase traffic at Port Hueneme; thus, disruption of operations at Port Hueneme could occur.	CEQA Class II; NEPA minor to moderate adverse, long-term	MM MT-7a. Project Pilots. The Applicant shall have all masters of Project tugboats obtain an endorsement on their master's license and a pilot's license from the USCG and the Port of Hueneme Pilots Association before construction begins. MM MT-7b. U.S. Navy Exemption. The Applicant shall apply for an U.S. Navy exemption to the requirement that operations cease in the Port of Hueneme channel. MM MT-7c. Scheduling of Tug trips to the Port of Hueneme. The Applicant shall make arrangements for use of a dedicated berth and coordinate at least 48 hours in advance with the Port of Hueneme to schedule tugboat arrivals and departures such that they do not conflict with commercial fish offloading operations	Less than significant
AESTHETICS [AES] (Section 4.4)			
Offshore Construction			
Impact AES-1: <i>Alter Ocean Views from Onshore and Channel Islands Viewpoints</i> The FSRU in an unobstructed viewshed could alter views from beach areas, residences near sea level, residences at higher elevations, and from hiking trails at higher elevations.	CEQA Class III; NEPA minor adverse, long-term	None.	Less than significant
Onshore Construction			
Impact AES-2: <i>Alter Nighttime Ocean Views</i> Night lighting on the FSRU could be visible to residents, thereby altering night vistas.	CEQA Class III; NEPA minor adverse, long-term	AM BioMar-3a. Construction/Operation Lighting Control (see Section 4.7, Biological Resources – Marine”).	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
Impact AES-3: <i>Alter Views for Recreational Boaters</i> The FSRU would change the visual character of the ocean view for recreational boaters.	CEQA Class I; NEPA major adverse, long-term	None.	Significant
Impact AES-4: <i>Alter Offshore Views from an Eligible State Scenic Highway</i> The FSRU would be visible to travelers on an eligible State Scenic Highway.	CEQA Class III; NEPA minor adverse, long-term	None.	Less than significant
Impact AES-5: <i>Alter Ocean Views During Construction</i> Night lighting during offshore construction could be visible from the shore and to residents living in the foothills and higher elevation area in Malibu, thereby temporarily altering the nighttime viewshed.	CEQA Class III; NEPA minor adverse, long-term	AM BioMar-3a. Construction Lighting/Operation Control (see Section 4.7, Biological Resources – Marine”).	Less than significant
Impact AES-6: <i>Substantial Damage to Onshore Scenic Resources Along a State Scenic Highway</i> Construction of the onshore pipelines could alter the scenic quality of a highway eligible for the State Scenic Highway System.	CEQA Class III; NEPA minor adverse, long-term	MM GEO-1b. Backfilling, Compaction, and Grading (see Section 4.11, “Geologic Resources and Hazards”).	Less than significant
AGRICULTURE AND SOILS (Section 4.5)			
AGR-1: <i>Temporary Loss of Agricultural Land</i> Construction activities could temporarily cause a loss of agricultural land, crops, or crop production.	CEQA Class II; NEPA minor adverse, short-term	AM AGR-1a. Compensation for Temporary and Permanent Loss of Agricultural Land, Crop Loss, Future Loss of Production, and Other Negative Impacts. In compliance with California Government Code § 7267 et seq., the Applicant or its designated representative would make every reasonable effort to acquire easements (temporary and permanent) expeditiously by negotiation. The easement rights would be appraised before the initiation of negotiations, and the property owner or the property owner’s designated	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
		representative would be given an opportunity to accompany the appraiser during the inspection of the property. SoCalGas would establish an amount that it believes to be just compensation for the easement rights, based upon the appraisal. SoCalGas would provide the property owner with a written statement and summary of the basis for the amount it established as just compensation, which amount would not be less than the appraised value of the easement rights. The appraisal process would consider the value of the easement rights being acquired, and where applicable, crop loss, future loss of production, and any other negative impacts that SoCalGas' acquisition and use of the easement areas would have upon agricultural operations. AM AGR-1b. Coordinate Pipeline Installation with Farmers. The Applicant or its designated representative would schedule construction to begin immediately after harvest or before planting if the construction and planting/harvest schedules coincide closely enough to not compromise the overall pipeline construction completion schedule. The Applicant or its designated representative would let the farmer decide whether the farmer or the Applicant's contractor would remove seed/crops. AM AGR-1c. Post-Construction Restoration Measures. The Applicant or its designated representative would protect all substructures, such as drain tiles or other types of irrigations systems, during construction and replace any substructures if damaged. The Applicant or its designated representative would restore the grade of the TCE to match the surrounding field for drainage or compensate the farmer if the farmer chooses to have a contractor perform precision grading. MM AGR-1d. Minimize Orchard Tree Removal. Recognizing that no trees can grow within 15 feet (4.6 m) of the pipeline, the Applicant or its designated representative shall remove, box, maintain, and replant small orchard trees in the area between the TCE and the permanent ROW. The Applicant or its designated representative shall minimize the number of mature trees removed.	

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
AGR-2: Permanent Conversion of Agricultural Land to Non-Agricultural Use Operational activities could cause a loss of agricultural land, crops, or crop production. Construction of permanent facilities could cause a permanent loss of agricultural land, crops, or crop production. Agricultural land that is preserved under the Williamson Act could be permanently converted from agricultural land to non-agricultural land. Prime Farmland or Farmland of Statewide Importance could be converted to non-agricultural uses.	CEQA Class I; NEPA major adverse, long-term	None.	Significant
AGR-3: Topsoil Loss, Mixing, and/or Compaction Construction activities could result in topsoil and subsoil mixing, compaction, and/or introduction of weed/invasive species, thereby reducing agricultural productivity.	CEQA Class II; NEPA minor adverse, short-term	AM TerrBio-4a. Weed Management Plan (see Section 4.8, "Biological Resources – Terrestrial"). MM AGR-3a. Topsoil Salvage and Replacement. The Applicant or its designated representative shall ensure that the upper 12 inches (0.3 m) of topsoil (or less, depending on the existing depth of the topsoil) is salvaged, segregated from the rest of the soil, and replaced on top of the disturbed areas and replaced wherever the pipeline is trenched. MM AGR-3b. Landowner Compensation for Soil Productivity Losses. Prior to construction, the Applicant or its designated representative shall negotiate with landowners regarding measures to ensure that soil productivity is maintained and that the criteria for determining loss of soil productivity and the terms for compensation for such loss are determined.	Less than significant
AGR-4: Dust Deposition Dust generated during construction could be deposited on adjacent agricultural lands with planted crops, temporarily reducing productivity.	CEQA Class II; NEPA minor adverse, short-term	MM AIR-2b. Construction Fugitive Dust Plan (see Section 4.6, "Air Quality"). MM AGR-4a. Dust Suppression Water Quality. For dust suppression, the Applicant or its designated representative shall use potable water sources or water sources approved for discharge near agricultural uses.	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
AGR-5: Loss of Tree Rows Loss of tree rows could reduce agricultural productivity.	CEQA Class II; NEPA minor adverse, short-term	MM TerrBio-2g. Tree Avoidance and Replacement (see Section 4.8, "Biological Resources – Terrestrial").	Less than significant
AGR-6: Impacts from a Leak or Fire Associated with the Natural Gas Transmission Line If the natural gas transmission line leaked and/or was ignited, the resulting fire could cause the loss of crops or the contamination of the soil in the vicinity of the leak or fire.	CEQA Class II; NEPA minor adverse, short-term	AM PS-3a. More Stringent Pipeline Design (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). AM PS-4a. Class 3 Pipeline Design Criteria (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). MM AGR-6a. Restoration After a Natural Gas Transmission Line Accident. The Applicant or its designated representative shall restore the area that was either contaminated or burned as a result of a breach in the natural gas transmission line. MM PS-3c. Areas Subject to Accelerated Corrosion, Cathodic Protection System (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). MM PS-4b. Pipeline Integrity Management Program (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). MM PS-4c. Install Additional Mainline Valves Equipped with Either Remote Valve Controls or Automatic Line Break Controls (see Section 4.2, "Public Safety: Hazards and Risk Analysis").	Less than significant
AGR-7 Alt: Potential for Use of Agricultural Land for Staging Areas Under the Arnold Road Shore Crossing/Arnold Road Pipeline Alternative, construction activities associated with staging areas could temporarily cause a loss of agricultural land, crops, or crop production. Agricultural land that is preserved under the Williamson Act could be temporarily converted from agricultural land to non-agricultural land. Prime Farmland or Farmland of Statewide Importance soils	CEQA Class II; NEPA minor adverse, short-term	AM AGR-1a. Compensation for Temporary and Permanent Loss of Agricultural Land, Crop Loss, Future Loss of Production, and Other Negative Impacts. AM AGR-1b. Coordinate Pipeline Installation with Farmers. AM AGR-1c. Post-Construction Restoration Measures. MM AGR-1d. Minimize Orchard Tree Removal.	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
would temporarily be converted to non-agricultural uses.			
AGR-8 Alt: <i>Permanent Conversion of Agricultural Land to Non-Agricultural Use</i> Under the Arnold Road Shore Crossing/Arnold Road Pipeline Alternative, construction of permanent facilities could cause a permanent loss of agricultural land, crops, or crop production. Agricultural land that is preserved under the Williamson Act could be permanently converted from agricultural land to non-agricultural land. The pipeline corridor could convert Prime Farmland and Farmland of Statewide Importance soils to non-agricultural uses.	CEQA Class I; NEPA major adverse, long-term	None.	Less than significant
AGR-9 Alt: <i>Potential for Use of Agricultural Land for Staging Areas</i> Under the Point Mugu Shore Crossing/Casper Road Pipeline Alternative, construction activities associated with staging areas could temporarily cause a loss of agricultural land, agricultural soils, crops, or crop production. Agricultural land that is preserved under the Williamson Act could be temporarily converted from agricultural land to non-agricultural land.	CEQA Class II; NEPA minor adverse, short-term	AM AGR-1b. Coordinate Pipeline Installation with Farmers. AM AGR-1c. Post-Construction Restoration Measures. MM AGR-1d. Minimize Orchard Tree Removal.	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
AGR-10 Alt: <i>Permanent Conversion of Agricultural Land to Non-Agricultural Use</i> Under the Point Mugu Shore Crossing/Casper Road Pipeline Alternative, construction of permanent facilities could cause a permanent loss of agricultural lands, crops, or crop production. Agricultural land that is preserved under the Williamson Act could be permanently converted from agricultural land to non-agricultural land. Prime Farmland and Farmland of Statewide Importance soils could be converted to non-agricultural uses.	CEQA Class I; NEPA major adverse, short-term	None.	Significant
AIR QUALITY [AQ] (Section 4.6)			
Impact AIR-1: <i>Net Emission Increases of Criteria Pollutants from Construction Activities in Designated Nonattainment Areas</i> Project construction activities in Ventura and Los Angeles Counties would generate emissions that exceed quantitative thresholds for ozone precursors (NO _x and ROCs) and CO.	CEQA Class I; NEPA major adverse, short-term	AM AIR-1a. USEPA Nonroad Engine Standards. At a minimum, all onshore construction equipment would utilize engines compliant with USEPA Tier 2 nonroad engine standards. To the extent possible, onshore equipment would utilize engines compliant with USEPA Tier 3 or 4 nonroad engine standards. AM AIR-1b. Offshore Construction Equipment Standards. All vessels (and associated offshore equipment) used during shore crossing construction, offshore pipeline installation, and mooring/FSRU installation, would utilize only engines that emit CO, PM, NO _x , and ROC at rates less than or equal to USEPA Tier 1 nonroad engine standards (as outlined in 40 CFR 89.112, Table 1). AM AIR-1c. Ultra Low Sulfur Diesel. All Project operational vessels (including LNG carrier, tugs, and crew boat), FSRU equipment, and construction vessels and equipment would be fueled with ultra low sulfur diesel (less than 15 parts per million sulfur). This is consistent with California regulations (starting January 2007) that require that the sulfur content of all vehicular diesel fuel and non-vehicular diesel fuel supplied in California (including fuel for locomotives and harborcraft) not exceed 15 parts per million by weight. As it is anticipated that some of the operational and construction vessels/equipment would be transported	Significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
		from outside of California, this measure applies to vessels regardless of place of origin. MM AIR-1d. Gasoline-Fueled Equipment. The Applicant or its designated representative shall use only gasoline-fueled equipment that meets the exhaust emission standards for CO and NO_x (as listed for engine displacements greater than 1.0 liter) outlined in 13 CCR § 2433: Exhaust Emission Standards and Test Procedures – Off-Road Large Spark-Ignition Engines. MM AIR-1e. USEPA Tier 3 Nonroad Engine Standards. All onshore construction equipment with a rating between 100 and 750 hp would be required to utilize engines compliant with USEPA Tier 3 nonroad engine standards. MM AIR-1f. Construction Emissions Reduction Plan. The Applicant shall prepare a Construction Emissions Reduction Plan to be incorporated into all contracts and contract specifications for construction work. This plan shall specify all Applicant measures and mitigation measures related to construction equipment emission standards/controls as contractual requirements. The plan shall also outline additional specific measures, as contractual requirements, to reduce or eliminate potential impacts associated with construction-related emissions of criteria air pollutants and toxic air contaminants. At a minimum, the plan shall include the following additional specific measures: • As feasible, reduce emissions of diesel particulate matter (DPM) and other pollutants by using alternative clean fuel technology such as electric, hydrogen fuel cells, and propane-powered equipment or compressed natural gas-powered equipment with oxidation catalysts instead of gasoline- or diesel-powered engines. • Ensure that all construction equipment is properly tuned and maintained and shut off when not in direct use; • Prohibit engine tampering to increase horsepower; • Locate engines, motors, and equipment as far as possible from residential areas and at least 300 feet (91 m) from sensitive receptors, such as schools, daycare centers, and hospitals (Note: the proposed pipeline routes would not pass within 300 feet [91 m] of any sensitive receptor locations); • Provide carpool shuttles and vans to transport construction workers to and	

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
		from construction sites, thus eliminating some private vehicle trips; • Arrange for food catering trucks to visit each Project site twice a day; • Reduce construction-related trips of workers and equipment, including trucks; and • Require that on-road vehicles be less than 10 years old. Prior to finalization of the plan, the Applicant shall also consult with the VCAPCD and SCAQMD to identify other potential control measures not specified above. The Applicant or its designated representative shall submit this plan and related construction contract specifications to the California State Lands Commission (CSLC), USEPA, and to the extent applicable under local rules and regulations, VCAPCD and SCAQMD, prior to construction activities. MM AIR-1g. Construction Equipment Documentation. The Applicant or its designated representative shall prepare and maintain documentation that demonstrates implementation of the Applicant's proposed emission reduction measures and required mitigation measures. The following documents and/or files shall be submitted to the CSLC, USEPA, and to the extent applicable under local rules and regulations, VCAPCD and SCAQMD: • Inventory of all equipment and vessels used during each onshore and offshore construction activity. At a minimum, this inventory shall include an equipment description, equipment identification, identification of type of engine(s), and engine emission data; and • Documentation certifying that the actual emission rates for the engine(s) of each equipment and vessel used during construction comply with mitigation measures and applicant measures as required. This documentation shall include USEPA or CARB certification of engine emissions, source testing results for specific engines, or an equivalent means of certifying emission rates of NO_x, CO, ROC, and PM₁₀ from this equipment.	
Impact AIR-2: <i>Violations of Ambient Air Quality Standards Causes by Particulate Emissions from Onshore Construction Activities</i> Onshore Project construction activities	CEQA Class I; NEPA major adverse, short-term	AM AIR-2a. Fugitive Dust Controls. The Applicant or its designated representative would provide for the following control measures: • Excavation and spoils would be watered down; • Spoil piles that remain more than a few weeks would be covered with tarps; • Water trucks would be used for dust suppression; and	Significant

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would generate PM ₁₀ and PM _{2.5} emissions that could cause or contribute to existing or projected violations of NAAQS and/or State Ambient Air Quality Standards.		- Disturbed areas not covered with surface structures, such as buildings and pavements, would be stabilized following construction activities. This stabilization may involve planting these areas with suitable vegetation to minimize future on-site soil loss and off-site sedimentation. MM AIR-2b. Construction Fugitive Dust Plan. The Applicant or its designated representative shall be required to develop, and submit to the VCAPCD and the SCAQMD for approval, a Construction Fugitive Dust Control Plan prior to the commencement of construction activities. The plan shall be incorporated into all contracts and contract specifications for construction work. At a minimum, the control measures specified in the plan shall include Applicant measures and conform to all applicable requirements of SCAQMD Rule 403 (as listed for large construction operations) in both Ventura and Los Angeles counties. The plan shall outline the steps to be taken to minimize fugitive dust generated by construction activities by: - Describing each active operation(s) that may result in the generation of fugitive dust; - Identifying all sources of fugitive dust, e.g., earth moving, storage piles, vehicular traffic; and - Describing the control measures to be applied to each of the sources of dust emissions identified above. The descriptions shall be sufficiently detailed to demonstrate that the best available control measure(s) required by the SCAQMD and the VCAPCD for linear projects will be used and/or installed during all periods of active operations. - Stipulating the use of the following control measures, in addition to or as listed in SCAQMD Rule 403, such as, but not limited to: - Use of street sweeping and trackout devices at all construction sites. - Frequent watering or stabilization of excavation, spoils, access roads, storage piles, and other sources of fugitive dust. - Installing temporary coverings on storage piles when not in use. - Pre-watering of soils prior to trenching. - Dedicating water truck or high capacity hose to any soil screening operations.	

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
		- Minimizing drop height of material through screening equipment. MM AIR-1e. USEPA Tier 3 Nonroad Engine Standards. MM AIR-1f. Construction Emissions Reduction Plan. MM AIR-1g. Construction Equipment Documentation.	
Impact AIR-3: Violations of Ambient Air Quality Standards, Exposure of the Public to Substantial Pollutant Concentrations, and/or Creation of Objectionable Odors Caused by an Accidental LNG Spill or Pipeline Rupture Although rare, an LNG spill from the FSRU or a pipeline rupture would result in a natural gas release and/or a fire that could cause temporary increases in ambient air concentrations of criteria pollutants in excess of air quality standards, expose sensitive receptors and the general public to substantial concentrations of toxic air contaminants, and/or create objectionable odors.	CEQA Class I; NEPA moderate adverse, short-term	AM PS-3a. More Stringent Pipeline Design (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). AM PS-4a. Class 3 Pipeline Design Criteria (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). MM PS-3c. Areas Subject to Accelerated Corrosion, Cathodic Protection System (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). MM PS-4c. Install Additional Mainline Valves Equipped with Either Remote Valve Controls or Automatic Line Break Controls (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). MM PS-4d. Treat Shore Crossing as Pipeline HCA (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). MM PS-4e. Safety Marker Indicating the Presence of Buried Natural Gas Pipeline at Ormond Beach (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). MM PS-4f. Emergency Response (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). MM PS-5a. Treat Manufactured Home Residential Community as a High Consequence Area (see Section 4.2, "Public Safety: Hazards and Risk Analysis").	Significant
Impact AIR-4: Emissions of Ozone Precursors from the FSRU Emissions of NO _x and ROC generated from FSRU and LNG carrier equipment could contribute to ambient ozone impacts in the areas located downwind of the Project.	CEQA Class II; NEPA minor adverse, long-term	AM AIR-4a. Emissions Reduction Programs. As part of air permit-to-construct application procedures, the Applicant has committed to the USEPA to achieve emissions reductions (in addition to reductions inherent to the Project) to an amount equal to the FSRU's annual NO _x emissions. The Applicant has executed contracts to retrofit two marine vessels (long haul tugs) by replacing the propulsion engines of each vessel with modern low emitting engines (Tier 2 compliant diesel-fired engines). At the request of the USEPA and the CARB, the Applicant conducted source testing to assist in determining the emission reductions expected as a result of the retrofits. The Applicant estimated that the	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result																																
		repowering of two tugs could result in emission reductions of approximately 165.5 tons per year of NO_x. In a memorandum from the CARB to the CSLC dated February 9, 2007, the CARB outlined the apportionment of the estimated NO_x emission reductions based on the anticipated tug operations within the following regions: <i>Emission Reductions</i> <table><tr><td><u>Local Air District</u></td><td><u>(tons per year)</u></td></tr><tr><td>SCAQMD</td><td>47.4</td></tr><tr><td>VCAPCD</td><td>16.8</td></tr><tr><td>Santa Barbara County APCD</td><td>35.6</td></tr><tr><td>San Luis Obispo County APCD</td><td>15.2</td></tr><tr><td>Monterey Bay Unified APCD</td><td>25.4</td></tr><tr><td>Bay Area AQMD</td><td>25.1</td></tr><tr><td>TOTAL</td><td>165.5</td></tr></table> The CARB reviewed the methodology used to calculate the estimated emission reductions and found it to be reasonable. However, the CARB indicated that, “there is not yet a consensus on the estimated emission reductions from the mitigation proposal and that the USEPA’s estimates are less than those presented here.” (Fletcher 2007). A copy of the CARB memorandum is provided as Appendix G9. The USEPA conducted its own review of the retrofit projects; based on the information submitted by the Applicant, the USEPA determined that the following emission reductions can be expected along the routes traveled by the tugs: <i>Emission Reductions</i> <table><tr><td><u>Local Air District</u></td><td><u>(tons per year)</u></td></tr><tr><td>SCAQMD</td><td>33.15</td></tr><tr><td>VCAPCD</td><td>11.47</td></tr><tr><td>Santa Barbara County APCD</td><td>25.11</td></tr><tr><td>San Luis Obispo County APCD</td><td>10.84</td></tr><tr><td>Monterey Bay Unified APCD</td><td>18.09</td></tr><tr><td>Bay Area AQMD</td><td>17.99</td></tr><tr><td>TOTAL</td><td>116.65</td></tr></table>	<u>Local Air District</u>	<u>(tons per year)</u>	SCAQMD	47.4	VCAPCD	16.8	Santa Barbara County APCD	35.6	San Luis Obispo County APCD	15.2	Monterey Bay Unified APCD	25.4	Bay Area AQMD	25.1	TOTAL	165.5	<u>Local Air District</u>	<u>(tons per year)</u>	SCAQMD	33.15	VCAPCD	11.47	Santa Barbara County APCD	25.11	San Luis Obispo County APCD	10.84	Monterey Bay Unified APCD	18.09	Bay Area AQMD	17.99	TOTAL	116.65	
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Table ES-5 Summary of Impacts and Mitigation Measures

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
		Thus, the USEPA's estimate for NO_x reductions (116.65 tons per year) is less than the Applicant's estimate of NO_x reductions (165.5 tons per year) by a value of 48.85 tons per year. Further, the CARB staff question the appropriateness of counting the emission reductions in the Bay Area since these reductions would likely not benefit the regions where the Project is located. Excluding the Bay Area emissions would reduce the amount of emission reductions by 25.1 tons per year based on estimates from the Applicant (or 17.99 tons per year based on estimates from the USEPA).	
Impact AIR-5: <i>Emissions of Ozone Precursors from Project Vessels Operating in California Coastal Waters</i> Emissions of NO_x and ROC generated from LNG carriers, tugboats, and the crew/supply boat operating in California Coastal Waters could contribute to ambient ozone impacts in the areas located downwind of the Project.	CEQA Class I; NEPA major adverse, long-term	AM AIR-5a. Natural Gas on LNG Carriers. The Applicant would use natural gas as the primary fuel in LNG carrier engines, whenever these vessels are berthed at the FSRU and/or operating within California Coastal Waters. A small amount of ultra low sulfur diesel would be used simultaneously as a pilot fuel in LNG carrier engines resulting in a fuel mixture with a natural gas-to-diesel ratio of approximately 99 to 1. All LNG carriers that deliver LNG to the FSRU would be powered exclusively by Wartsila 50DF series dual-fuel electric engines or equivalent dual-fuel electric engines. AM AIR-5b. Control Equipment on Support Vessels. The Applicant would use ultra low sulfur diesel as the fuel in the engines on the tugboats and crew/supply boat. The diesel engines on these vessels would be fitted with pollution control equipment including SCR, oxidation catalysts, and particulate filters to reduce emissions. The Applicant assumed a NO_x control efficiency of 80 percent in developing its emission inventories. The Applicant also expects CO and ROC reductions of 70 percent and 40 percent, respectively. The use of this control equipment would result in emissions comparable to or less than emissions from natural gas-fueled engines. MM AIR-5c. Documentation of Engine Specifications. The Applicant shall prepare and maintain documentation that demonstrates implementation of the Applicant's emission reduction measures. The following documents and/or files shall be submitted to the USCG, CSLC, and CARB: Final design documents for the Project crew/supply boat and tug engines, including engine specifications, air pollution control equipment specifications, and associated manufacturer/vendor emission data.	Significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
		- Documentation certifying that the actual emission rates for the Project crew/supply boat and tug engines are less than or equal to the “controlled” emission rates, in grams per kilowatt-hour, reported for these vessels and documented in Appendix G2. This documentation shall include a report summarizing emission testing of the newly constructed Project crew/supply boat and tug engines for NO_x, CO, ROC, and PM₁₀. - Contract documents between the Applicant or its designated representative and LNG carrier operators that specify that all LNG carriers are powered exclusively by Wartsila 50DF series dual-fuel electric engines or equivalent dual-fuel electric engines. - Equivalent air emission rates will be defined in grams per kilowatt-hour. Documentation of all LNG carriers that berth at the FSRU, which at a minimum, will include the vessel name, country of origin, engine power plant description, diesel specifications, and emission certifications.	
Impact AIR-6: <i>Emissions of Ozone Precursors from Project Construction Activities in Federal Waters</i> Project construction activities in Federal waters would generate emissions of NO _x and ROCs that could contribute to ambient ozone impacts in the areas located downwind of the Project.	CEQA Class III; NEPA minor adverse, short-term	MM AIR-1f. Construction Emissions Reduction Plan. MM AIR-1g. Construction Equipment Documentation.	Less than significant
Impact AIR-7: <i>Temporary Ambient Air Quality Impacts Caused by Criteria Pollutant Emissions from Onshore and Offshore Construction Activities</i> Air pollutants emitted during onshore and offshore Project construction activities would cause temporary increases in ambient pollutant concentrations.	CEQA Class III; NEPA minor adverse, short-term	MM AIR-1f. Construction Emissions Reduction Plan. MM AIR-1g. Construction Equipment Documentation.	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
Impact AIR-8: <i>Ambient Air Quality Impacts Caused by Air Pollutant Emissions from the FSRU and Project Vessels</i> Air pollutants emitted from FSRU equipment and Project vessels associated with operations would cause increases in ambient pollutant concentrations.	CEQA Class III; NEPA minor adverse, long-term	None.	Less than significant
Impact AIR-9: <i>Temporary Ambient Air Quality Impacts Caused by Air Toxic Pollutant Emissions from Onshore and Offshore Construction Activities</i> Air toxic pollutants emitted during onshore and offshore Project construction activities would cause temporary increases in ambient pollutant concentrations.	CEQA Class II, NEPA minor or moderate adverse, short term	MM AIR-1e. USEPA Tier 3 Nonroad Engine Standards. MM AIR-1f. Construction Emissions Reduction Plan. MM AIR-1g. Construction Equipment Documentation.	
MARINE BIOLOGY (Section 4.7)			
Impact BioMar-1: <i>Burial of Sessile Marine Biota</i> Construction activities associated with pipeline and mooring installation could temporarily disturb soft substrate sediments and could bury or crush sessile marine biota such as benthic invertebrates.	CEQA Class III; NEPA minor adverse, short-term	None.	Less than significant
Impact BioMar-2: <i>Temporary Avoidance of the Area Due to Increased Turbidity from Construction Activities Offshore or Accidental HDB Release of Drilling Fluids</i>	CEQA Class II; NEPA minor adverse, short-term	MM WAT-3a. Drilling Fluid Release Monitoring Plan (see Section 4.18, "Water Quality and Sediments," and Appendix D1).	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
A release of drilling fluids and bentonite into the subtidal environment during HDB could temporarily increase turbidity. Increases in turbidity at the offshore exit point could cause fish to avoid this area.			
Impact BioMar-3: <i>Temporary or Permanent Alteration or Disturbance of Marine Biota or Sensitive Habitats, including EFH</i> Construction and/or operational activities could affect marine biota or alter EFH or sensitive habitats (beach spawning areas or hard bottom substrate), resulting in cessation or reduction of feeding or reproduction, area avoidance, or changes in migration patterns for both non-threatened and endangered and special status species.	CEQA Class II; NEPA moderate or major adverse, short- or long-term	AM BioMar-3a. Construction/Operations Lighting Control. A plan would be developed in consultation with a marine bird expert and submitted for approval by the USCG and the CSLC at least 60 days prior to construction. AM NOI-4a. Construction Noise Reduction Measures (see Section 4.14, "Noise and Vibration"). MM BioMar-3b. Monitoring. If intertidal beach work occurs between February and September, the Applicant shall ensure that a qualified biologist will monitor the beach within 100 feet (30.5 m) of the route during the two weeks prior to installation. If a grunion spawning event occurs during the two weeks prior to construction activities, installation will be delayed until the grunion eggs have hatched. A qualified biologist shall determine the day in which construction can begin again after the spawning event. MM BioMar-3c. Avoidance. The Applicant shall ensure that any unexpected hard bottom habitats encountered during construction will be avoided. MM NOI-1a. Efficient Equipment Usage (see Section 4.14, "Noise and Vibration").	Less than significant
Impact BioMar-4: <i>Construction or Operation Vessels Act as an Attractive Nuisance or Disrupt Marine Mammal Behavior or Migrations</i> Construction or operational activities could alter sensitive habitats such that marine mammal reproduction could be reduced, prey species could be eliminated, or animals might avoid an area.	CEQA Class III; NEPA moderate or major adverse, short- or long-term	None.	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
Impact BioMar-5: <i>Noise Disrupting Marine Mammal Behavior</i> Noise from construction and operation vessels or equipment could disrupt migrations; interfere with or mask communications, prey and predator detection, and/or navigation; cause adverse behavioral changes; or result in temporary or permanent hearing loss.	CEQA Class I; NEPA major adverse, long-term	AM BioMar-9a. Avoid Offshore Construction during Gray Whale Migration Season. AM BioMar-9b. Marine Mammal Monitoring. MM BioMar-5a. Noise Reduction Design. The Applicant shall work with marine architects, acoustic experts and mechanical engineers and the USCG, among others, to design the FSRU and its equipment to reduce, to the maximum extent feasible, the output of cumulative noise from the facility. MM BioMar-5b. Acoustic Monitoring Plan. The Applicant shall prepare an acoustic monitoring plan to obtain site-specific baseline data and empirical data prior to and during LNG operations. MM BioMar-5c. Helicopter Altitude. The Applicant shall ensure that helicopters maintain a flight altitude of at least 2,500 feet (762 m), except during takeoff and landing. MM NOI-1a. Efficient Equipment Usage (see Section 4.14, "Noise and Vibration").	Significant
Impact BioMar-6: <i>Mortality and Morbidity of Marine Biota from Spills</i> Although rare, an accidental release of a significant amount of oil or fuel during construction or operation, or LNG spills or a natural gas leak from subsea pipelines, could cause morbidity or mortality of marine biota, including fish, invertebrates, seabirds, and special status species such as sea turtles, through direct contact or ingestion of the material.	CEQA Class I; NEPA major adverse, long-term	AM PS-1a. Applicant Engineering and Project Execution Process (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). AM PS-1b. Class Certification and a Safety Management Certificate for the FSRU (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). AM PS-1c. Periodic Inspections and Surveys by Classification Societies (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). AM PS-1d. Designated Safety Zone and Area to be Avoided (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). AM MT-3a. Patrol Safety Zone (see Section 4.3, "Marine Traffic"). MM PS-1e. Cargo Tank Fire Survivability (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). MM PS-1f. Structural Component Exposure to Temperature Extremes (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). MM PS-1g. Pre- and Post-Operational HAZOPs (see Section 4.2, "Public Safety: Hazards and Risk Analysis").	Significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
Impact BioMar-7: <i>Discharge of Bilge Water, Gray Water, and Deck Runoff</i> An accidental discharge of untreated bilge water, gray water, or deck runoff from the FSRU or from the LNG carriers could result in the release of contaminants into the marine environment. A release of contaminants could cause mortality or morbidity of fish and/or benthic communities, and would have the potential to adversely affect special status species.	CEQA Class III; NEPA moderate or major adverse, short- or long-term	None.	Less than significant
Impact BioMar-8: <i>Release of LNG, Natural Gas, Fuel, or Oil Causes Injury or Mortality of Marine Mammals</i> A release of LNG, natural gas, fuel, or oil could cause injury or mortality of marine mammals through direct contact or ingestion of the material, and would have the potential to adversely affect special status species.	CEQA Class I; NEPA major adverse, long-term	AM PS-1a. Applicant Engineering and Project Execution Process (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). AM PS-1b. Class Certification and a Safety Management Certificate for the FSRU (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). AM PS-1c. Periodic Inspections and Surveys by Classification Societies (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). AM PS-1d. Designated Safety Zone and Area to be Avoided (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). AM MT-3a. Patrol Safety Zone (see Section 4.3, "Marine Traffic"). MM PS-1e. Cargo Tank Fire Survivability (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). MM PS-1f. Structural Component Exposure to Temperature Extremes (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). MM PS-1g. Pre- and Post-Operational HAZOPs (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). MM MT-3f. Live Radar and Visual Watch (see Section 4.3, "Marine Traffic").	Significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
Impact BioMar-9: <i>Collision between Project Vessels and Marine Mammals or Sea Turtles</i> Construction and operational vessels could collide with marine mammals or sea turtles or other special status species resting on the ocean surface, resulting in injury or mortality.	CEQA Class III; NEPA moderate or major adverse, short- or long-term	AM BioMar-9a. Avoid Offshore Construction During Gray Whale Migration Season. The Applicant would conduct offshore construction activities outside the gray whale migration season (June 1 through November 30). AM BioMar-9b. Marine Mammal Monitoring. All construction vessels would carry two qualified marine monitors and all operational vessels would carry one qualified marine monitor to provide a 360-degree view and watch for and alert vessel crews of the presence of marine mammals and sea turtles during construction activities.	Less than significant
Impact BioMar-10: <i>Entanglement of Marine Mammals, Sea Turtles, and Other Special Status Species</i> Marine mammals or sea turtles or other special status species could become entangled in construction or operation equipment, causing injury or mortality.	CEQA Class II; NEPA moderate or major adverse, short- or long-term	AM BioMar-9b. Marine Mammal Monitoring. MM BioMar-10a. Deployment of Potentially Entangling Material. The Applicant shall ensure that the vessel operator deploys material that has the potential for entangling marine mammals or sea turtles only as long as necessary to perform its task, and then immediately removes such material from the Project site. MM BioMar-10b. Notification. In the unlikely event that a marine mammal or sea turtle is entangled, the Applicant shall require the vessel operator to immediately notify the stranding coordinator at NOAA Fisheries in Long Beach and the Santa Barbara Marine Mammal Center so that a rescue effort may be initiated.	Less than significant
Impact BioMar-11: <i>Discharge of Ballast Water Potentially Containing Exotic Species</i> A release of ballast water containing exotic species could introduce exotic species that directly compete with native organisms, affecting the viability of native species, including special status species.	CEQA Class III; NEPA moderate or major adverse, short- or long-term	None.	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
Impact BioMar-12: <i>Increase/Decrease in Fish Abundance or Commercially Important Benthic Species</i> Commercially important fish species could potentially avoid the Project site due to increased human activity and Project-related noise. Additionally, fish and other benthic species could be attracted to the low relief habitat provided by the subsea pipeline, decreasing abundance in other heavily fished areas.	CEQA Class III; NEPA moderate or major adverse or beneficial, short- or long-term	None.	Less than significant
TERRESTRIAL BIOLOGY (Section 4.8)			
Impact TerrBio-1: <i>Temporary Increase in Sedimentation</i> Construction activities could cause a temporary increase in sedimentation and soil erosion and expose contaminated soils during trenching activities, which could cover or damage plants, including special status species. The HDB procedures to install the pipelines beneath Ormond Beach may present remote potential for drilling fluid seepage. These construction methods could cause habitat degradation for sensitive and special status plant species or wetlands.	CEQA Class II; NEPA minor adverse, short-term	AM TerrBio-1a. Erosion Control. To minimize sedimentation, the Applicant or its designated representative would implement erosion control measures during construction. MM TerrBio-1b. Spill Containment/Management. The Applicant or its designated representative shall implement measures to control and manage spills. MM WAT-3a. Drilling Fluid Release Monitoring Plan (see Section 4.18, "Water Quality and Sediments"). MM WAT-4a. Strategic Location for Drilling Fluids and Cuttings Pit (see Section 4.18, "Water Quality and Sediments").	Less than significant

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Impact TerrBio-2: <i>Temporary or Permanent Impacts Regarding Construction, Operation, and Maintenance Effects on Rare and Special Status Plants</i> Upland vegetation removal during onshore pipeline construction, maintenance, and repair activities could result in the loss of special status plants.	CEQA Class II; NEPA major or moderate adverse, short- or long-term	AM TerrBio-2a. Additional Pre-Construction Plant Surveys. The Applicant or its designated representative would conduct additional pre-construction surveys to further define the location of special status species identified during the spring and summer 2005 surveys. The surveys would be conducted according to survey protocols established by the USFWS or the CDFG. AM TerrBio-2b. Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP). Surveys would be conducted within any areas potentially impacted by Project activities during construction or operation where special status species potentially occur. Results of the surveys would be used to develop a BRMIMP, which the Applicant would implement. AM TerrBio-2c. Employee Environmental Awareness Program (EEAP). The Applicant or its designated representative would conduct an employee awareness program before groundbreaking to explain the applicable endangered species laws and any endangered species concerns to contractors working in the area. The EEAP would also include: trash removal, policies regarding habitat protection measures, traffic management and site safety. AM TerrBio-2d. Biological Monitoring. The Applicant or its designated representative would use a qualified biological monitor to conduct the EEAP program and on-site biological monitoring. AM TerrBio-2e. Confine Activity to Identified Right-of-Way (ROW). The Applicant or its designated representative would limit all proposed roadway construction to the existing roadway surface wherever special status plant species or habitats occur adjacent to the roadway. MM TerrBio-2f. Riparian Avoidance and Restoration. The Applicant or its designated representative shall avoid, minimize, and compensate for impacts on riparian habitat during construction due to trenching or open cut crossings of waters of the United States. MM TerrBio-2g. Tree Avoidance and Replacement. The Applicant or its designated representative shall, to the extent possible, avoid, minimize, and compensate for impacts on trees.	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
Impact TerrBio-3: Temporary or Permanent Changes to Wetlands or Waters of the United States during Construction Construction (such as trenching) in wetlands or waters of the United States could remove vegetation, including special status species, disrupt the hydrology of the wetlands within and adjacent to the construction area, or alter the habitat for special status plant species.	CEQA Class II; NEPA major or moderate adverse, short- or long-term	AM WAT-6b. Spill Response Plan. The Applicant or its designated representative would prepare a spill response plan to protect surface water at and near the surface water crossings. This plan would be incorporated into the SWPPP as a requirement of the construction storm water NPDES permit and the SPCC Plan. The plan would identify specific measures to prevent, contain, and clean up any spills that could enter surface water pathways. MM TerrBio-3a. Avoid, Minimize, or Reduce Impacts on Wetlands. Impacts on wetlands or waters of the United States shall be avoided, minimized, or reduced. MM TerrBio-2f. Riparian Avoidance and Restoration.	Less than significant
Impact TerrBio-4: Permanent Impact Caused by Noxious Weed Invasion Construction-related disturbance could provide an opportunity and seedbed for the invasion of weeds, which could adversely affect special status plant species or habitats and upland vegetation.	CEQA Class III; NEPA major or moderate adverse, short- or long-term	AM TerrBio-4a. Weed Management. The Applicant or its designated representative would implement measures to prevent the spread of invasive weeds.	Less than significant
Impact TerrBio-5: Direct Permanent Impact on Wildlife Mortality Construction activities associated with pipeline installation, staging areas, HDD or HDB locations, and access roads could cause the mortality of small mammals, reptiles, and other less-mobile species. Direct mortality could also be associated with increased human activity, particularly involving wildlife habitat removal and animal/vehicle collisions.	CEQA Class II; NEPA major or moderate adverse, long-term	AM TerrBio-2c. Employee Environmental Awareness Program (EEAP). AM TerrBio-2d. Biological Monitoring. MM TerrBio-5a. Pre-Construction Wildlife Surveys. To minimize the potential for causing mortality of local wildlife, the Applicant or its designated representative shall engage a qualified wildlife biologist to conduct additional pre-construction surveys in advance of any vegetation clearing, or excavation or other activity that causes disturbance to surface soils.	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
CULTURAL RESOURCES (Section 4.9)			
Impact CULT-1: <i>Marine Archaeological Sites and Artifacts</i> The Project could violate cultural resource standards or cause an adverse change in archaeologically significant resources in offshore Project areas.	CEQA Class III; NEPA major adverse, long-term	AM CULT-1a. Marine Archaeological Surveys. Additional marine archaeological surveys would be performed to confirm the location of and gather further information on the submerged objects determined to be subject to potential impact from the Project. Shipwrecks or other underwater cultural resources identified as culturally significant would be avoided. Pipelaying barges would use dynamic positioning except near shore, where normal anchoring could occur (as identified in the Applicant's Anchor Mitigation Plan for HDB Nearshore Pipeline Project Marine Operations).	Less than significant
Impact CULT-2: <i>Native American Values</i> The Project could violate cultural resource standards by impacting resources that are of value to Native American culture and heritage, particularly the Ventura Chumash.	CEQA Class III; NEPA major adverse, long-term	AM CULT-2a. Site Avoidance. The Applicant would avoid identified sites and adhere to State of California burial remains legislation and the Native American Graves Protection and Repatriation Act as applicable. AM CULT-2b. Native American Values. The Applicant would incorporate the following measures to avoid impacts on Native American values: • Native American monitoring would be included in Project-related activities that result in disturbance of surface and subsurface components of archaeological sites; • Artifacts recovered from archaeological sites would be curated at a qualified museum or historical facility that allows access to Native Americans; • Procedures specified in CEQA Guidelines 15064.5(e) and Health and Safety Code § 7050.5 and Public Resources Code § 5097.98 would be implemented if human remains are discovered in the Project area; and • Significant oak trees and other plants and animals of local Native American concern would be avoided to the extent possible, and impacts on native plants would be minimized by allowing collection of herbs before construction and by relocating and replanting grasses. If such resources are unavoidable during Project construction or maintenance, further investigations in the form of complete documentation would be implemented. All such investigations would include Native American participation where mandated by Federal, State, and local law. AM CULT-1a. Marine Archeological Surveys. AM CULT-3a. Archaeological Monitoring.	Less than significant

Table ES-5 Summary of Impacts and Mitigation Measures

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
		AM CULT-3b. Unanticipated Discovery Plan. AM CULT-3c. Pre-Construction Pedestrian Survey (onshore only).	
Impact CULT-3: Terrestrial Historic or Archaeological Resources The Project could violate cultural resource standards, cause an adverse change in the significance of a historic or archaeological resource, or disturb human remains in onshore Project areas.	CEQA Class III; NEPA major adverse, long-term	AM CULT-3a. Archaeological Monitoring. A qualified archaeologist would monitor all construction within 328 feet (100 m) of archaeological sites and areas with high potential for the occurrence of sites buried under alluvium, including the shoreline crossing. If sites are identified during the monitoring phase of construction, the archaeologist would be empowered to stop all construction activities in the vicinity of the find and evaluate the resource. Such evaluation would require a Phase 2 subsurface testing and evaluation program. If remains prove to be significant and site avoidance cannot be implemented through Project redesign, a Phase 3 data recovery program would be implemented to mitigate impacts. AM CULT-3b. Unanticipated Discovery Plan. To ensure compliance with mitigation measures, a cultural resources management plan has been developed pursuant to all relevant Federal, State, and local cultural resources guidelines and criteria, including NEPA § 101(b), and CEQA Guidelines §§ 15064.5(e) and (f). The plan includes an overview of the regulations that apply in the event of an unanticipated discovery, and identifies specific steps to be undertaken for treatment or discovery of remains. The plan covers: • Authority to halt construction; • Procedures when skeletal remains are found; • Protection while awaiting recommendations from most likely descendants; • Treatment as recommended by most likely descendants; • Reporting; and • Curation of archaeological material not associated with human remains. AM CULT-3c. Pre-Construction Pedestrian Survey. The Applicant would employ a qualified archaeologist to conduct a pre-construction pedestrian survey over any segments of the route that have not already been surveyed. If unanticipated surface evidence of an archaeological site is observed, the Applicant would follow the Unanticipated Discovery Plan.	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
ENERGY AND MINERALS (Section 4.10)			
ENE-1: Access to Oil and Gas Resources The Project may temporarily restrict access to or availability of oil and gas resources.	CEQA Class III; NEPA minor adverse, short-term	None.	Less than significant
ENE-2: Create Significant Effects on Local or Regional Energy Supplies The Project would have a beneficial impact on local and regional energy supplies.	CEQA Class IV; NEPA beneficial	Not applicable.	Beneficial impact
GEOLOGY (Section 4.11)			
Impact GEO-1: Worsens Existing Unfavorable Geologic Conditions and/or Releases Toxic or Other Damaging Material into the Environment Construction activities could temporarily worsen existing unfavorable geologic conditions.	CEQA Class II; NEPA moderate or major adverse, long-term	AM GEO-1a. Drilling Location. For HDB activities at the shore crossing, the Applicant or its representative would locate the onshore entry and offshore exit points of the drilling outside of the area affected by normal storms. In addition, the pipeline would be buried deep enough to prevent surfacing due to storm-induced erosion. AM TerrBio-1a. Erosion Control (see Section 4.8, "Biological resources – Terrestrial"). MM GEO-1b. Backfilling, Compaction, and Grading. Following construction of the onshore pipelines, the Applicant or its designated representative shall properly backfill and compact the right-of-way as defined by standard construction practices, grade the trench to preexisting contours and revegetate/restore the landscape to preexisting conditions to prevent preferential flow paths, erosion, or subsidence. MM WAT-3a. Drilling Fluid Release Monitoring Plan (see Section 4.18, "Water Quality and Sediments").	Less than significant
Impact GEO-2: Cause a Loss of a Unique Paleontological Resource Construction activities could disturb or destroy paleontological resources; such impacts are typically permanent.	CEQA Class II; NEPA moderate or major adverse, long-term	MM GEO-2a. Inspection. The Applicant or its designated representative shall have a qualified paleontologist complete a paleontological inspection prior to excavating in the suspect areas.	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
Impact GEO-3: <i>Expose People or Structures to Adverse Effects Due to Direct Rupture along Fault Lines, Ground Shaking, or Seismic-related Ground Failure</i> Damage to pipelines or other facilities could occur due to direct rupture (ground offset) along fault lines.	CEQA Class II; NEPA moderate or major adverse, short-term	AM GEO-3a. Avoidance. The Applicant would avoid crossing known active fault zones, where possible. AM GEO-3b. Pipeline Flexibility. Except for the shore crossing, where the pipelines would be installed beneath Ormond Beach, the Applicant would install the offshore pipelines directly on the seabed surface to allow enhanced flexibility (compared with a buried pipeline) and to help them withstand movement caused by fault rupture. Under normal conditions (not due to mass movement) some sediment may cover the pipelines; however, minor sediment should not affect the flexibility of the pipelines. Pipeline routes would also be designed to cross potential faults at as much as a right angle as possible if determined by site-specific conditions to be the most appropriate design. Offset of pipelines crossing strike-slip or normal faults at right angles typically induces tension in the pipe, rather than compression. Pipelines can withstand significant offset when in tension. MM GEO-3c. Geotechnical Studies. The Applicant, as a condition of any lease, shall complete final site-specific geotechnical and seismic hazard studies, to be approved by the CSLC and USCG or MARAD, as appropriate, prior to final pipeline design and construction. MM GEO-3d. Design and Operational Procedures. The Applicant shall evaluate a larger trench, engineered backfill, thicker wall pipe, and telemetric control for final pipeline design. MM PS-4c. Install Additional Mainline Valves Equipped with Either Remote Valve Controls or Automatic Line Break Controls (see Section 4.2, "Public Safety: Hazards and Risk Analysis").	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
Impact GEO-4: <i>Cause Severe Damage to Project Components as a Direct Consequence of a Geologic Event, Releasing Toxic or Other Damaging Materials into the Environment</i> Ground shaking from earthquakes, which is of a transitory and sporadic nature, could damage Project components.	CEQA Class II; NEPA moderate or major adverse, short-term	MM GEO-4a. Design for Ground Shaking. The Applicant shall employ proper seismic design, including but not limited to the design guidelines in the publications <i>Guidelines for the Design of Buried Steel Pipe</i> , <i>Guidelines for the Seismic Design of Oil and Gas Pipeline Systems</i> , and the American Society of Mechanical Engineers' <i>Managing System Integrity of Gas Pipelines</i> .	Less than significant
Impact GEO-5: <i>Damage a Pipeline due to Landslides, Mudflow, Lateral Spreading, Subsidence, Liquefaction, or Collapse as a Result of Locating the Project on a Geologic Unit or Soil that is Unstable</i> Mass movement, which is of a transitory and sporadic nature, could damage pipelines or structures.	CEQA Class III; NEPA moderate or major adverse, short- or long-term	AM GEO-5a. Avoid Areas of Mass Movement. To the extent possible, the Applicant would avoid areas of soil susceptible to mass movement and areas of steeper slopes. MM GEO-3c. Geotechnical Studies. MM GEO-3d. Design and Operational Procedures.	Less than significant
Impact GEO-6: <i>Damage to Pipelines from Tsunamis</i> Tsunamis, which are transitory and sporadic in nature, could damage nearshore pipelines or facilities due to the typical force and erosive nature of these storms.	CEQA Class III; NEPA moderate or major adverse, short-term	AM GEO-6a. Pipeline Burial. The pipeline at the shore crossing would be buried at least 50 feet (15.2 m) below the surface of the beach and deeply enough below sea level to minimize the potential of frac-outs. This will also avoid potential damage from tsunamis.	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
HAZARDOUS MATERIALS (Section 4.12)			
Impact HAZ-1: <i>Release of Oil or Hazardous Materials and Contamination of Marine Environment due to Offshore Operations</i> Improper handling of hazardous materials or leaks in containers on the FSRU and support vessels could result in a release to the marine environment or exposure of workers or the public.	CEQA Class III; NEPA major or moderate adverse, short- or long-term	None.	Less than significant
Impact HAZ-2: <i>Release of Oil or Hazardous Materials Spills Could Result in Soil Contamination due to Pipeline Construction Activities</i> Activities associated with site preparation, construction, and drilling, as well as operations and maintenance activities, could result in an accidental spill of hazardous materials or oil and exposure of workers or the public.	CEQA Class II; NEPA major or moderate adverse, short- or long-term	MM HAZ-2a. Maintain Equipment. The Applicant, or its designated representative, shall maintain equipment in good operating condition to reduce the likelihood of fuel or oil line breaks and leakage. Any vehicles with chronic or continuous leaks shall be removed from the construction site and repaired before being returned to operation. MM HAZ-2b. Hazardous Material Contingency Plan. The Applicant, or its designated representative, shall prepare a detailed hazardous material contingency plan per RCRA and the Hazards Waste Control Act that describes how the contaminated soil and/or groundwater is to be handled and disposed pursuant to law, as well as training for personnel. This plan must receive prior approval from the USEPA or the DTSC before construction begins. MM WAT-3a: Drilling Fluid Release Monitoring Plan (see Section 4.18, "Water Quality and Sediments").	Less than significant
Impact HAZ-3: <i>Release of Existing Contaminants from Sediments, Soils, or Groundwater</i> Construction activities could unearth existing contaminated sites onshore and offshore, causing potential health hazards to construction workers, the public, and marine and terrestrial ecology.	CEQA Class II; NEPA major or moderate adverse, short- or long-term	MM HAZ-3a. Consult with DTSC Regarding Cleanup of Soil and Groundwater at Whittaker-Bermite Site (MP 0.2 to 1.25). Soil contamination in Operable Unit 2 immediately adjacent to or within the proposed pipeline route is expected to be cleaned up by 2006 and certified as such by DTSC. The Applicant or its designated representative shall coordinate with the DTSC to identify potential soil and/or groundwater contamination hazards present in the proposed pipeline alignment and to determine whether additional surveys or screening-level sampling are warranted in areas to be disturbed by pipeline construction prior to any construction. To confirm that the appropriate level of coordination occurs with	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
		the DTSC, the Applicant, or its designated representative, shall submit a letter detailing the results of consultation with the DTSC and any specific measures that are to be implemented during construction to the CSLC, with a copy to the DTSC, 60 days prior to initiating construction. The CSLC would assist the Applicant, or its designated representative, with DTSC consultation, if requested by the Applicant, or its designated representative. MM HAZ-3b. Onshore Surveys. In areas where the proposed pipeline alignments diverge from existing ROWs, the Applicant or its designated representative shall conduct additional surveys to identify potential areas of soil and/or groundwater contamination. If contaminated sites are identified, the Applicant or its designated representative shall implement its Hazardous Material Contingency Plan (see MM HAZ-2b) and implement best management practices.	
Impact HAZ-4: Potential Disturbance or Detonation of Unexploded Ordnance due to Onshore or Offshore Construction Offshore pipeline installation and onshore pipeline construction activities could encounter UXO, causing an explosion that could result in serious injuries or fatalities to workers or the public, and—for offshore locations—serious injuries or fatalities to marine life from subsurface blast pressures.	CEQA Class II; NEPA major or moderate adverse, short- or long-term	MM HAZ-4a. Offshore Surveys. The Applicant shall conduct additional surveys at the offshore pipeline installation within and near the Point Mugu Sea Range to locate visible and shallowly buried UXO that might be disturbed by pipeline installation and avoid identified UXO or develop, in consultation with the U.S. Navy, procedures to eliminate such UXO. MM HAZ-4b. Coordination with the California Department of Toxic Substances Control. The Applicant, or its designated representative, shall coordinate with the DTSC and notify the City of Santa Clarita before conducting any surveys or construction activities at parts of the Line 225 Pipeline Loop route on or near the Whittaker-Bermite site to determine whether additional UXO surveys would be warranted and shall ensure that those surveys are conducted if deemed necessary. If UXO is present, the Applicant will recover and dispose it as required by DTSC prior to beginning construction. The Applicant, or its designated representative, shall submit a letter to the CSLC and the USCG with a copy to the DTSC documenting the outcome of coordination and the status of follow-up 60 days prior to beginning construction.	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
LAND USE (Section 4.13)			
None.		AM LU-1. Construction of Center Road Pipeline in Future ROW Along McWane Boulevard if McWane Boulevard is Approved and Constructed Prior to the Construction of the Center Road Pipeline. The Draft Ormond Beach Specific Plan in the City of Oxnard identifies McWane Boulevard as a future east-west public street that may be located south of Hueneme Road. In the event that McWane Boulevard is approved and constructed prior to the construction of the Center Road Pipeline, the Applicant shall locate the Center Road Pipeline within the ROW for McWane Boulevard. The pipeline shall run north from the metering station at Ormond Beach, turn east along McWane Boulevard to Arnold Road, turn north along Arnold Road to Hueneme Road, and turn east along Hueneme Road to resume the proposed alignment of the Center Road Pipeline.	Less than significant
Impact LU-1: Changes in Existing Land Use Implementation of the Project would change an existing land use.	CEQA Class III; NEPA moderate or major adverse, long-term	AM AGR-1a. Compensation for Temporary and Permanent Loss of Agricultural Land, Crop Loss, Future Loss of Production, and Other Negative Impacts (see Section 4.5, "Agriculture and Soils").	Less than significant
Impact LU-2: Disruption to Adjacent Properties Construction may cause temporary disturbances or nuisances to nearby residents and businesses or to special land uses.	CEQA Class II; NEPA minor adverse, short-term	AM LU-2a. Minimize Disruption for Residences, Businesses, and Special Land Uses in or near the Construction Area. The Applicant or its designated representative would minimize disruption in residential and business areas during construction. AM LU-2b. Reduce Disruption for Residences Within 25 Feet (7.6 m) of the Construction Work Area. The Applicant or its designated representative would further reduce disruption in residential areas during construction. AM AIR-2a. Fugitive Dust Controls (see Section 4.6, "Air Quality"). MM LU-2c. Coordinate with Other Utilities. Before construction, coordinate with other utility service providers to ensure conflicts with other maintenance or construction activities are minimized during construction. MM NOI-6a. Post Signs (see Section 4.14, "Noise and Vibration"). MM NOI-6b. Equipment Location (see Section 4.14, "Noise and Vibration"). MM TRANS-1a. Traffic Control Plans (see Section 4.17, "Transportation").	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
NOISE (Section 4.14)			
Offshore			
Impact NOI-1: Noise Generated During the Installation of the FSRU and Offshore Pipelines Noise generated by vessels or equipment during installation of the mooring system, FSRU, and offshore pipelines could result in temporary increases in noise levels in the area, which could impact sensitive noise receptors such as recreational boaters or fishers.	CEQA Class II; NEPA minor adverse, short-term	AM MT-1a. Safety Vessel Warnings (see Section 4.3, "Marine Traffic"). MM NOI-1a. Efficient Equipment Usage. The Applicant shall: • Operate construction equipment only on an as-needed basis during this period, and maintain it to the manufacturer's specifications. This will serve to reduce the number of noise producing events. • Ensure that equipment engine covers are in place and mufflers are in good working condition for the installation of the mooring system, FSRU, and offshore pipeline. • Require that prospective contractors for the offshore pipeline installation address noise reduction measures in their respective bid proposals, such as (1) the extent to which they will use engines with lower noise ratings, (2) phased construction activities to reduce simultaneous operations of engines, and (3) all other practices they would follow to reduce equipment noise emissions. MM MT-1c. Notices to Mariners (see Section 4.3, "Marine Traffic").	Less than significant
Impact NOI-2: Long-Term Noise Generated During FSRU Operations Recreational boaters and fishers at certain distances from the facility could hear noise generated by FSRU operations over the long-term.	CEQA Class I; NEPA moderate adverse, long-term	MM BioMar-5a. Noise Reduction Design. The Applicant shall work with marine architects, acoustic experts and mechanical engineers and the USCG, among others, to design the FSRU and its equipment to reduce, to the maximum extent feasible, the output of cumulative noise from the facility.	Significant
Impact NOI-3: Temporary Noise Generated by Support Vessels During Offshore Operations LNG carriers, crew boats and supply vessels, or helicopters could temporarily increase noise levels for sensitive receptors, such as recreational boaters and fishers during operations.	CEQA Class I; NEPA moderate adverse, long-term	AM NOI-3a. Daytime Operations. The Applicant would operate crew boats, supply vessels, and helicopters during daytime hours, except during emergencies. The operation of these vessels would be less disturbing to receptors during daytime hours when there is greater ambient background noise and people are not typically involved in activities that require lower noise levels.	Significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
Onshore			
Impact NOI-4: Temporary Noise Generated During Construction using Horizontal Directional Boring (HDB), Horizontal Directional Drilling (HDD), or Other Drilling Techniques HDB at the shore crossing and HDD or other drilling techniques at onshore waterways and intersection crossings could temporarily increase noise levels for sensitive receptors. Noise levels could exceed local noise ordinances or permit conditions.	CEQA Class I; NEPA moderate adverse, short-term	AM NOI-4a. Construction Noise Reduction Measures. The Applicant shall monitor noise levels to comply with applicable regulations, enclose power units, implement noise barriers, enclose mud pumps and engines, enclose generator sets, partially enclose mud mixing, provide engine compartment treatments, modify backup alarms, orient loading bins, restrict use of mobile equipment, enclose light set engines, use temporary hay bales as noise barriers, and place silencers on engines where possible. MM NOI-4b. Use Noise Blankets. During Project construction noise blankets shall be used to fully enclose equipment associated with boring where residences occur within 2,000 feet (610 m) and work occurs after 6 p.m. MM NOI-4c. Limit Heavy Equipment Activity Near Residences. Heavy equipment activity adjacent to residences shall be limited to the shortest possible period required to complete pipeline installation. MM NOI-4d. Cover the Equipment Engine. The equipment engine shall be covered and the Applicant shall ensure that mufflers are in good working condition. MM NOI-4e. Establish Telephone Hotline. A phone number shall be established and publicized for members of the public to call should they have a noise complaint. Upon receiving a complaint, noise monitors will measure the levels and ensure that all appropriate noise controls are being implemented. MM NOI-4f. Establish Procedures. The Applicant or its designated representative shall establish procedures to stop or curtail work or add additional measures to respond to any noise complaints or exceedances of any ordinances.	Significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
Impact NOI-5: <i>Temporary Vibration Generated During Horizontal Directional Boring (HDB), Horizontal Directional Drilling (HDD), and Pipeline Construction Activities</i> HDB, HDD, boring, trenching, and other construction activities could temporarily create vibration levels at sensitive receptors.	CEQA Class I; NEPA moderate adverse, short-term	AM NOI-4a. Construction Noise Reduction Measures. MM NOI-5a. Restricted Work Hours. The Applicant or its designated representative shall ensure that work hours are restricted for pipeline construction activities, with the exception of HDB, involving motorized equipment from 7 a.m. to 7 p.m. Monday through Saturday. MM NOI 4c. Limit Heavy Equipment Activity Near Residences.	Significant
Impact NOI-6: <i>Noise Generated During Construction of the Onshore Pipeline</i> Site preparation, pipeline installation, and construction of aboveground facilities could temporarily increase noise levels for sensitive receptors, such as schools and residences. Noise levels may exceed county and/or city noise ordinances or permit conditions during the installation of the onshore pipeline and associated structures.	CEQA Class I; NEPA moderate adverse, short-term	AM NOI-4a. Construction Noise Reduction Measures. MM NOI-6a. Post Signs. The Applicant or its designated representative shall post signs along the construction right-of-way with approximate schedule and contact information. MM NOI-6b. Equipment Location. The Applicant or its designated representative shall locate stationary equipment, such as compressors and welding machines, away from the noise receptors to the extent practicable. MM NOI-4c. Limit Heavy Equipment Activity Near Residences. MM NOI-4d. Cover the Equipment Engine. MM NOI-4e. Establish Telephone Hotline. MM NOI-4f. Establish Procedures. MM NOI-5a. Restricted Work Hours.	Significant
Impact NOI-7: <i>Noise Generated by Traveling to the Construction Site</i> Additional vehicular traffic carrying workers, equipment, and materials to the construction sites could temporarily increase noise levels for residences, schools, places of worship, or hospitals.	CEQA Class III; NEPA moderate or major adverse, short-term	None.	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
Impact NOI-8: <i>Noise Generated During Onshore Pipeline and Associated Facilities Operations</i> Repair or maintenance operations of the onshore pipelines and associated aboveground facilities may temporarily exceed county and/or city noise ordinances or permit conditions.	CEQA Class II; NEPA minor adverse, long-term	AM NOI-4a. Construction Noise Reduction Measures. MM NOI-4c. Limit Heavy Equipment Near Residences MM NOI-4d. Cover the Equipment Engine. MM NOI-5a. Restricted Work Hours. MM NOI-4f. Establish Procedures. MM NOI-6a. Post Signs. MM NOI-6b. Equipment Location.	Less than significant
RECREATION (Section 4.15)			
Offshore			
Impact REC-1: <i>Temporary Restrictions on Offshore Recreational Boating and Fishing during Construction and Temporary Reductions of Fish Catch</i> Construction activities would temporarily restrict recreational boating and recreational marine fishing.	CEQA Class III; NEPA minor adverse, short-term	None.	Less than significant
Impact REC-2: <i>Restricted Recreational Fishing Due to Area to be Avoided</i> Operational activities could restrict offshore recreational activities because of the creation of a safety zone around the FSRU.	CEQA Class III; NEPA minor adverse, long-term	None.	Less than significant

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
Impact REC-3: <i>Reduce the Quality of the Offshore Recreational Experience</i> During Project operations, the presence of the FSRU would alter the recreational experience of recreational boaters, including tourists and visitors on whale-watching trips and other visitors to the CINP.	CEQA Class I; NEPA moderate adverse, long-term	None.	Significant
Onshore			
Impact REC-4: <i>Reduce the Recreational Experiences at or Restrict Access to Ormond Beach</i> Construction or maintenance activities at the shore crossing could temporarily impede recreational uses or degrade recreational experiences at Ormond Beach because of the noise, dust, and light generated during construction and repairs or because of accidental release of drilling fluids or a gas leak.	CEQA Class III; NEPA minor adverse, long-term	None.	Less than significant
Impact REC-5: <i>Reduce or Restrict Access to Parks or Reduce User Enjoyment</i> Construction activities could temporarily restrict access to parks due to increased traffic congestion or other nuisances in the general area of parks in the vicinity of pipeline construction.	CEQA Class II; NEPA minor adverse, long-term	AM REC-5a. Contractor Yard Locations. Contractor yards would be located at least 1 mile (1.6 km) away from park and recreational areas. MM TRANS-1a. Traffic Control Plans (see Section 4.17, "Transportation").	Less than significant

Table ES-5 Summary of Impacts and Mitigation Measures

Note: Impact classes are defined in Table ES-4. Acronyms for each resource are defined at the end of Table ES-5. Many of the measures listed apply to more than one resource; however, each measure is described only once under its primary resource. For example, AM MT-3a, Patrol Safety Zone, applies to Impacts PS-1, PS-2, MT-3, MT-4, BioMar-6, and BioMar-8, but is described in full only under Impact MT-3.

Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
Impact REC-6: <i>Reduce or Restrict Access to Trails</i> Construction activities for the Line 225 Pipeline Loop would temporarily close the multi-use trails along the South Fork Santa Clara River.	CEQA Class II; NEPA minor adverse, short-term	MM REC-6a. Trail Closure Signage and Information. The Applicant or its designated representative shall post signs and disseminate information to the public about the multi-use trail along the South Fork Santa Clara River stating how long the trail will be closed, when it will be restored, and alternate routes. MM REC-6b. Trail Restoration. The Applicant or its designated representative shall restore the multi-use trail along the South Fork Santa Clara River to its previous condition before construction within 21 days after completion of the section of the pipeline along the trail.	Less than significant
SOCIOECONOMICS (Section 4.16)			
SOCIO-1: <i>Decrease in Catch Revenues for Commercial Fisheries due to Exclusion from Fishing Areas</i> The long-term and temporary exclusion of commercial fishers from fishing grounds could decrease catch revenues for commercial fisheries.	CEQA Class II; NEPA moderate adverse, long-term	AM SOCIO-1a. Compensation for Lost Gear. As a member of the Oil Caucus of the Joint Oil/Fisheries Committee of South Central California, the Applicant would negotiate mitigation for impacts on fishers using guidance from existing Joint Oil/Fisheries Committee guidelines for lost or damaged gear. AM MT-1a. Safety Vessel Warnings (see Section 4.3, "Marine Traffic"). AM MT-1b. Automatic Identification System (see Section 4.3, "Marine Traffic"). AM MT-2b. Established Routes to and from Port Hueneme (see Section 4.3, "Marine Traffic"). AM MT-2c. Compliance with JOFLO Vessel Traffic Corridors (see Section 4.3, "Marine Traffic"). MM SOCIO-1b. Arbitration. If there is a complaint by a fisher related to impacts from the Project, the Applicant shall comply with a mutually agreed-upon settlement between itself and the injured party. If a settlement cannot be reached through voluntary negotiation that is acceptable to both parties, dispute resolution shall be conducted by a mutually agreed-upon arbitrator. The arbitrator shall be compensated by the Applicant. An arbitrator shall become involved if the voluntary negotiation is not concluded within three months.	Less than significant

Table ES-5 Summary of Impacts and Mitigation Measures

Note: Impact classes are defined in Table ES-4. Acronyms for each resource are defined at the end of Table ES-5. Many of the measures listed apply to more than one resource; however, each measure is described only once under its primary resource. For example, AM MT-3a, Patrol Safety Zone, applies to Impacts PS-1, PS-2, MT-3, MT-4, BioMar-6, and BioMar-8, but is described in full only under Impact MT-3.

Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
SOCIO-2: <i>Decreased Commercial Fisheries Revenues due to Loss of Fishing Gear</i> The loss of commercial fishing gear from pipelines and supply boat traffic could decrease commercial fisheries revenues.	CEQA Class II; NEPA minor adverse, short-term	AM SOCIO-1a. Compensation for Lost Gear. AM MT-2b. Established Routes to and from Port Hueneme (see Section 4.3, "Marine Traffic"). AM MT-2c. Compliance with JOFLO Vessel Traffic Corridors (see Section 4.3, "Marine Traffic"). MM SOCIO-1b. Arbitration. MM MT-1c. Notices to Mariners (see Section 4.3, "Marine Traffic"). MM MT-1d. Securite Broadcasts (see Section 4.3, "Marine Traffic"). MM MT-1e. Safety Vessel (see Section 4.3, "Marine Traffic").	Less than significant
SOCIO-3: <i>Increase in Regional Fishing Pressure</i> The permanent exclusion of commercial fishing from fishing grounds could increase fishing pressure in other areas or reduce the catch, resulting in negative economic impacts.	CEQA Class III; NEPA minor adverse, long-term	None.	Less than significant
SOCIO-4: <i>Small Increased Demand for Public Services</i> The Project would cause a slight increased demand for public services during construction and operations.	CEQA Class III; NEPA minor adverse, long-term	None.	Less than significant
TRANSPORTATION (Section 4.17)			
TRANS-1: <i>Temporary Increase in Traffic</i> During construction, the addition of the construction-related workforce and material deliveries to and from staging areas could temporarily increase traffic during peak construction periods.	CEQA Class II; NEPA moderate adverse, short-term	MM TRANS-1a. Traffic Control Plans. Two traffic control plans shall be prepared by a registered professional engineer in accordance with the Work Area Protection and Traffic Control Manual (1999): one for the Center Road Pipeline and one for Line 225 Pipeline Loop. MM TRANS-1b. Notification, Schedule Shifts, Carpooling. During construction, the Applicant or its designated representative shall implement best management practices approved by CalTrans and/or the affected local government, such as notification, schedule shifts, and carpooling, to minimize increases in traffic.	Less than significant

Table ES-5 Summary of Impacts and Mitigation Measures

Note: Impact classes are defined in Table ES-4. Acronyms for each resource are defined at the end of Table ES-5. Many of the measures listed apply to more than one resource; however, each measure is described only once under its primary resource. For example, AM MT-3a, Patrol Safety Zone, applies to Impacts PS-1, PS-2, MT-3, MT-4, BioMar-6, and BioMar-8, but is described in full only under Impact MT-3.

Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
TRANS-2: Temporary Traffic Lane Closures The Project could restrict one or more lanes of major roads, disrupting local traffic flow during peak hours.	CEQA Class II; NEPA moderate adverse, short-term	MM TRANS-1a. Traffic Control Plans (see Impact TRANS-1).	Less than significant
TRANS-3: Temporarily Reduced On-Street Parking Access Construction could temporarily restrict residential on-street parking access.	CEQA Class III; NEPA minor adverse, short-term	None.	Less than significant
TRANS-4: Temporary Closure of Bike Routes Construction could result in temporary closure and/or restricted access to bike paths crossed by the onshore pipelines, which could adversely affect the safety of bicyclists.	CEQA Class II; NEPA moderate adverse, short-term	MM TRANS-4a. Bike Detour Lanes. Where bike paths are closed, the Applicant or its designated representative shall provide an alternative bike route, provide signs and notice of the pending closure at least 30 days prior to commencement of work at the affected location, and ensure that the route remains posted until the access is restored to its pre-construction condition. MM TRANS-4b. Repair Damage to Bike Paths. The Applicant or its designated representative shall restore any bike paths damaged as a result of Project construction to their pre-construction condition within 21 days of completion of the bike route-based portion of each alignment. MM TRANS-1a. Traffic Control Plans (see Impact TRANS-1).	Less than significant
TRANS-5: Damage to Roads During Construction Roads crossed or paralleled by the onshore pipelines, as well as those used to access the Project, could be temporarily damaged by increased traffic and heavy equipment.	CEQA Class II; NEPA minor or moderate adverse, short-term	MM TRANS-5a. Repair Damage to Roads. The Applicant or its designated representative shall repair to pre-construction conditions any damage to roads that occurs as a result of the Project within 21 days of completion of the road-based portion of each alignment or in accordance with local road encroachment permit conditions determined prior to construction, whichever is less. In addition, where a roadway has been rehabilitated within the past five years, the Applicant or its designated representative shall provide a full width overlay after trenching is completed. The Applicant or its designated representative shall negotiate with the appropriate jurisdiction regarding videotaping of existing roadways prior to construction and mitigation fees to be deposited into a trust fund.	Less than significant

Table ES-5 Summary of Impacts and Mitigation Measures

Note: Impact classes are defined in Table ES-4. Acronyms for each resource are defined at the end of Table ES-5. Many of the measures listed apply to more than one resource; however, each measure is described only once under its primary resource. For example, AM MT-3a, Patrol Safety Zone, applies to Impacts PS-1, PS-2, MT-3, MT-4, BioMar-6, and BioMar-8, but is described in full only under Impact MT-3.

Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
WATER (Section 4.18)			
Offshore – Construction/Installation			
WAT-1: Temporary Degradation of Offshore Water Quality due to Accidental Discharges Accidental discharges of petroleum, contaminants, gray water, or sewage from vessels during offshore construction and installation activities could temporarily degrade offshore water quality.	CEQA Class III; NEPA minor or moderate adverse, short-term	None.	Less than significant
WAT-2: Short-Term Increase in Turbidity or Accidental Unearthing of Contaminants during Offshore Construction The installation of the FSRU and subsea pipelines could disturb seafloor sediments or release drill cuttings or fluids, causing a short-term increase in turbidity or accidental unearthing of contaminants.	CEQA Class III; NEPA minor or moderate adverse, short-term	None.	Less than significant
Onshore Construction			
WAT-3: Short-Term Degradation of Surface Water or Groundwater Quality due to Accidental Release of Drilling Fluids Accidental releases of drilling fluids at the shore crossing during construction could degrade surface water or groundwater quality for the short term.	CEQA Class II; NEPA minor or moderate adverse, short-term)	MM WAT-3a. Drilling Fluid Release Monitoring Plan. The Applicant shall implement its Drilling Fluid Release Monitoring Plan to minimize the potential for releases of drilling fluids, to properly clean up drilling fluids in the event of a release, and notify appropriate agencies should a release occur. The plan (see Appendix D1) would incorporate best management practices to reduce the impacts from releases of drilling fluids, including the following: • Maintaining containment equipment for drilling fluids on site; • Adding a non-toxic color dye to the drilling fluids to easily and quickly detect release of drilling fluids; • Ensuring that a qualified environmental monitor or suitably trained water quality	Less than significant

Table ES-5 Summary of Impacts and Mitigation Measures

Note: Impact classes are defined in Table ES-4. Acronyms for each resource are defined at the end of Table ES-5. Many of the measures listed apply to more than one resource; however, each measure is described only once under its primary resource. For example, AM MT-3a, Patrol Safety Zone, applies to Impacts PS-1, PS-2, MT-3, MT-4, BioMar-6, and BioMar-8, but is described in full only under Impact MT-3.

Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
		specialist is on site full time near sensitive habitat areas during horizontal directional boring activities; • Stopping work immediately if there is any detection of bentonite seeps into surface water or sensitive habitats, for example, by a loss in pressure or visual observation of changes in turbidity or surface sheen; • Reporting all bentonite seeps into waters of the State or sensitive habitat immediately to the Project's resource coordinator, the CSLC, the Los Angeles RWQCB, and the appropriate resource agencies: National Oceanic and Atmospheric Administration Fisheries, U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, the California Department of Water Resources, the California Reclamation Board, the applicable city (Oxnard or Santa Clarita) and county (Ventura or Los Angeles); and • Cleaning up and properly disposing of any release of drilling fluids to the satisfaction of regulatory agencies.	
WAT-4: <i>Short-Term Increase in Erosion due to Construction Activities</i> Boring and trenching at stream crossings, including release of hydrostatic test water, could cause short-term increases in erosion.	CEQA Class II; NEPA minor adverse, short-term	AM TerrBio-1a. Erosion Control. MM WAT-4a. Strategic Location for Drilling Fluids and Cuttings Pit. The Applicant or its designated representative shall ensure that a pit has been excavated at the exit hole to collect and contain the drilling fluids and cuttings. Engineering controls shall be installed to ensure that fluids remain contained in the pit, including: • Locating the entry pit and exit pit sufficiently far from a stream bank and at a sufficient elevation to avoid inundation by the stream and to minimize excessive migration of groundwater into the entry pit or exit pit; • Isolating the entry pit and exit pit with silt fencing to avoid sediment transport into the surface water body; • Isolating the spoils storage from the excavation of the entry pit using silt fencing to avoid sediment transport; • Undertaking and completing proper disposal of excess spoils; backfilling and restoring the original contour of the entry pit and exit pit; and revegetating the area upon completion of the bore; • Monitoring the drilling fluid, if a release of drilling fluids occurs, by a qualified environmental monitor or suitably trained water quality specialist to determine	Less than significant

Table ES-5 Summary of Impacts and Mitigation Measures

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
		the appropriate cleanup response; and Consulting with regulatory agencies to determine the next appropriate step to clean up the area. MM WAT-4b. Transport Sediment Spoils Off-Site. Sediment spoils that are not utilized to backfill trenches in stream channels shall be transported and disposed of offsite at an approved facility. MM WAT-4c. Monitor Stream Crossing Construction. A qualified environmental monitor or suitably trained water quality specialist shall be present at each stream crossing construction site to ensure compliance with applicable permits and mitigation. MM GEO-1b. Backfilling, Compaction, and Grading (see Section 4.11, "Geologic Resources and Hazards").	
WAT-5a. Degradation of Water Quality due to Accidental Release of Untreated Gray Water, Deck Drainage, and other Discharges that do not Meet Water Quality Standards The FSRU or other Project vessels could accidentally release small amounts of contaminants, including bilge water, detergents, or human waste, to marine waters in excess of water quality standards.	CEQA Class III; NEPA moderate adverse, short-term	None.	Less than significant
WAT-5b. Degradation of Water Quality due to an Accidental Release of Diesel Fuel from the FSRU, Pipelaying Vessel, or Service Vessels An accidental release of diesel fuel to marine waters would violate Federal and State water quality standards or objectives.	CEQA Class I; NEPA moderate adverse, short-term	None.	Significant

Table ES-5 Summary of Impacts and Mitigation Measures

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
WAT-6: <i>Temporary Degradation of Surface Water Quality During Maintenance Activities</i> Releases of petroleum or other contaminants during onshore pipeline maintenance activities could temporarily degrade surface water quality.	CEQA Class III; NEPA moderate adverse, short-term	AM WAT-6a. Best Management Practices at Creek Crossings. Best management practices would be employed at all creek crossings for major maintenance activities that could result in spills that could enter surface water pathways. AM WAT-6b. Spill Response Plan. The Applicant or its designated representative would prepare a spill response plan to protect surface water at and near the surface water crossings. This plan would be incorporated into the SWPPP as a requirement of the construction storm water NPDES permit and the SPCC Plan. The plan would identify specific measures to prevent, contain, and clean up any spills that could enter surface water pathways.	Less than significant
WAT-7: <i>Degradation of Surface Water Quality due to Erosion Caused by Regular Maintenance Activities</i> Regular maintenance of the pipelines could cause erosion and sedimentation of creeks from the use of maintenance vehicles or equipment, leading to short-term violations of water quality standards.	CEQA Class III; NEPA minor or moderate adverse, short-term	AM WAT-6a. Best Management Practices at Creek Crossings.	Less than significant
WAT-8: <i>Degradation of Water Quality due to Operational Thermal Discharges</i> During eight days per year, non-contact seawater cooling water would be discharged to the ocean at temperatures above ambient and could exceed the guidelines in the California Thermal Plan.	CEQA Class III; NEPA minor adverse, short-term	None.	Less than significant

Table ES-5 Summary of Impacts and Mitigation Measures

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Impact	Impact Class	Applicant Proposed Mitigation Measures (AM) Agency Recommended Mitigation Measures (MM)	Result
ENVIRONMENTAL JUSTICE (Section 4.19)			
EJ-1: Disproportionate Impact on Minority and Low-Income Community of a Pipeline Accident near Center Road Pipeline MP 4.1 There would be a long-term risk of a pipeline rupture that could cause a fire that would disproportionately adversely affect minority or low-income communities near MP 4.1.	NEPA moderate adverse, long-term	AM PS-4a. Class 3 Pipeline Design Criteria (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). MM PS-4b. Pipeline Integrity Management Program (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). MM PS-4c. Install Additional Mainline Valves Equipped with Either Remote Valve Controls or Automatic Line Break Controls (see Section 4.2, "Public Safety: Hazards and Risk Analysis"). MM PS-5a. Treat Manufactured Home Residential Community as a High Consequence Area (see Section 4.2, "Public Safety: Hazards and Risk Analysis").	Less than significant

Key to impacts (EIS/EIR section #):**AES** = Aesthetics (4.4)**AGR** = Agriculture and Soils (4.5)**AIR** = Air Quality (4.6)**BioMar** = Biological Resources–Marine (4.7)**CUL** = Cultural Resources (4.9)**EJ** = Environmental Justice (4.19)**ENE** = Energy and Minerals (4.10)**GEO** = Geologic Resources (4.11)**HAZ** = Hazardous Materials (4.12)**LU** = Land Use (4.13)**MT** = Marine Traffic (4.3)**NOI** = Noise (4.14)**PS** = Public Safety (4.2)**REC** = Recreation (4.15)**SOCIO** = Socioeconomics (4.16)**TerrBio** = Biological Resources–Terrestrial (4.8)**TRANS** = Transportation (4.17)**WAT** = Water Quality and Sediments (4.18)

APPENDIX D

COASTAL COMMISSION CRITIQUE OF BHP'S AIR MITIGATION PACKAGE

NO_x emissions from the operational aspects of the project are as follows:

Source	NO_x Emissions (tons/year)	
FSRU	75.5	(stationary source under VCAPCD jurisdiction)
Vessels		
- District Waters	0.3	(extends three nautical miles off the CA coastline)
- Federal Waters	48.9	(from the District Waters boundary to 24 nautical miles off the CA coastline)
- CA Coastal Waters	35.5	(from the Federal Waters boundary to about 100 nautical miles off the CA coastline)
Total	159.9¹	

In a memorandum from CARB to the State Lands Commission dated February 9, 2007, CARB outlined the apportionment of the estimated NO_x emission reductions based on the anticipated tug operations by region. CARB reviewed the methodology used to calculate the estimated emission reductions and found it to be reasonable, although noted that there was not a consensus on the actual emission reductions. EPA conducted its own review of the retrofit projects; based on the information submitted by BHP, EPA determined that the following emission reductions can be expected along the routes traveled by the tugs:

Air District	Applicant/CARB Emissions Reduction Estimate (tons/year)	EPA Emissions Reduction Estimate (tons/year)
SCAQMD	47.4	33.05
VCAPCD	16.8	11.47
Santa Barbara County APCD	35.6	25.11
San Luis Obispo APCD	15.2	10.84
Monterey Bay Unified APCD	25.4	18.09
Bay Area AQMD	25.1	17.99
Total	165.5	116.65

There are numerous concerns over the appropriateness of BHP's proposed air mitigation plan. First and most important, Rule 26.2 does not allow retrofitting long-haul tugs to achieve emission reductions. The "banking" of offshore mobile emission reductions, such as tugs, does not qualify as offsets under Rule 26.

Even if a tug engine retrofit project was allowed under Rule 26.2, BHP's proposal has the following shortcomings:

¹ Final EIS/EIR Tables 4.6-12 through 4.6-14. Note that Final EIS/EIR NO_x emission estimate from Table 4.6-13 is summed incorrectly. The corrected total for vessel NO_x emissions should be 84.7 tons per year.

- Not all emission reductions would occur in the same air basin as the project emissions and would not fully reduce potential impacts associated with the proposed project. CARB staff question the appropriateness of counting the emission reductions in the Bay Area since these reductions would likely not benefit the regions where the project is located. Excluding the Bay Area emissions would reduce the amount of emission reductions by 25.1 tons per year based on estimates from BHP (or 17.99 tons per year based on estimates from the EPA).
- It is also questionable as to whether or not the emission reductions offshore of Monterey County would benefit those areas impacted by the proposed project. The shipping lanes were recently moved farther offshore in the vicinity of the Monterey Bay National Marine Sanctuary (MBNMS) as shown in Figure 8. An analysis of seasonal monthly mean wind vectors, shown in Figure 6 (a through d), would indicate that emissions from the shipping lanes offshore Monterey Bay would be transported parallel to the coast for much of the year, or landfall in Monterey and San Luis Obispo Counties during the summer months when ozone formation is a concern. Therefore, emission reductions occurring offshore of Monterey County would not likely benefit the areas affected by the proposed project. Excluding the Monterey County emissions would reduce the amount of emission reductions by 25.4 tons per year based on estimates from BHP (or 18.09 tons per year based on estimates from EPA).
- Under VCAPCD Rules,² the proposed emission reductions will not be “real, quantifiable, permanent, enforceable and surplus.” One of the tug retrofits proposed by BHP would be from the Pacific Falcon, which tows the barge Jovalan to and from the Ellwood Marine Terminal (EMT) in Santa Barbara County to refineries in the Los Angeles and San Francisco Bay Areas. The EMT State Tidelands lease expired in 2003 and has been operating on annual lease renewals. The Draft EIR for the EMT Lease Renewal Project indicates that the lease, if renewed, would expire in February 2013, which is only one year (2012) after Cabrillo Port is expected to commence operations. The University of California Santa Barbara, which owns the lease where the onshore EMT facilities are located, has indicated that the lease will not be renewed once it expires in 2016. Venoco, which owns the EMT, is currently in the permitting process for an onshore pipeline to transport crude oil from its South Ellwood Field to refinery destinations in anticipation of the shutdown of the EMT in 2013. Therefore, the potential emission reductions associated with the retrofit of the Pacific Falcon would not offset potential project related emissions after February 2013. Even if the Pacific Falcon were to continue operating after the EMT lease expiration, there is no guarantee that it would operate within areas that would be impacted by the proposed project.
- The emissions reduction plan admittedly provides inadequate offsets for project-related emissions of Reactive Organic Compound (ROC). Rule 26.2 clearly requires ROC offsets for the proposed project. Therefore, the emission reduction plan does not meet Rule 26.2 offset requirements.

² VCAPCD Rule 26.4, New Source Review – Emission Banking.

- The proposed emission reduction package does not incorporate the tradeoff ratio of 1.3:1 that is required under VCAPCD Rule 26.2. Project-related emissions will exceed the 25 ton/year threshold for offset requirements for both NO_x and ROC.

Based on the issues noted above, but still allowing credit for emission reductions from the Pacific Falcon, the following comparison can be made.

<i>Air District</i>	<i>NO_x Emissions Reduction Estimate (tons/year)</i>	<i>ROC Emissions Reduction Estimate (tons/year)</i>
SCAQMD	33.05	8.51
VCAPCD	11.47	3.01
SBCAPCD	25.11	6.39
SLOAPCD	10.84	2.73
Total	80.47	20.64
Project Emission Offset Liability (including 1.3:1 offset ratio)	98.5	41
Net Deficit	-18.03	-20.36

In addition to the emission offsets required under VCAPCD Rule 26.2, the project would also emit 48.9 and 18.0 tons/year of NO_x and ROC, respectively, in federal waters. While VCAPCD does not require ERCs for emissions from vessels in federal waters, emissions from these sources (FSRU support vessels and LNG tankers) would contribute to existing onshore violations of State and federal ambient air quality standards.

Of the emissions listed above, approximately 41 percent would be from the retrofit of the Pacific Falcon. As noted above, this tug will likely curtail service associated with the Ellwood Marine Terminal about the same time that the Cabrillo Port project commences operations. Therefore, the above emission reduction estimates may be overstated by 41 percent. Given the net deficit in the proposed emission reduction package, the project does not meet the offset requirements of VCAPCD Rule 26.2.

APPENDIX E

EX PARTE COMMUNICATION

FORM FOR DISCLOSURE OF EX PARTE COMMUNICATIONS

Name or description of project, LPC, etc.: **BHP Billiton LNG Plant**

Date and time of receipt of communication: **03/15/07 1:30-2:30**

Location of communication: **Café Fina, Monterey, CA**

Type of communication (letter, facsimile, etc.): **Oral Presentation**

Person(s) Initiating communication: **Susan Jordan,
California Protection Network**

Detailed substantive description of content of communication:
(Attach a copy of the complete text of any written material received.)

**General description of the BHP Bilton LNG project, environmental issues at stake,
Commissioner Kruer also attended.**

Thursday, March 19, 2007
Date



Signature of Commissioner

If the communication was provided at the same time to staff as it was provided to a Commissioner, the communication is not ex parte and this form does not need to be filled out.

If communication occurred seven or more days in advance of the Commission hearing on the item that was the subject of the communication, complete this form and transmit it to the Executive Director within seven days of the communication. If it is reasonable to believe that the completed form will not arrive by U.S. mail at the Commission's main office prior to the commencement of the meeting, other means of delivery should be used, such as facsimile, overnight mail, or personal delivery by the Commissioner to the Executive Director at the meeting prior to the time that the hearing on the matter commences.

If communication occurred within seven days of the hearing, complete this form, provide the information orally on the record of the proceeding and provide the Executive Director with a copy of any written material that was part of the communication.

From: Tom Luster
Sent: Tuesday, March 27, 2007 8:40 AM
To: Diane Livia
Subject: FW: ex-parte
Importance: High

-----Original Message-----

From: Vanessa Miller
Sent: Wednesday, March 21, 2007 10:15 AM
To: Alison Dettmer; Tom Luster
Cc: Jeff Staben
Subject: FW: ex-parte
Importance: High

-----Original Message-----

From: LWan22350@aol.com [mailto:LWan22350@aol.com]
Sent: Wednesday, March 21, 2007 9:55 AM
To: Vanessa Miller
Subject: ex-parte

Hi,

Please enter into my ex-parte file on the BHP LNG development

Sara

Diane Livia

From: Shiva Polefka [shiva@edcnet.org]
Sent: Wednesday, March 21, 2007 7:19 AM
To: LWan22350@aol.com
Cc: Susan Jordan
Subject: noise emissions from Cabrillo Port LNG and impacts to marine mammals

Good Morning Ms Wan,

I'm an environmental analyst for ocean issues at the Environmental Defense Center in Santa Barbara, where we're working hard to assess the full range of impacts from the proposed Cabrillo Port offshore liquefied natural gas terminal. Yesterday afternoon Susan Jordan mentioned to me that you'd like a briefing on the impacts to marine mammals from the proposed facility's noise emissions, which I would be happy to provide for you. Incidentally, I've been researching the effects of underwater noise on marine mammals for a few years now, generally in the context of conservation efforts on the behalf of the Channel Islands National Marine Sanctuary. If you recall, you attended and spoke at a CINMS Advisory Council in Ventura a few years back in which I had presented findings on how noise may impact CINMS natural resources.

Based on our research, the various drafts of the EIS/EIR, and expert comments submitted by marine mammal experts like John Calambokidis up at Cascadia research, we're convinced that the proposed Cabrillo Port project would embody a significant new industrial presence regularly emitting harmful levels of noise as part of normal operations in to a large ocean area regularly inhabited by numerous marine mammal species ranging from endangered blue, humpback and fin whales, to migrating gray whales, to nearly every size of odontocete.

Interestingly, the Final EIS/EIR for the facility essentially acknowledges that noise from both construction and operations of the facility will cause both Level B and Level A take under the Marine Mammal Protection Act. The document presents a table of applicant-submitted noise levels for various operational activities of the facility, including one in which the peak broadband noise level will exceed 192dB. The table then states that this sound will exceed 120 dB, the NMFS threshold for Level B take under the MMPA, for more than 11 miles surround the facility. This radius of ensoufication comprises an area of more than 389 square miles of ocean.

Unfortunately, the document attempts to negate the harmfulness of these activities by stating that marine mammals are essentially not likely to be present in the project area. EDC has been working since last year to compile evidence and expert opinion to address this assertion, because we believe that numerous MMPA-protected and ESA-listed marine mammal species are indeed commonly present within this region of influence, even if systematic sighting effort hasn't been deployed in the immediate project area at levels comparable with the waters around the Channel Islands.

There are several other marine biological resource issues we're concerned about and will be commenting on, however that's a basic overview of the major noise issue at hand. You'll be interested to note that NMFS shares this opinion and has denied USCG the concurrence it requested that the project will not cause significant impacts to protected marine species.

I've attached three relatively brief documents for you for further information. First, a comment letter (1 page) submitted by John Calambokidis stating his opinion on the presence of certain ESA-listed whale species in the project area. Second, the most recent letter of correspondence from NMFS to the USCG (2 pages) summarizing their concerns about impacts to protected marine species.

Finally, I attached the Biological Resources Marine section of the Cabrillo Port Final EIS/EIR. While this document is a daunting 120 pages, the relevant discussions of noise emissions and noise impacts to marine mammals are centered around a few key passages:

3/27/2007

- presence of MMPA-protected and ESA-listed species runs from: 12-28
- review of correspondence between USCG and NMFS on MarMam issues: 38 and 39
- review of disclosed noise emissions, potential impacts to marine biota, and mitigation measures: 66-81

If you have any problems with the attached files please let me know immediately and I can resend or fax them.

I would be happy to speak with you over the phone at your convenience to discuss these important issues, as well as the additional concerns regarding marine mammal impacts that EDC has identified. Simply let me know when a good time would be for me to call.

Thanks in advance for your time and your interest in this matter.

--

Shiva Polefka
Marine Conservation Analyst
The Environmental Defense Center
906 Garden Street Santa Barbara CA 93101
p: 805/963.1622 x109 | f: 805/962.3152 | m: 650/867.0078

<http://www.EDCnet.org>



Phone: (360) 943-7325
FAX: (360) 943-7026
Homepage: www.cascadiaresearch.org

31 March 2006

Dwight E. Sanders
California State Lands Commission
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825

Dear Mr. Sanders:

I have reviewed the sections on cetaceans in the March 2006 revised draft EIR for the Cabrillo Port LNG. I focused on the section on "Special Status Species" under Section 4.7 relating to humpback and blue whales. These are two endangered large whale species that I have worked with extensively off the California coast and in the proposed project area.

Some of the material in the draft EIR attributed to Carretta et al. (2002) is in fact based on my work and publications. We have been conducting long-term photographic identification and monitoring of both humpback and blue whales off California since 1986. For both species we have over 1,500 different individuals identified from natural markings and which form the basis for abundance estimates and migratory movements of these two populations.

I disagree with the conclusion of the revised draft EIR that the occurrence of both species would be very unlikely near the project area. While it is true that some of the highest densities of blue whales occur along escarpments and not necessarily close to shore, it is not reasonable to infer from this that they would not occur near the project area. I know from our own observations and those of others that blue whale concentrations have sometimes occurred not far from the proposed site. This would indicate blue whale occurrence at or very near the project site should not be considered unlikely and in fact should be expected.

The document also implies that the proposed site is outside the typical habitat of especially blue whales because it is close to the mainland coast of southern California. We have sighted blue and humpback whales in waters not far from the proposed project area. There have also been sightings made by other boaters and even shore observers of blue and humpback whales not far from the project area including to the east (inshore). The proposed project area is actually in deeper water and closer to shore than many of the sightings we have made of humpback and blue whales off California. Therefore the implication that the proximity of the proposed site to shore puts it outside the typical habitat of either of these whale species is not accurate.

Please let me know if there is any additional information I can provide.

Sincerely,

John Calambokidis
Research Biologist

Waterstreet Building 218½ West Fourth Ave. Olympia, Washington 98501





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802- 4213

JAN 31 2007

In response, refer to:
151404SWR2004PR13870:MLD

Mark A. Prescott
Chief, Deepwater Ports Standards Division
U.S. Coast Guard
2100 Second Street, S.W.
Washington, D.C. 20593-0001

Dear Chief Prescott:

NOAA's National Marine Fisheries Service (NMFS) has reviewed your letter dated December 21, 2006, requesting NMFS' concurrence with the U.S. Coast Guard's (USCG) determination under Section 7 of the Endangered Species Act (ESA) (16 U.S.C. § 1536(a)(2)) on the effects of the construction and operation of the proposed Cabrillo Port Deepwater Port on listed species. The proposed Deepwater Port would be located approximately 14 miles off Ventura County, on the shoreward side of the Southern California Bight (SCB). The applicant, BHP Billiton, has proposed a floating, storage, and regasification unit for transforming liquefied natural gas (LNG) back to its gaseous state. USCG has requested that NMFS concur with its determination that "this project will not likely affect the continued existence of any threatened or endangered species or lead to the destruction of critical habitat" (Page 2 of USCG December 21, 2006 letter).

The December 21, 2006, letter disagrees with NMFS' recommendation in our letter dated July 14, 2006, that the Region of Influence (ROI) be expanded beyond the SCB to include waters from the project location to the U.S. Exclusive Economic Zone (EEZ). As stated in the December 21, 2006, letter, and in the Draft Environmental Impact Statement/Report (EIS/EIR) and the Revised Draft EIR, the possibility of impacts to marine mammals and sea turtles from ship strikes and possible avoidance behavior by these animals in response to increase ship traffic associated with the project does exist. NMFS supports USCG's recommendation that any license that is granted will include a condition that all LNG carriers transit in the specific east-west transit lanes within the EEZ. However, the action area of the project should include all areas to be affected directly or indirectly by the action, and not merely the immediate area involved in the action (50 CFR 402.02). The action area is considered to be all terrestrial and aquatic environments affected by the construction and operation of the LNG terminal and pipelines. The marine portion of the action area should therefore be considered to extend from the marine basin of the Cabrillo Port LNG terminal including all LNG traffic lanes within the EEZ of the Pacific Ocean.

In the December 21, 2006, letter USCG states that noise impacts associated with the construction of the proposed project may result in both Level A and Level B takes under the Marine Mammal Protection Act (MMPA). Given this determination, NMFS recommends that USCG and/or the applicant apply for a Letter of Authorization (LOA) under the MMPA for construction operations. USCG also states that noise impacts associated with the operations of



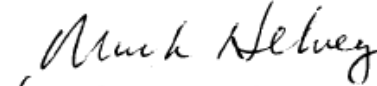
the proposed project may result in Level B takes under the MMPA. NMFS recommends that USCG and/or the applicant apply for either an Incidental Harassment Authorization (IHA) or LOA under the MMPA for operations of the proposed project. In addition, the December 21, 2006, letter states that "Noise from construction of pipelines under certain scenarios may be likely to adversely affect some marine mammal species." These takes associated with construction and/or operations, may include ESA-listed marine mammal species. Typically, any noise impacts to marine mammals are also likely to impact sea turtles. A take of an ESA-listed species is an adverse effect, therefore, we cannot concur, at this time, with USCG's determination on Page 2 of the December 21, 2006, letter that this project is not likely to adversely affect ESA-listed marine mammal or sea turtle species.

Mitigation and monitoring plans (Plans) have not yet been developed at this stage of the Deepwater Port licensing process because the license may not be granted. Although the Draft EIS/EIR and Revised EIR describe some of the impacts that may occur as a result of the project and state that Plans will be prepared, details on proposed measures to minimize or avoid harm to protected species were not provided to NMFS. NMFS cannot concur with USCG's findings without having the opportunity to review proposed mitigation and monitoring protocols. NMFS would like to accept USCG's offer to participate in the development of these mitigation and monitoring protocols and looks forward to working together on the Plans. Please note that these Plans will need to be available in order to proceed with either the LOA or IHA application process under the MMPA.

The December 21, 2006, letter states that any decommissioning will be included in a separate project-specific document, pursuant to the National Environmental Policy Act. NMFS supports USCG's recommendation to include a licensing condition for any license granted that will ban the use of explosives during decommissioning. As stated in the December 21, 2006, letter in advance of any decommissioning that is undertaken, USCG or applicant, shall provide NMFS with the opportunity to review the proposed decommissioning process to identify potential impacts to protected species.

These comments are provided in accordance with the ESA and MMPA. We appreciate your efforts to comply with Federal regulations and to conserve protected species. As described in this letter, additional information is required before NMFS can proceed with the consultation for this project. Please contact Monica DeAngelis at 562-980-3232 or Monica.DeAngelis@noaa.gov, if you have any questions concerning this letter or if you require additional information.

Sincerely,


for Rodney R. McInnis
Regional Administrator

Diane Livia

From: Alison Dettmer
Sent: Wednesday, March 28, 2007 10:23 AM
To: Diane Livia
Subject: FW: Followup items on Cabrillo Port LNG and marine mammal impacts

Another ex parte.

-----Original Message-----

From: Vanessa Miller
Sent: Wednesday, March 28, 2007 11:22 AM
To: Tom Luster; Alison Dettmer; Jeff Staben
Subject: FW: Followup items on Cabrillo Port LNG and marine mammal impacts

Ex parte.

-----Original Message-----

From: LWan22350@aol.com [mailto:LWan22350@aol.com]
Sent: Tuesday, March 27, 2007 5:24 PM
To: Vanessa Miller
Subject: Fwd: Followup items on Cabrillo Port LNG and marine mammal impacts

Enter into my ex-parte file

AOL now offers free email to everyone. Find out more about what's free from AOL at AOL.com.

Diane Livia

From: Shiva Polefka [shiva@edcnet.org]
Sent: Tuesday, March 27, 2007 9:01 AM
To: Sara Wan
Cc: Linda Krop
Subject: Fwd: Followup items on Cabrillo Port LNG and marine mammal impacts

Good Morning Sara,

I think you may be interested in the email below that I sent to Mr Delaplaine, comparing noise impacts to marine mammals from the Cabrillo Port proposed technology with that of the Northeast Gateway LNG facility off Massachusetts, which is further along in the permitting process and based on technology already in operation in the Gulf of Mex.

Bottom line-- significantly more rigorous, comprehensive mitigation and monitoring measures, and at least two orders of magnitude less intense of noise emissions than Cabrillo Port.

----- Original Message -----

Subject: Followup items on Cabrillo Port LNG and marine mammal impacts

Date: Tue, 27 Mar 2007 00:01:34 -0700

From: Shiva Polefka <shiva@edcnet.org>

To: mdelaplaine@coastal.ca.gov

Hi Mr Delaplaine, thanks for your time on the phone today.

Per our conversation, I wanted to follow up with you on a few items you may find interesting and useful.

First and foremost, please see the attached notice from the Federal Register on a request for authorization to take marine mammals from the proposed Northeast Gateway offshore LNG terminal (offshore Mass.). As I was describing, Northeast Gateway delivers vaporized LNG to shore using "shipboard regasification," in which specialized LNG carrier vessels attach to an underwater mooring point and pipeline, rather than a floating platform.

For our purposes, I think the notice is interesting for several reasons. First, note the detail of acoustic data provided relative to Cabrillo Port. Actual empirical data is available from an analogous facility in operation in the Gulf.

Second, note the proposed noise levels of Northeast Gateway relative to Cabrillo Port-- for docking of tankers at Northeast Gateway (what they refer to as "positioning" and "coupling"), maximum source levels are identified as 170dB (page 4), more than two orders of magnitude less intense than the 192dB level associated with standard docking activities

3/28/2007

at the Cabrillo Port FSRU. Importantly, Woodside Natural Gas Inc. is currently proposing a system essentially identical to Northeast Gateway ("OceanWay LNG") for a site approximately 20 miles offshore Los Angeles. The two other Southern California proposals, Esperanza and Clearwater (aka Platform Grace) propose alternative systems but also do not require an FSRU or tug-assisted docking, suggesting they too would emit noise of orders of magnitude less intensity. The bottomline is that an FSRU is not indispensable to offshore LNG, and is not environmentally preferable. [This holds true with respect to air emissions as well but thats another conversation].

Finally, please note the rigor of the monitoring and mitigation measures proposed in the Northeast Gateway application, to mitigate harm to marine mammals in the project area from noise and shipstrike (page 7). Examples include: requiring two experienced, NOAA-trained special status species monitors per construction vessel with clearly articulated protocols for data recording and a requirement to initiate activity shutdown; implementation of a Passive Acoustic Monitoring (PAM) system, in partnership with research institutions; training in marine mammal sighting for all LNG carrier vessel crew associated with navigation; emplacement (at the expense of the applicant) of 10 acoustic detection buoys; and speed restrictions and a clearly articulated deceleration protocol for LNG carrier ships entering the region, to reduce the risk of incidental shipstrike.

Given that the Southern California Bight has a similar, if not greater richness of protected whale and turtle species than New England, including species such as fins, blues, and humpbacks that are both endangered (with very low potential biological removal numbers) and documented as subject to lethal shipstrikes, there is no reason why Cabrillo Port should not be required to reduce its level of marine mammal impacts with a similar if not more rigorous suite of monitoring and mitigation measures. Unfortunately, as we discussed, the current mitigation measures proposed in the Final EIS/EIR are grossly inadequate and a shade of those proposed for Northeast Gateway, a project that, as described above, has a lower potential to impact whales.

Thanks again for your interest and your time. Let me know if I can provide any further information. I'll forward you other documentation we discussed (ie the Calambokidis report) as soon as possible.

--

Shiva Polefka

The Environmental Defense Center
906 Garden Street Santa Barbara CA 93101
p: 805/963.1622 x109 | f: 805/962.3152 | m: 650/867.0078

<http://www.EDCnet.org>

3/28/2007

--
Shiva Polefka

The Environmental Defense Center
906 Garden Street Santa Barbara CA 93101
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<http://www.EDCnet.org>

**PUBLIC LETTERS
REGARDING CC-079-06
BHP BILLITON CABRILLO PORT**

A

Dear Coastal Commission: I'm writing this letter concerning the LNG terminal

That's currently under planning for the counties of Los Angeles

and Ventura. The issue of the plans making probable impacts

to the Marine Protected Area in the region. The destruction

of our coastline and its ecosystem has already been disrupted

severely due to human activity. And it is my belief, as a

~~student~~ student of UCSB as well as a residence of LA county, that

we as a community should not concur with the process

of building LNG terminals along our coastline. Thank You

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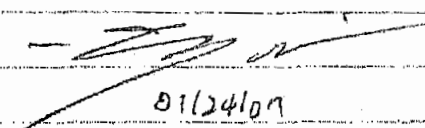
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we as a community should not concur with the process

of building LNG terminals along our coastline. Thank You


01/24/07

1/24/07

Dear Coastal Commission,

As a member of the Isla Vista Surfrider,
I am extremely disheartened to ^{learn} ~~hear that~~
the ~~coastal~~ Commission's decision to hear
the proposal for BHP's LNU terminal
so far from the pristine coastline it
impacts. The commission is excluding countless
members of affected communities from
participating in the decision.

Unlike other LNU ~~oper~~ operations, this
project would emit more than 500 tons of
smog, threaten whale migration, and
industrialize the coast.

I urge the commission to move
the hearing to the Malibu and Ventura
~~community~~ communities so that they

1-24-07

Dear Coastal Commission,

I want to let you know just how important I feel it is that the hearings concerning the construction of the LNG towers be held in either Malibu, or Ventura California. I feel this is important because the people who live in these coastal communities are the ones who must endure the physical, aesthetical and environmental consequences of the liquid natural gas industry. Furthermore, I want to let you know that I think the implementation of ~~of~~ regulations protecting our coast and marine life from such destruction is more than necessary. We need to protect our coast so we can still enjoy it in 10 years!

Thank you for your time,

1/24/07

Dear Coastal Commission,

as an Aquatic Biology student at UCSB I am extremely concerned with the well-being of the ocean and its marine life. The proposal for giant tankers off of the Malibu coast will only serve to harm the coastal environment. At least allow the hearing to take place in Malibu, where the affected individuals live. This will give the opportunity for those relevant to the situation to voice their opinions.

Thank you,

RECEIVED

FEB 02 2007

CALIFORNIA
COASTAL COMMISSION

**Alison J. Dettmer
California Coastal Commission
Manager: Energy and Oceans Resources Unit
45 Fremont Street, Suite 2000
San Francisco, CA 94105**

Deadly noise from BHP Billiton's proposed LNG plant between Oxnard and Malibu must be addressed as the grave risk it is to our protected marine mammals. It may threaten their very existence.

Clearly, low-frequency sound has a serious effect on whales and dolphins because they rely on their hearing for echo location and communication.

Hence, tucked deep within BHP Billiton's "Cabrillo Port" DEIR, March 2006, volume 1 (4.7-54, 12) is this statement:

"Noise from construction and operation vessels or equipment could disrupt migration; interfere with or mask communications, prey and predator detection, and/or navigation; cause adverse behavioral changes; or result in temporary or permanent hearing loss."

Also in the DEIR (4.7-62, 8) are the sound levels (in decibels, or dB) and frequencies (in Hertz, or Hz) that are projected to be emitted by the offshore facility: "Broadband sound frequency (22 Hz to 11.3 kHz)- 192.6 dB --- 31.5 Hz at 185 dB --- 250 Hz at 180.7 dB --1000 Hz at 171.6 dB --- 4000 Hz at 160.8 dB." It is important to note that sound levels (dB) are logarithmic, i.e. 150 dB is 10 times that of 140 dB and 160 dB is 100 times that of 140 dB.

Please note that the noise level will reach 192.6 decibels.

There have been many research studies done on the effects of sound on our marine mammals and fish, and the research is ongoing. US Navy SONAR (sound) tests affecting marine mammals show that gray whales avoid sounds over 120 dB in their migratory path. Sound has been suspected in the stranding of whales and dolphins and the separation of mother whales from their calves. Sound has also been implicated in adverse effects on fish hearing and the viability of their eggs. Adverse effects on vestibular function (inner ear balance) may have caused the stranding of the beaked whales in the Mediterranean (Nature, 1998) when they were exposed to low frequency sound at 150-160 dB. According to the National Resources Defense Council (NRDC), "Other whale strandings

around the world have been associated with high-intensity sound, including in the Bahamas, Canary Islands, Virgin Islands and North Carolina. Analyses of the Bahamas stranding, which is among the most well-documented and which resulted in lethal hemorrhaging, suggests that whales there were likely exposed to no more than 160 dB for 20-30 seconds."

A prevalent misconception that needs clarifying is that SoNAR is somehow different from sound. SoNAR (Sound Navigation And Ranging) is nothing more than a sound pulse or "ping" that is bounced off an underwater object. The timing of the return sound signal is then calculated for distance and bearing. Whales, dolphins and bats use sound in the same manner. It's called echo location.

As for humans, according to the US Navy's test results of the bioeffects of low frequency (100-500 Hz) underwater sound, a small number of divers rate their aversion to the sound as very severe at 140-148 dB. "At 157 decibels, it is estimated that at least 20% of divers will immediately abort an open ocean dive. At 160 decibels, the lung resonance created by a sound pressure wave may induce "'significant decrements in vestibular function' " (inner ear balance). (A quote from Marsha L. Green, Ph.D., Ocean Mammal Institute)

Although the "Cabrillo Port" DEIR states that the broadband sound of their LNG facility would drop off to 122 dB within .6 miles from the source, it also states that (4.7-62, 15) the shallow waters of the (Channel) Islands would help attenuate (lessen) the sound. This indicates that BHPB is well aware of, or suspects the presence of, a SoFAR sound channel, as the nearest island is nearly 21 miles away from the sound source. The phenomenon known as Sound Fixing and Ranging (SoFAR, or sound channel) exists in all our oceans. In its simplest terms, a sound wave form is "trapped" into a sound channel that can carry the sound literally hundreds of miles, "even across entire ocean basins," with very little loss in its intensity. Sound caught in a SoFAR channel travels downward until it is bent upwards by the denser water at the bottom of the channel and then it is bent back down by the less dense water at the top of the channel. Thus, the physics of SoFAR are entirely dependent on the density of the water at both the top and bottom of the channel. This can vary with depth (pressure), temperature of the water, and salinity. There is never a fixed upper and lower limit.

The Cabrillo Port, or Floating Storage and Re-gasification Unit (FSRU), would be located in water at a depth 2750 feet, according to the marine charts. SoFAR channels can run deep at lower latitudes and very near the surface in higher latitudes. A blanket, or layer of sound, radiates out from a propagation source in

through as they dive, forage, and travel in order to breed and give birth. The whales will avoid this barrier of sound and the noise can effectively create an obstacle to their very survival as a species.

The Natural Resources Defense Council has twice raised the issue of sound affecting our marine mammals, and it has never been properly addressed in the DEIR.

The existence of SoFAR sound channels has not been examined at all in the Draft EIR. There are absolutely no data or studies. This is a glaring and alarming omission, especially since Sound Fixing and Ranging, as termed by the military, has been known since WW II, when it was used to help locate our downed airmen--often several hundred miles away.

Sources:

"Cabrillo Port" Draft Environmental Impact Report

United States Navy

NOAA Fisheries (National oceanic and Atmospheric administration)

NOAA ocean explorer

Natural Resources Defense Council (NRDC)

Ocean Futures Society

Ocean Mammal Institute

The National Academies Press

Federal Armed Forces Underwater acoustic and Marine Geophysics Research Institute

Alison J. Dittmer
California Coastal Commission
Manager: Energy and Oceans Resources Unit
45 Fremont Street, Suite 2000
San Francisco, CA 94105

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MAR 09 2007

CALIFORNIA
COASTAL COMMISSION

We don't need what Liquefied Natural Gas will give us

- (1) 25 million tons of global warming gasses yearly**
- (2) 484 tons of air pollutants blowing ashore yearly**
- (3) Noise so loud that it can kill our whales and other marine mammals**
- (4) Lack of environmental justice for our 68 to 72% Latino population**
- (5) Scary security and safety concerns for our communities**
- (6) More natural gas when we already have enough**

Note: According to the American Gas Association there will be enough natural gas in the U.S. to last well into the next century, without importing foreign LNG

Eugene D. Hubbard

RECEIVED

MAR 19 2007

**CALIFORNIA
COASTAL COMMISSION**

**Alison J. Dittmer
California Coastal Commission
Manager: Energy and Oceans Resources Unit
45 Fremont Street, Suite 2000
San Francisco, CA 94105**

An unintentional oversight?

BHP Billiton's floating liquefied natural gas (LNG) re-gasification unit is proposed to be anchored in waters 2,750 feet deep.

At our latitude, 34 degrees north, SoFAR sound channels run 1,600 to 2,200 feet deep and can extend for hundreds of miles.

The presence of these sound channels has not been addressed at all in the final EIS/EIR.

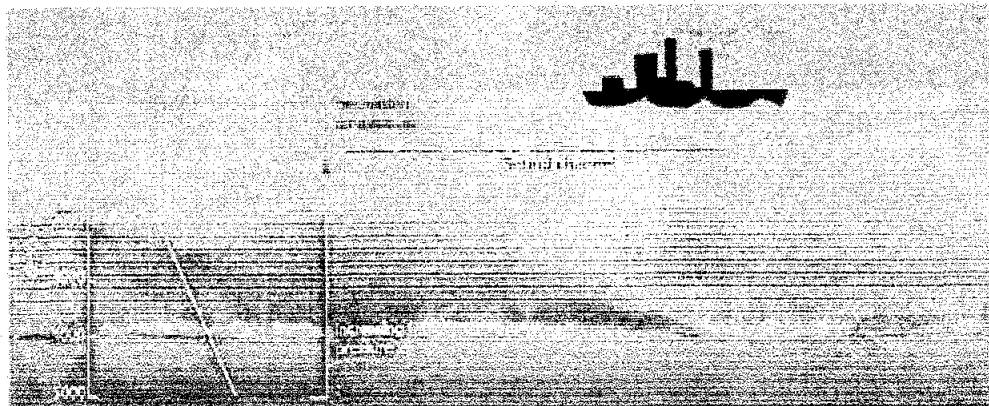
This is a glaring omission that could spell the extinction of our migratory gray and humpback whales.

Sincerely,

Eugene D. Hubbard

**2509 Grapevine Dr.
Oxnard, CA 93036**

Sound Fixing and Ranging (SOFAR)



How does SOund Fixing and Ranging (SOFAR) work?

This "channeling" of sound occurs because of the properties of sound and the temperature and pressure differences at different depths in the ocean. The ocean is divided into horizontal layers in which the speed of sound is greatly influenced by temperature in the upper layers and by pressure in the deeper layers. As temperature decreases, the speed of sound decreases, and as pressure (depth) increases, the speed of sound increases. Sound waves bend, or refract, towards the area of minimum sound speed. Therefore, a sound wave traveling through a thermocline (a region of rapid change in temperature with depth) tends to bend downward as the speed of sound decreases with decreasing water temperature, but then is refracted back upward as the speed of sound increases with increasing depth and pressure. This up-down-up-down bending of low-frequency sound waves allows the sound to travel many thousands of meters without the signal losing significant energy. The depth of this "channel" varies in different oceans depending on the salinity, the temperature, and depth of the water. At low and middle latitudes, the SOFAR channel axis lies between 600-1200 m below the sea surface. It is deepest in the subtropics and comes to the surface in high latitudes, where the sound propagates in the surface layer. Scientists often take advantage of the properties of the SOFAR channel. We have learned that by placing hydrophones at just the right depth (that is, at the axis of the sound channel) we are able to record sounds such as whale calls, earthquakes and man-made noise that occur many kilometers from the hydrophone. As a matter of fact, sometimes we can hear low-frequency sounds across entire ocean basins!

Related Links

[Sound in the Sea: Understanding Ocean Acoustics](#)

1/24/07

Dear Coastal Commission,

As a lifelong coastal resident I have always had a deep care and concern for the California Coastline. I have recently moved to Santa Barbara to attend UCSB, and I was very disappointed to find oil rigs obstructing the natural beauty of the ocean. LNG would cause but another obstruction, not only this but it would also obstruct the fragile eco-system of the area. I feel that the LNG hearing should be held where the people who would be effected by it most could speak out. Instead of SLO, I believe it should be held down South nearer to Malibu and Ventura. If we can't stop this proposal hearing altogether, then it should ~~be~~ at least be in the respected area it would effect.

Sincerely,

1/24/07

Dear Coastal Commission,

I am writing you regarding my concern for the proposed Liquefied Natural Gas (LNG) port on the Ventura coast. There are many downsides to building this port, as it will be highly detrimental to the earth and the wildlife both near the port and on the land. Although LNG is a fairly safe gas, its transport is very dangerous, and transferring it from the ships to the port in turbulent seas is very unsafe. Also, the underwater pipe that will transport the LNG from the port to the land will ~~disrupt~~ disrupt the local marine life. Additionally, the transportation of the LNG from Australia will produce large amounts of emissions and contribute to the traffic in the oceans. Overall, the LNG port is highly unnecessary and already has high opposition from the communities of Ventura and Malibu. Using LNG will take away incentive for using other sources of renewable energy such as conservation. Please consider my letter in your decision.

Thank-You,

Isia Vista Surfado

to

Received from:
Eugene d. Hubbard
2509 Grapevine Dr.
Oxnard, CA 93036

RECEIVED

MAR 22 2007

CALIFORNIA
COASTAL COMMISSION

American Gas Association

[http://www.aga.org/Content/NavigationMenu/About Natural Gas/Natural Gas Background/Supply Outlook/Supply Outlook.htm](http://www.aga.org/Content/NavigationMenu/About%20Natural%20Gas/Natural%20Gas%20Background/Supply%20Outlook/Supply%20Outlook.htm)

Natural Gas Supply Outlook

Ample supplies of natural gas are available at competitive prices to help meet the nation's growing energy needs. Because natural gas is the cleanest burning fossil fuel, it is playing an increasing role in helping to attain national goals of a cleaner environment, energy security and a more competitive economy.

The natural gas industry currently provides about 25 percent of the energy consumed in the United States, and accounts for 31 percent of the nation's energy production. It supplies more than one-half of the energy consumed by residential and commercial customers, and about 41 percent of the energy used by U.S. industry.

One of the most frequently referenced estimates of conventionally recoverable U.S. natural gas resources is that of the Potential Gas Committee (PGC) of the Colorado School of Mines. Based on its 1997 report, total U.S. recoverable natural gas resources are 1,234 trillion cubic feet (Tcf), including the U.S. Department of Energy's (DOE) estimate of 166 Tcf of proved reserves. This translates into a 65-year supply at current production levels. Many energy experts believe that the United States has several hundred years of natural gas supplies.

After a decade of weak demand, beginning in the mid-70s, which was characterized by falling prices and a supply surplus, natural gas demand in the United States has increased about 35 percent since 1986. The American Gas Association projects that natural gas demand will continue to grow well into the next century, and that there will be growing supplies to meet new demand at competitive prices.

The supply surplus in the 1980s discouraged drilling activity. Despite the lower drilling levels, large amounts of new natural gas reserves have been found, primarily because of new exploration and drilling technologies. For the past decade, additions to proved reserves annually have averaged more than 90 percent of gas production. As natural gas demand increases and technology continues to improve recovery rates, it is expected that there will continue to be a high level of reserves replacement.

The natural gas industry can respond quickly to demand increases by using both lower-48 state sources and by developing near-term supplemental sources. This short-term capability is found in four supply categories. They are:

Uncommitted Nonproducing Reserves. There are significant gas reserves now available in the lower-48 states that are not being produced. DOE's Energy Information Administration estimates this nonproducing gas at 33 Tcf. Much of this gas could be brought to the market quickly (in less than a year), with an annual deliverability of about 0.75 Tcf.

Canadian Gas. U.S. companies currently have contracts with Canadian producers and marketers to import significant volumes of Canadian gas. In 1996, about 2.9 Tcf was imported.

Accelerated Infill Drilling. In the early 1980s, gas deliverability increased as a result of extensive infill drilling in known gas fields (adding new wells to existing fields to enhance extraction of gas). Many U.S. natural gas fields are excellent areas in which accelerated infill drilling would further increase production capability.

Liquefied Natural Gas. There are four liquefied natural gas (LNG) terminals in the United States that were operational in the early 1980s. Two are operating today -- and all of them could become operational again, if demand warranted. Collectively, these terminals have the capacity to handle up to 850 billion cubic feet (Bcf) per year. In the event that additional gas supplies were needed in the United States, 200 Bcf could be realized from LNG within 12 months from the two terminals currently operational, and up to 500 Bcf/year with longer lead times.

Overall, a short-term gas supply response potential of over 1.2 Tcf/year exists, most of which could be available in about a year. These additional sources should ensure that natural gas supplies will grow in response to rising demand.

. Coalbed methane has become a significant supply source. It is currently estimated that more than 146 Tcf of methane can be recovered. Department of Energy statistics indicate that 1.0 Tcf of coalbed methane was produced in the United States in 1996.

Two other sources of gas energy that hold potential for the future are biomass and urban landfills. Although these sources are renewable, market demand and the economics of production have limited their development. Biomass, which refers primarily to either land or aquatic plant material, can be processed to produce gas energy. However, further research in harvesting and conversion techniques are needed. Urban landfills currently produce about 4 Bcf of high-Btu gas a year.

Large deposits of natural gas await discovery in the outer continental shelf (OCS) along the U.S. coastline. Currently, offshore areas provide about 28 percent of the total natural gas produced in the United States. Most of this gas comes from the Gulf of Mexico. In addition to proved reserves of over 30 Tcf, it is estimated that total OCS gas resources, including Alaska, amount to about 272 Tcf.

. Future natural gas supply depends in large part on new technologies and on the economics of production. However, given the magnitude of the resource base from which future supplies will be drawn and the diversity of supply sources, there is no doubt that adequate natural gas supplies can be available far into the next century.

Cascadia Research Collective



a non-profit research organization

Phone: (360) 943-7325
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Homepage: www.cascadiaresearch.org

31 March 2006

Dwight E. Sanders
California State Lands Commission
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825

Dear Mr. Sanders:

I have reviewed the sections on cetaceans in the March 2006 revised draft EIR for the Cabrillo Port LNG. I focused on the section on "Special Status Species" under Section 4.7 relating to humpback and blue whales. These are two endangered large whale species that I have worked with extensively off the California coast and in the proposed project area.

Some of the material in the draft EIR attributed to Carretta et al. (2002) is in fact based on my work and publications. We have been conducting long-term photographic identification and monitoring of both humpback and blue whales off California since 1986. For both species we have over 1,500 different individuals identified from natural markings and which form the basis for abundance estimates and migratory movements of these two populations.

I disagree with the conclusion of the revised draft EIR that the occurrence of both species would be very unlikely near the project area. While it is true that some of the highest densities of blue whales occur along escarpments and not necessarily close to shore, it is not reasonable to infer from this that they would not occur near the project area. I know from our own observations and those of others that blue whale concentrations have sometimes occurred not far from the proposed site. This would indicate blue whale occurrence at or very near the project site should not be considered unlikely and in fact should be expected.

The document also implies that the proposed site is outside the typical habitat of especially blue whales because it is close to the mainland coast of southern California. We have sighted blue and humpback whales in waters not far from the proposed project area. There have also been sightings made by other boaters and even shore observers of blue and humpback whales not far from the project area including to the east (inshore). The proposed project area is actually in deeper water and closer to shore than many of the sightings we have made of humpback and blue whales off California. Therefore the implication that the proximity of the proposed site to shore puts it outside the typical habitat of either of these whale species is not accurate.

Please let me know if there is any additional information I can provide.

Sincerely,

John Calambokidis
Research Biologist

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Sincerely,

John Calambokidis
Research Biologist

March 23, 2007



Oxnard
Chamber of Commerce

Mr. Patrick Kruer
Chair, California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

RE: Federal Docket Number: USCG-2004-16877
State Clearinghouse Number: 2004021107

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MAR 26 2007
CALIFORNIA
COASTAL COMMISSION

Dear Mr. Kruer:

The Oxnard Chamber of Commerce represents 700 businesses and more than 25,000 jobs that rely upon a ready supply of clean burning and efficient natural gas. We are concerned about the price of natural gas, and we support expanding the state's supply. Specifically, we support BHP Billiton's Cabrillo Port liquid natural gas facility.

The final Environmental Impact Study/Report sites the California Energy Commission and the California Public Utilities Commission's 2005 Energy Action Plan that LNG must be included in diversifying the energy supplies for California. Our businesses cannot afford another energy crisis with blackouts and this project will help avoid that crisis.

With the facts about the need for supply stated by the experts and a responsible energy company like BHP Billiton ready and willing to construct and operate a safe, state-of-the-art project sited away from population centers, we have what we need to help secure our energy future in our county, our region and our state. With coal, oil, and nuclear energy declining in use, natural gas is needed as a source of cleaner and reliable energy so businesses can continue to operate and succeed. Additionally, LNG is an important "bridge" fuel that can provide cleaner energy while we transition to renewable energy sources.

Cabrillo Port will increase the availability of reliable energy sources, which is critical to the continued success of the business community in Ventura County as well as throughout California. We recognize the value of the project's overall pollution reduction program that BHP will implement to improve the air quality in the region, particularly powering the LNG carriers supplying Cabrillo Port with clean-burning natural gas instead of diesel fuel.

The Oxnard Chamber of Commerce encourages the federal and state regulators to issue permits for this project so we can have a new source of natural gas in the near future.

Sincerely,

Nancy Lindholm
President/CEO

March 23, 2007

Chairman Patrick Kruer
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

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MAR 26 2007

CALIFORNIA
COASTAL COMMISSION

Re: BHP Billiton LNG Cabrillo Port – Federal Docket No. USCG-2004-16877

Dear Chairman Kruer:

I am a resident of Oxnard, California. Having lived here for several years I truly love our coastline and beautiful California environment.

California won't run out of energy by May.

Safety of, and need for, LNG are key to public confidence in this additional energy source. Cabrillo Port also has significant air pollution, impacts on marine wildlife, commercial fishing, water quality, recreation, noise and light issues, only some of which can be mitigated.

According to the GAO, the U.S. Government Accountability Office, there are still outstanding safety concerns with this proposal.

According to U.S. Rep. Henry Waxman, there are concerns that politics influenced the EPA in exempting Cabrillo Port from tough Ventura County air-quality standards. The EPA's illegal exemption of the project from the requirements of the Clean Air Act is the subject of *two ongoing Congressional investigations* - one by Representative Henry Waxman, the Chair of the House Committee on Oversight and Government Reform and one by Senator Barbara Boxer and Representative Lois Capps of the Senate Committee on the Environment and Public Works with oversight over the EPA.

The EPA's reversal on holding Billiton to Ventura County's strict air quality rules is very disturbing.

You and all Californians need more information.

Please do not approve this application!

Sincerely,

Nancy Symons
5222 Sandpiper Way
Oxnard, CA 93035

MARCH 23, 2007

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CALIFORNIA
COASTAL COMMISSION

Dear Director Peter Douglas,

My wife and I are native Californians, who because of business and family obligations, moved from our Los Angeles neighborhood to other locations in the United States. We knew however, when we retired, we would return to our home on the beautiful Pacific Ocean. We now reside in Oxnard. We realized that our return would mean renewed commitment to protect California's most important resource, its coastline. We grew up in Los Angeles at a time when public incineration of refuse was allowed, which polluted our lungs, and environment. We saw first hand the destructive effects on the coast by the 1969 Santa Barbara oil spill. We were in constant threat of human waste entering the Santa Monica Bay, closing beaches, killing marine life, and threatening the very existence of this fragile ecosystem. Thankfully, what grew out of these intolerable incidences' were The Clean Air Act, the Clean Water Act, and a slew of active groups of people and institutions committed to protecting the environment. When we came back to California, we were encouraged to see that our Governor and the Legislature took the lead by putting into law the new RPS (Renewable Portfolio Standard), which calls for energy efficiency and renewable energy sources by the year 2010, which would reduce our energy needs by 20% and reduce the amount of green house gasses. We thought that the will of the people had prevailed over the greed of International corporations, whose sole interest is making large sums of money, regardless of environmental consequences.

To our dismay, we see the Governor, the California State Lands Commission, and even the Environmental Protection Agency, infused with Bush Administration officials, seemingly ready to approve the BHP Billiton LNG terminal off the Oxnard coast. The EPA, the government agency sworn to enforce the laws of this nation, and to protect its people, animals and land, have given their support to this proposal. This, in turn, would break current law under the Clean Air Act, by exceeding Ventura County's air pollution standards. The proposed BHP Billiton LNG terminal and the tankers, the first of its kind anywhere in the world, would give off more than 200 tons of smog producing air pollution each year. In BHP Billiton's proposal, they admit that the port and its tankers would cause distraction of the marine life in the area. Some scientists think that this "distraction", in conjunction with the extraction of liquid natural gas in other parts of the world to supply this terminal, would lead to the extinction of the grey whale. We are at a crossroads of how we balance our energy needs to the safety and well-being of the environment. Conservation, repairing or rebuilding old or out-dated natural gas facilities in California, and supporting current law (RPS), is the direction this state should be heading towards. We should NOT go down the old road of depending on depleting fossil fuels that will choke our very existence. Let us NOT become the eco-terrorists of our time, who allow a proposal that will contribute to global warming, and decrease air quality. A proposal that will put our children, and our children's children at risk, and possibly lead to the extinction of the grey whale. A proposal that will create a potential target for terrorists, as any attack or possible rupture, could ignite an explosion of unparalleled strength, just a few miles off our coast. The choice seems obvious. Do NOT allow this horrendous proposal to succeed! If we do, the only thing we will be sure of, will be the further eroding of the principle that we are a county that believes, "in the people, and for the people," not just the wealthy few.

Concerned Ventura County (Oxnard) residents,
Chris, Linda and Sara Coudert

5120 Woolley Rd #1
OXNARD, CA 93035
(805) 985-2623

David Pierce
1717 East College Avenue
Lompoc, CA 93436
(805)735-8061
dpierce@impulse.net

23 March 2007

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MAR 26 2007

CALIFORNIA
COASTAL COMMISSION

Chairman Pat Kruer,
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Re: Cabrillo Port Liquefied Natural Gas Deepwater Port Final Environmental
Impact Statement/Environmental Impact Report

Dear Chairman Kruer,

I am disappointed that earlier comments on the 4.11 Geologic Resources and Hazards received such a limited response. The wholly simplistic treatment of the geologic risks masks a significant environmental factor. Observations from the recent papers by Fisher et al. (BSSA) and Sorlien et al. (JGR) already show that the offshore deformation in the area of the proposed pipeline is both recent and complex. The risks become obvious when a comparison is made to geology on land, adjacent to the project site. The FEIR would have us believe that the geologic setting simplifies dramatically at the shoreline. Ventura Basin Study Group Maps & Cross Sections HOPPS FTP site at the University of California Santa Barbara: Institute of Crustal Studies ([ftp://ftp.crustal.ucsb.edu/](http://ftp.crustal.ucsb.edu/)) reveal the on-shore complexity that may very well obtain in the off-shore and along the run of ocean bottom piping.

The FEIR's implicit assumption that the complexity of the tectonic system is adequately represented for environmental review purposes and risk assessment, with words suggesting that engineering solutions are available for unknown geologic risks, are inconsistent with available data.

In light of recent revelations in a Congressional report by the Government Accountability Office, the gravity of catastrophic failure, described by some as "stunning and scary", have been severely underestimated. For this reason, the geologic risks must be given a much higher level of significance before the environmental impacts can be evaluated and public adequately protected. Surprises similar to the Northridge Quake of 1994 are to be considered realistic risks near Sycamore Knoll and near the ocean bottom pipeline.

With stakes as high as they are for the great population directly impacted by this risk, an independent assessment of the geologic hazards by credentialed experts, not involved with the BHP Billiton project, is needed. This FEIR work must be carried out before the public can have confidence that a catastrophic engineering failure can be reasonably avoided.

Thank you for considering my comments,

David Pierce

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MAR 26 2007

CALIFORNIA
COASTAL COMMISSION

6353 Malibu Park Lane
Malibu, CA 90265
March 23, 2007

Chairman Patrick Kruer
California Coastal Commission
45 Freemont Street, Suite 2000
San Francisco, CA 94105-2219

Dear Chairman Patrick Kruer:

We are not scientists. But common sense tells us that the proposed BHP Billiton project known as Cabrillo Port should be stopped. We have both been active in meetings to try to terminate the project. It will not serve the citizens of Oxnard and Malibu well, along with the millions of Southern Californians who use our beaches, and it may impact their safety due to environmental factors or may cause danger because of possible explosions, not to mention that it will definitely affect our fragile sea life. We urge you to do what you can to dissuade Governor Schwarzenegger from approving this insane idea. This is our final chance to make our feelings known to Governor Schwarzenegger who has the sole veto power over this project.

Thank you.

Sincerely,

Eleanor and Herbert Reich