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Date Filed:	December 13, 2004
49th Day:	49 Days: Waived
Staff:	AD/ALM-SF
Staff Report:	January 28, 2004
Hearing Date:	February 16, 2005

STAFF REPORT
COASTAL DEVELOPMENT PERMIT APPLICATION

CDP Application No.:	**E-04-010**
Applicant:	**Atlantic Richfield Company (ARCO)**
Project Location:	State of California Tidelands Lease No. 421 (PRC-421), offshore of City of Goleta, two miles west of Coal Oil Point, Santa Barbara Channel.
Project Description:	Removal of remnant oil and gas pier structures; installation of four bird roost platforms and support piles; and construction and kelp seeding of artificial reef.
Substantive File Documents:	See Appendix A

SYNOPSIS

The proposed project consists of three principal components: (1) removing remnants of a 1930's-era oil and gas pier; (2) installing four piles and 800 square feet of bird roosting/nesting platforms; and (3) constructing an artificial reef on State Lease PRC-421, located about two miles west of Coal Oil Point, offshore of the City of Goleta, Santa Barbara County (see Exhibit 1).

Although the applicant for this coastal development permit is Atlantic Richfield Company (ARCO), the project is a joint ARCO/California Department of Fish and Game (DFG) endeavor. In 2000, ARCO originally applied to the California States Lands Commission (CSLC) to remove all of the remnant pier structures and return the site to its pre-development condition. In reviewing that project, DFG expressed serious concerns about removing the derelict structure because it currently serves as a prime roosting site for the California brown pelican (*Pelecanus occidentalis californicus*), a federal- and State-listed endangered species and a State fully protected species. The site also serves as a roosting and nesting site for the Brandt's cormorant (*Phalacrocorax penicillatus*), and is probably a roosting site for the double-crested cormorant (*Phalocrocorax auritus*), a State species of special concern. Since the pier is in a severe state of deterioration and likely to suffer a catastrophic collapse in the near future, DFG strongly recommended that the project include the construction of new bird platforms at the site to replace the remnant pier structure. DFG also recommended that the project include an on-site artificial reef to enhance offshore hard substrate and kelp habitat.

In response to DFG's concerns and recommendations, ARCO developed an alternative project that includes (1) removal of the remnant pier except for eight concrete caissons that are to be toppled in place, (2) installation of four bird platforms, and (3) placement of 3,000 cubic feet of quarry rock to augment the toppled caissons (see Exhibits 4 and 5) and form an artificial reef. DFG has approved the bird platform and reef designs, and CSLC approved the overall project in June 2004.

ARCO will undertake all pier removal work and construct the bird platforms and artificial reef. Once construction activities are complete, the CSLC will issue to DFG a new lease for the seafloor area of Lease PRC-421 occupied by the reef and bird platforms. This CDP will be transferred from ARCO to DFG at that time. DFG will then assume all liability and maintenance responsibilities for the reef and bird platforms. The reef has been designed specifically as kelp habitat. (After construction, the Santa Barbara Channelkeeper proposes to "seed" the reef with kelp and then monitor the success of kelp restoration efforts). The reef materials – the concrete caissons and quarry rock – meet DFG's artificial reef material requirements.

Proposed decommissioning and construction activities have the potential to adversely affect marine resources such as fish and marine mammals (due to explosives use during decommissioning) and kelp and natural hard substrate (due to vessel anchoring). To eliminate or significantly reduce any adverse marine resource impacts, the applicant proposes to implement an Anchor Mitigation and Hardbottom Avoidance Plan, an Explosives Operations Plan, a

Wildlife Protection Plan and a Marine Mammal Contingency Plan. (Details of these plans are included in section 4.4.2 of this report.) Also, the CSLC is requiring implementation of a Mitigation Monitoring Plan that requires, among other measures, detailed marine mammal monitoring and pre-and post-construction kelp surveys. Coastal Commission staff is recommending special conditions to address potential kelp loss and impacts to abalone. If project-related activities cause unavoidable kelp loss, as demonstrated by pre-and-post construction surveys, **Special Condition 4** requires the applicant to perform an additional post-construction survey one year after completion of the project. If the survey results demonstrate that the lost kelp has not fully reestablished, the applicant will be required to submit an amendment to this permit for kelp restoration and monitoring. **Special Condition No. 5** requires the applicant, within 30 days before project commencement, to survey the project area for abalone. **Special Condition No. 6** requires the applicant to follow the recommendations of NOAA Fisheries and DFG abalone experts, and not commence work until the Executive Director of the Coastal Commission is satisfied that the recommendations have been followed.

The purpose of the bird platforms is to provide long-term, secure roosting and nesting habitat for special-status seabirds consistent with the resource protection goals of the Coastal Act. If, however, the birds do not use the new structures for roosting and nesting, Coastal Commission staff is recommending they be removed. **Special Condition No. 8** requires the bird platforms to be monitored annually for a period of five years. If after five years the monitoring results demonstrate that seabirds are not using the platforms for roosting and/or nesting, the applicant must submit an amendment to this permit to remove the platforms.

Commission staff believes the proposed project, as conditioned herein, will be carried out in a manner consistent with the resource protection and use policies of the Coastal Act. Commission staff therefore recommends **approval** of the project, as conditioned.

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1.0 STAFF RECOMMENDATION

Approval with Conditions
The staff recommends conditional approval of the permit application.

Motion:

I move that the Commission approve Coastal Development Permit E-04-010 subject to conditions set forth in the staff recommendation specified below.

Staff recommends a **YES** vote. Passage of this motion will result in approval of the permit as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of Commissioners present.

Resolution:

The Commission hereby approves the Coastal Development Permit for the proposed project and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.

2.0 STANDARD CONDITIONS

1. **Notice of Receipt and Acknowledgment.** The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. **Expiration.** If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. **Interpretation.** Any questions of intent of interpretation of any condition will be resolved by the Executive Director or the Commission.

4. **Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. **Terms and Conditions Run with the Land.** These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

3.0 SPECIAL CONDITIONS

This permit is subject to the following special conditions:

1. **Scope of Project Approval.** This permit authorizes those project activities specifically described in section 4.2 of this staff report, except as modified by the conditions of this permit. Any modifications to the project shall require an amendment to this permit.

2. **Indemnification.** In addition to any immunities provided for by law, in exercising this permit, the applicant agrees to hold harmless and indemnify the Coastal Commission, its officers, employees, agents, successors and assigns from any claims, demands, costs, expenses and liabilities for any damage to public or private properties or personal injury that may result directly or indirectly from the project.

3. **Anchor Placements.** The locations of the nearshore anchor placements and temporary moorings shall be ground-truthed and surveyed by a diver no more than 30 days prior to project commencement, to determine if anchor site revisions could reduce impacts to kelp and hardbottom habitat.

4. **Kelp Monitoring.** The applicant shall perform pre- and post-construction kelp surveys as described in the *Work Statement for Pre- and Post-Demolition Assessment of Kelp Resources Associated with Removal of Remnant Pier Structure in State of California Tidelands Lease PRC-421, Santa Barbara County, California* (dated August 9, 2004 and revised December 13, 2004) ("Kelp Survey Plan"). In addition to surveying the anchor placements and anchor corridors, as specified in the Kelp Survey Plan, the applicant shall survey all areas in which project activities could potentially impact kelp. The pre-construction survey shall take place within the minimum feasible amount of time between the survey and the beginning of construction activities, and in any case within 30 days prior to the beginning of construction. The post-construction survey shall take place within the minimum feasible amount of time between the survey and the completion of construction activities, and in any case within 30 days after the completion of construction.

   A report shall be submitted to the Executive Director of the Coastal Commission (hereinafter, "Executive Director") within 60 days of completion of the post-construction survey, describing the results of the surveys and evaluating whether the loss of kelp is due to construction activities. If the report demonstrates there is loss of kelp due to construction activities, the applicant shall perform an additional post-construction survey one year after the completion of construction activities. A second report shall be submitted to the Executive Director within 60 days of completion of this third survey. If after one year any kelp lost due to project-related construction activities has not fully reestablished, the applicant shall within 60 days from submitting the final post-construction survey report

submit to the Coastal Commission an application for an amendment to this permit for kelp restoration and monitoring.

5. **Abalone Survey.** Within 30 days prior to project commencement, the applicant shall perform a pre-construction abalone survey as described in the *Work Statement for Pre-Demolition Assessment of Abalone Resources in Areas Associated with Demolition of Remnant Pier Structure in State of California Tidelands Lease PRC-421, Santa Barbara County, California* (dated September 1, 2004) ("Abalone Survey Plan"). If abalone are encountered in the project area, the applicant shall immediately notify NOAA Fisheries, DFG and the Executive Director, as described in the Abalone Survey Plan.

6. **Abalone Protection Measures.** The applicant shall follow NOAA Fisheries and/or DFG abalone experts' recommendations for protecting abalone that may be present at the project site. No construction activities shall occur until the Executive Director is satisfied that the recommendations of NOAA Fisheries and/or DFG have been followed.

7. **Clean Seas Contract.** Prior to commencement of the project, the applicant shall submit to the Executive Director a written copy of an executed Clean Seas Associate Member contract for on-water and shoreline oil-spill response, recovery and clean-up services, for the time frame that will cover all the project-related decommissioning and construction activities.

8. **Bird Roost Platforms.** For five years after construction of the bird platforms, the applicant shall monitor the use of the platforms by seabirds (i.e., California brown pelican, Brandt's cormorant, and double-crested cormorant). Monitoring shall occur at least annually and include identification and abundance of seabirds and roosting and nesting behavior. The applicant shall submit to the Executive Director by the end of each calendar year an annual seabird monitoring report, with a final report due at the end of the five-year monitoring program. If after reviewing the final report the Executive Director determines that the platforms are not being used by seabirds as a nesting/roosting structure, the applicant shall, within 90 days of the Executive Director's determination, submit an amendment to this permit to remove the bird platforms.

9. **Air Board Permit.** Prior to the issuance of this permit, the applicant shall submit to the Executive Director evidence that the Santa Barbara County Air Pollution Control District (APCD) has issued an Authority to Construct permit for the project.

4.0 FINDINGS AND DECLARATIONS

The Commission finds and declares as follows:

4.1 Project Setting and Background

In August of 1929, the State of California issued a lease for PRC-421, located about two miles west of Coal Oil Point in the Santa Barbara Channel, off the coast of the City of Goleta in the County of Santa Barbara (see Exhibit 1). Between 1930 and 1933, Bankline Oil Company drilled two wells (Wells No. 7 and No. 10) and constructed an oil development pier on the lease

site. The original structure consisted of a wooden causeway running from the beach to Well No. 7, located approximately 550 feet from shore, then further seaward to Well No. 10, located at the offshore end of the pier, about 850 feet from the shoreline. The pier was wide enough to allow vehicles to drive to each of the wells, while at each well location the pier was wider to allow for the placement of drilling and production equipment. Both wells were permanently plugged and abandoned by the late 1950's, and by 1958, most of the above-surface pier structures extending out to the offshore well had been removed. After abandonment, however, undersea pilings from the original causeway and an above-surface section of pier located at the offshore well (Well No. 10) remained in place.

There currently exists a visibly deteriorating remnant pier structure at Well No. 10, located approximately 850 feet offshore in about 32 feet of water (see Exhibit 2). Seafloor remains of the pier extend northeastward from the visible structure toward the shoreline. The pier remnants terminate within approximately 400 feet of the shoreline. The visible structure is composed of eight steel-reinforced concrete caissons with riveted steel trusses connecting them at the top. The steel trusses support the remains of a wooden deck. Each caisson is nominally eight feet in diameter, extends approximately 18 feet above the water, and is composed of four steel 'H' piles surrounded by a composite of concrete and reinforcing rods. The caissons are arranged in three parallel rows with a northwest to southeast orientation. Together, the eight caissons form a thick "L" shape measuring about 60 feet by 60 feet. A portion of the northwestern-most caisson has collapsed in previous storm events, and is currently resting on the seafloor. A conductor pipe from a previously abandoned well (Well No. 10), estimated to be 24 inches in diameter, is located within the northwest section of the structural footprint.

Metal I-beam piling remnants of the original (now absent) causeway are aligned toward the shoreline, terminating before reaching the shoreline. These pilings extend up to 4 feet above the ocean bottom. Many of the piles are bent over (towards shore) or covered with sand; however, none of the piles extend above the water surface. In addition, a second well conductor pipe (from Well No. 7) measuring 18 inches in diameter extends to 8 feet above the ocean bottom, and is located within the original pier alignment approximately 550 feet from shore at a depth of -18 feet. This well conductor is surrounded by a 4-foot tall rock and sheet pile, a 36-inch diameter casing at its base, and several piling remnants projecting up to four feet out of the rock pile. Several more rows of pilings are present between the rock pile and shore, terminating at an approximate depth of -10 feet, and an approximate distance of 400 feet from shore (see Exhibit 3).

The remnant structure is in a severe state of deterioration and is likely to suffer a catastrophic collapse in the near future. If storm or earthquake forces do not induce a catastrophic collapse, the progressive weakening of the remnant structure through continued corrosion and erosion will cause the same result. The caissons have experienced significant concrete loss, exposing the steel piles and the steel reinforcing rods to highly corrosive salt water. The remnant top deck is partially missing or collapsed, and is in the process of further collapse. Pieces of rotted steel and wood are hanging from the above-water portions of the remnant structure.

ARCO is obligated to remove the remnant pier structures at PRC-421 as per requirements of the 1993 Transfer Agreement between ARCO and Mobil. (In 1997, the lease was again transferred to from Mobil to VENOCO, who remains the current leaseholder.) In May 2000, ARCO applied to the California State Lands Commission (CSLC) to remove the remnant structure and associated seafloor debris. As lead agency under the California Environmental Quality Act, the CSLC prepared a draft environmental impact report (EIR) for public review and comment. In its comments on the draft EIR, the staff of the California Department of Fish and Game (DFG) expressed serious concern about removing the derelict structure because it currently serves as a prime roosting site for the California brown pelican (*Pelecanus occidentalis californicus*), a federal- and State-listed endangered species and a State fully-protected species.[1] The structure also serves as a roosting and nesting site for the Brandt's cormorant (*Phalacrocorax penicillatus*), and is probably a roosting site for the double-crested cormorant (*Phalocrocorax auritus*), a State species of special concern.

DFG stated that the remnant structure ranks 12th out of 60 mainland diurnal roost sites for brown pelicans from Point Conception to the Mexican border, and is the only nocturnal roost site along 75 miles of the southern California coastline. The site is also the only known nesting site for Brandt's cormorant on the mainland coast south of Point Conception. According to DFG, the structure has been surveyed 13 times in aerial surveys, and was occupied 100% of the time, with the number of brown pelicans ranging from 12 to 160 and averaging 53. In its letter, DFG strongly recommended the construction of a new roosting platform at or close to the site to replace the remnant pier structure. In addition, DFG recommended that the project include an on-site artificial reef to provide increased hardbottom substrate for vegetation, fish, and invertebrates.

In response to DFG's concerns, ARCO worked with CSLC and DFG staff to design a modified project that includes removal of the remnant structure (except for the eight concrete caissons that will be used as part of an artificial reef), the placement of 3,000 cubic yards of quarry rock for the reef, and the construction of four bird roosting/nesting platforms. The modified project is proposed by ARCO in this coastal development permit application. ARCO will remove and/or otherwise reposition the visible remains of the remnant structures, incorporate specific components and add new quarry rock to create an artificial reef, and install four piles that will support new platforms to serve as roosting and nesting habitat for the brown pelican, cormorants, and other seabirds. Once construction activities are completed, the CSLC will issue a new lease to DFG for the seafloor area of PRC-421 that will be occupied by the reef and bird platforms. This CDP will be transferred to DFG at that time, and DFG will assume all maintenance, monitoring and liability responsibilities for the artificial reef and bird platforms. VENOCO, the current leaseholder, will have ongoing responsibility for the abandoned well conductors, the seafloor area of PRC-421 not included in the DFG lease, and all sub-seafloor areas under PRC-421.

4.2 Project Description

The proposed project consists of three principal components:

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[1] May 28, 2002. Letter from California Department of Fish and Game to California State Lands Commission.

1) Removal of the wooden and steel deck structure, toppling of the eight remnant caissons, abandoning the well conductors and removing other pier-associated seafloor debris;
2) Installation of four piles and 800 square feet of bird roosting/nesting platforms; and
3) Construction of an artificial reef, by placing 3,000 cubic yards of quarry rock around the eight toppled caissons.

4.2.1 Removal of Remnant Structures

Pre-Construction Survey and Kelp Harvesting

Pre-construction surveys will be conducted for kelp, hardbottom, abalone, and nesting birds on the remnant pier structures. A final bottom survey will also be performed to confirm the location of seafloor features and select final anchor points.

Wooden and Steel Deck Structure Removal

The existing structure will be removed using typical offshore methodology and equipment. The project will require the use of a Load Line Barge. Four anchors for the barge will be "flown in" (transported through the water as opposed to dragged along the seafloor) via tugboat to pre-determined locations. A construction or biological monitor will confirm that the areas to which the anchors are flown are located at the pre-determined anchor placement locations. The anchor locations will be ground-truthed and surveyed by a diver prior to placement in order to determine whether anchor site revisions could reduce kelp and hardbottom habitat impacts. Removal of the existing structures will be conducted with the use of a 230-ton conventional crane located onboard the barge. All salvaged material will be loaded onto the barge into bins or sea-fastened on deck for transport to shore for recycling/disposal.

Toppling of Existing Caisson Structures

After removing the topside structure and debris, divers will remove underwater debris in and around the caissons to facilitate toppling of the eight caissons. Using divers and barge equipment, sediment surrounding the well conductor pipe will be jetted, and the conductor pipe for Well No. 10 will be cut by a diver using a cutting torch and removed to one foot below the mudline. Divers will expose the four H-Beams at the base of each caisson to a point approximately four feet below the mudline.

Halliburton Explosive Services will perform blasting operations to topple the eight concrete caissons. Explosives will consist of four 1.8-lb. charges placed at the base of each caisson. Each explosive will be buried one foot below mudline, to help absorb the shock of the blast and protect marine life. At lease eleven marine mammal monitors will be on site during critical phases of the project, i.e., detonations, pile driving, and the installation of quarry rock. A safety zone of 1000-yards around the project site will be monitored to protect marine mammals, and a bubble curtain will be installed to minimize impacts to fish. Charges will be detonated in rapid succession to reduce the chance of predatory marine mammals entering the safety zone between detonations.

Preparation, attachment, and detonation of explosives will take approximately 10 to 12 hours. Once the charges have been detonated and the caissons have been toppled, divers will determine the seabed position of the toppled caissons. An onboard review of the divers survey will identify any caissons that may need to be repositioned to provide access to the well conductor for Well No. 10. Once the position of the toppled caissons has been determined, final pile locations will be confirmed.

The barge will be moved shoreward on its anchors and the divers will remove any visible remnant pier pilings and debris, and cut off the well conductor for Well No. 7 to one foot below the mudline. The rock pile surrounding Well No. 7 will be left as hardbottom substrate.

Remnant Causeway Piling Removal

After removing the island structure debris, the barge will be relocated as necessary to begin removal of the causeway piling remnants, working towards the shoreline using divers and oxy-acetylene cutting equipment. All pilings will be cut at or below the mudline. The well conductor for Well No. 7 will be removed to approximately one foot below the mudline, and all exposed sheet piling will be cut and removed. Work will continue shoreward (to approximately 400 feet from shore) until all remaining pile remnants are cut, removed, and fastened for transportation to shore for recycling/disposal.

4.2.2 Construction of the Artificial Reef

The applicant proposes to topple the concrete caissons in place to form the core of a new hard substrate area, and place quarry rock around the caissons. The seabed footprint of the toppled caissons will be, by nature of the operation, random. To provide access to the well conductor, some repositioning of the caissons may be performed. This will involve placing a sling around one end of the column, raising the caisson slightly with a deck-mounted winch, and swinging it around to lie against, or near, an adjacent caisson, by moving the barge. The entire caisson will not be physically lifted during repositioning.

Approximately 3,000 cubic yards of clean, modified A-500 quarry rock will be brought to the site on barges, probably from the Connolly-Pacific site on Catalina Island. Quarry rock will be deposited in a checkerboard pattern on the seafloor, to a maximum of four to five feet above the seafloor adjacent to the columns, and less away from the columns. The area covered by the quarry rock will be approximately 25,782 square feet, or 0.59 acres. The reef will be seeded with kelp, and the success of the constructed hardbottom habitat will be monitored by the applicant in accordance with the Artificial Reef Monitoring Plan. The reef has been designed in consultation with DFG artificial reef experts, and is specifically designed to function as a kelp reef. ARCO will construct the reef, and after the completion of construction activities DFG will assume all maintenance, monitoring and liability responsibilities for the artificial reef.

To allow for future access to the interior well conductor, a 30-inch pipe will be jetted into the seabed around the well conductor to prevent rock from covering the conductor. Following deposition of rock, the 30-inch pipe will be trimmed to the elevation of the rock and secured.

4.2.3 Installation of the Bird Roosting/Nesting Platforms

Four piles will be driven into the seafloor to support the roosting/nesting platforms. The precise position of the four piles can only be determined after the concrete caissons are toppled. However, the intended locations will be to the nearshore side of the toppled caissons, in-line or in a slight arc, allowing rock barge access from the offshore side. Once the final positions for the four piles have been established, the barge will be winched to a position suitable for pile driving. Once the four piles have been driven, the barge will be positioned to install the roosting/nesting platform structures atop the piles. Heavy lifting and rigging techniques will be used for installation of the roosting/nesting platforms.

The use of the bird platforms by roosting and nesting seabirds will be monitored according to the *Seabird Monitoring Proposal*. Maintenance of the bird platforms will be conducted according to the *PRC-421 Roosting Platforms Maintenance Schedule & Estimated Costs, Four Pile-Supported Systems*. Maintenance will primarily consist of surface paint touch-ups approximately every five years, starting in year eight. The sacrificial aluminum anodes will be replaced in year 26.

4.2.4 Final Survey

A final underwater survey using divers, dive cameras, and a video- and sonar-equipped ROV will be conducted throughout the entire demolition area to ensure the removal of all debris items.

4.2.5 Implementation Plans

In addition to the elements of the project described in sections 4.2.1 through 4.2.4 of this staff report, as part of the project the applicant will implement those aspects of the project described in the following documents:

- Project Description, dated April 28, 2004, including all attachments, revised on August 19, 2004; November 20, 2004; December 3, 2004; December 9, 2004, and December 28, 2004
- Anchor Mitigation and Hardbottom Avoidance Plan, contained in Appendix C of the EIR
- Heavy Lift Rigging Plan, contained in Appendix D of the EIR and revised April 28, 2004
- Explosive Transportation and Operations Plan, contained in Appendix E of the EIR
- Wildlife Protection Plan, contained in Appendix J of the EIR
- Marine Mammal Contingency Plan, contained in Appendix L of the EIR
- Oil Spill Contingency Plan, contained in Appendix M of the EIR and revised August 17, 2004
- Mitigation Monitoring Program, contained in Appendix P of the EIR
- Execution Plan, dated April 22, 2004
- Work Statement for Pre- and Post-Demolition Assessment of Kelp Resources Associated with Removal of Remnant Pier Structures in State of California Tidelands Lease PRC-421, Santa Barbara, California, received August 9, 2004 and revised December 13, 2004

- Work Statement for Pre-Demolition Assessment of Abalone Resources in Areas Associated with Demolition of Remnant Pier Structure in State of California Tidelands Lease PRC-421, Santa Barbara County, California, received September 1, 2004
- PRC-421 Roosting Platforms Maintenance Schedule & Estimated Costs, Four Pile-Supported Systems. Undated.
- Draft Proposal Submitted to the State Lands Commission, In Response to the Need for Monitoring at Bird Island Mitigation Reef, received August 4, 2004 and revised October 18, 2004
- PRC-421 Draft Seabird Monitoring Proposal, dated May 31, 2004 and revised October 12, 2004
- Acoustic Monitoring Plan. Received January 18, 2005 and revised January 26, 2005.

Relevant details of these documents are discussed in this staff report in section 4.4: Coastal Act Issues. Full citations for each of these documents, including letters and e-mail correspondence, are included in Appendix A. The full text of all EIR appendices is included in the Draft EIR, subject to revisions contained in the Final EIR.

4.2.6 Partial Transfer of Lease to DFG

As described above, ARCO will remove and/or otherwise reposition the remnant structures, incorporate specific components and add new quarry rock to create an artificial reef, and install four piles that will support new platforms to serve as roosting and nesting habitat for the brown pelican, cormorants, and other seabirds. Once construction activities are completed, the CSLC will issue a new lease to DFG for the seafloor area of PRC-421 that will be occupied by the reef and bird platforms. This CDP will be transferred to DFG at that time, and DFG will assume all maintenance, monitoring and liability responsibilities for the artificial reef and bird platforms.

4.2.7 Equipment and Personnel

Dive support, material handling (crane) and pile driving operations will be conducted from a single work platform: a 240' x 60' Load Line Barge with its attendant tug. The barge will be anchored on site by a four-point mooring. Anchors will be "flown" to their location to minimize seabed impacts. On a single placement of four anchor points the barge will be able to maneuver to all locations necessary to support the operation. Additional watercraft will be available for the initial barge anchor positioning and subsequent retrieval, transit of quarry rock, crew transport and marine mammal observers.

The equipment needed to conduct the proposed project will be shipped from the Port of Long Beach. Most of the vessels will travel once to the location and remain on site. The crew boat will make daily trips to and from Ellwood Pier to transport personnel and supplies. A total of approximately 28 personnel will conduct the fieldwork activities for the proposed project. Personnel, including an Operations Superintendent or Company Representative, will be present at the site throughout the duration of the project.

4.3 Other Permits, Approvals, and Authorizations

Project implementation will require ARCO to obtain permits and/or other forms of approval from federal, State, and local agencies. These agencies include:

- **Federal Agencies**
  - Army Corps of Engineers: Clean Water Act Section 404 individual permit.
  - U.S. Fish and Wildlife Service: Section 7 Consultation under the Endangered Species Act.
  - National Marine Fisheries Service: Section 7 Consultation and Marine Mammal Protection Act.
- **State Agencies**
  - Department of Fish and Game: Explosives Permit.
  - Regional Water Quality Control Board: 401 Water Quality Certification.
  - California Department of Transportation: Explosives Transportation Permit.
- **Local Agencies**
  - Santa Barbara County Air Pollution Control District: Authority to Construct.

4.4 Coastal Act Issues

4.4.1 Fill in Coastal Waters

Coastal Act § 30233(a) states:

> *The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:*
>
> *(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.*
>
> *(2) Maintaining existing, or restoring previously dredged depths on existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.*
>
> *(3) In wetland areas only, entrance channels for new or expanded boating facilities; and in a degraded wetland, identified by the Department of Fish and Game pursuant to subdivision (b) of Section 30411, for boating facilities if, in conjunction with such boating facilities, a substantial portion of the degraded wetland is restored and maintained as a biologically productive wetland. The size of the wetland area used for boating facilities, including berthing space, turning basins, necessary navigation channels, and any necessary support service facilities, shall not exceed 25 percent of the degraded wetland.*
>
> *(4) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of*

structural pilings for public recreational piers that provide public access and recreational opportunities.

(5) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

(6) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.

(7) Restoration purposes.

(8) Nature study, aquaculture, or similar resource dependent activities.

The applicant proposes to topple eight concrete caissons, place approximately 3,000 cubic yards of quarry rock, and install four pilings on the ocean floor. The concrete caissons, quarry rock, and pilings constitute "fill" as defined by the Coastal Act. Section 30108.2 of the Coastal Act states:

"Fill" means earth or any other substance or material, including pilings placed for the purpose of erecting structures thereon, placed in a submerged area.

Coastal Act Section 30233(a) permits fill in coastal waters if three tests are met: 1) the fill constitutes an allowable use under 30233(a); 2) there is no feasible less environmentally damaging alternative; and 3) feasible mitigation measures have been provided to minimize any adverse effects.

Allowable use

The purpose of placing the fill is to create an artificial reef and bird roosting/nesting platforms. The artificial reef is intended to provide habitat for kelp and other marine species, and to enhance both the production of living marine resources and recreational fishing potential at the project site. The bird platforms are intended to provide offshore structures for roosting and nesting marine birds, especially for the California brown pelican and Brandt's cormorant. Therefore, the Commission finds that the proposed fill is allowed under use number (8), "nature study, aquaculture, or similar resource dependent activities."

No feasible less environmentally damaging alternative

Bird Platforms
The proposed bird platforms include a minimal amount of ocean fill, i.e., four pilings. The platforms have been designed to provide approximately equal roosting area to that currently available on the remnant structure. DFG biologists and marine bird specialists reviewed the platform design and spatial arrangement, and the proposed design incorporates their recommendations.

The applicant and DFG examined two location alternatives. The first alternative involved complete removal of the remnant structures, without the installation of a replacement roosting

and nesting site. As discussed in more detail above, and in section 4.4.2 of this staff report, existing pier structures currently serve as an important roosting and/or nesting site for California brown pelicans, Brandt's cormorants, and probably double-crested cormorants. The pier is considered by the California Department of Fish and Game as the only secure roost site for brown pelicans in Santa Barbara County south of Point Conception, and the only nesting site for Brandt's cormorants on the mainland coast south of Point Conception. This site ranks 12th out of 60 mainland diurnal roost sites for brown pelicans from Point Conception to the Mexican border, and was occupied 100% of the time during thirteen aerial surveys. Replacing the remnant structures with alternate roosting and nesting habitat is an environmentally superior alternative to not replacing the existing structures.

The second location alternative the applicant and DFG considered was an onshore site for new bird roosts, which would eliminate the need for offshore pilings. Research conducted by DFG and others[2] indicates that the primary roost sites for brown pelicans in the western US are offshore rocks and islands on the outer coast, and sand islands within large estuaries. Roost site selection is based on several factors, including isolation from potential predators and human disturbance, distance to prey resources, and microclimate features that aid in thermoregulation. Brown pelicans prefer to roost communally on dry substrate surrounded by water. Night roosts are usually always surrounded by water. For these reasons, DFG has determined that installing new platforms in the same location as the existing platforms is the strategy most likely to succeed in attracting marine birds to the new structures, and is therefore the least environmentally damaging location.

Not applying protective coatings to the piles supporting the platforms was a further alternative considered by the applicant and DFG. The piles for the bird platforms will be subject to aggressive corrosion effects from seawater, primarily in the splash zone but also below the surface of the water. The portion of the piles and platforms above the water will also be subject to some corrosive forces. Applying preservative products to the piles and platforms will prevent the structures from deteriorating and ultimately collapsing in the marine environment. DENSO protective wrap is proposed for the splash zone, with sacrificial aluminum alloy anodes below the water surface and a high-performance siloxane paint above the +10-foot SWL elevation. DENSO has a long history of corrosion prevention with the proposed product, which is a chemically stable compound that can only be released into the marine environment if exposed to an organic solvent such as kerosene. Marine environments are a typical use for the proposed paint. The Commission therefore finds that the there are no feasible less environmentally damaging alternatives to the materials proposed for the bird platforms.

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[2] Jaques, D. and C. Strong. "Disturbance to brown pelicans at communal roosts in southern and central California." *Report to the American Trader Trustee Council.* 2002.
Briggs, K. T., W. B. Tyler, D. B. Lewis, and D. R. Carlson. "Bird communities at sea off California: 1975 1983." *Studies in Avian Biology*, No. 11. 74 pp. 1987.
Jaques, D. L. *Range expansion and roosting ecology of non breeding California Brown Pelicans.* Unpublished M.S. thesis. University of California, Davis, CA. 73 pp. 1994.

Artificial Reef
ARCO is proposing to construct an artificial reef covering approximately 25,782 square feet, or 0.59 acres, at the site of the remnant structures. The reef will be constructed of the eight toppled caissons, and approximately 3,000 cubic yards of clean, modified A-500 quarry rock. The quarry rock will be brought to the site and deposited in a checkerboard pattern on the seafloor adjacent to and in the vicinity of the toppled caissons. Exhibit 5 depicts a conceptual model for the reef design.

The materials proposed for the artificial reef meet DFG criteria described in the its publication "Materials Specification Guidelines for Augmentation of Artificial Reefs with Surplus Materials." Specifically, the quarry rock and concrete caissons 1) are persistent, in that they will remain largely intact after years of submersion in sea water; 2) have a specific gravity of at least twice that of sea water, and will remain in position during strong winter storms; and 3) do not contain toxic substances that will leach into the marine environment. The Materials Guidelines further state: "Commonly used materials include quarried rock and high density concrete rubble... Reinforced concrete is allowable..." The quarry rock and the concrete caissons are the materials most suitable for constructing an artificial reef and therefore are the environmentally superior alternative.

Feasible mitigation measures

The final test of Coastal Act Section 30233(a) requires that feasible mitigation measures have been provided to minimize any adverse effects. In other sections of this report, the Commission has identified feasible mitigation measures that will minimize the project's adverse environmental impacts. With the imposition of the conditions of this permit, in combination with applicant-proposed measures to avoid or lessen any adverse environmental effects, the Commission finds that the third and final test of Coastal Act Section 30233(a) has been met.

Conclusion

Because the three tests have been met, the Commission finds the proposed project consistent with Coastal Act Section 30233(a).

4.4.2 Marine Resources

Coastal Act § 30230 states:

> *Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*

The proposed project has the potential to affect the following marine resources: (a) Marine mammals, birds, fish and the benthic environment through impacts associated with percussive forces and noise levels caused by explosives use, pile driving, and placement of quarry rock; (b)

Hardbottom habitat and kelp, through impacts caused by vessel anchoring; (c) Abalone, through project activities occurring in the vicinity of the remnant pier structures; (d) Marine mammals, through potential collisions with project vessels; and (e) Roosting and nesting seabirds, through project activities occurring in the vicinity of the remnant pier structures.

Underwater Noise

Introduction

Marine mammals rely on sound for communication, orientation, and detection of predators and prey. In recent years the Commission's and the public's awareness of the effects of underwater noise, particularly low frequency noise, has increased significantly. In reviewing the Scripps' ATOC[3] and the Navy's LFA[4] research and operational LFA[5] efforts, the Commission noted: (1) the growing evidence that anthropogenic sounds can disturb marine mammals[6]; (2) that observed mammal responses to such sounds include silencing, disruption of activity and movement away from the source; and (3) that low frequency sound carries so well underwater that animals have been affected many tens of kilometers away from a loud acoustic source. Recent (March 2000) whale deaths in the Bahamas, probably caused by Navy mid-frequency sonar activities, have magnified these concerns.

Three sources of sound could potentially cause impacts to the marine environment from the proposed project: detonation of explosives, pile driving activities, and the placement of quarry rock.

Sound waves are pressure fluctuations: compression and rarefaction of molecules in the medium through which the sound waves travel.[7] Underwater, sound pressure levels are expressed in one of two ways – as pounds per square inch (psi), or as decibels referenced to a specific pressure, usually one micropascal (X dB re 1μPa). NOAA Fisheries currently accepts a sound pressure level (SPL) of 182 dB re 1μPa as the threshold at which minimal, recoverable auditory trauma (TTS) may occur to marine mammals. Alternately, NOAA Fisheries also accepts 12 psi peak pressure as a threshold level. While threshold determinations are currently in a state of flux, with NOAA Fisheries recently commencing an EIS process to revise its guidelines and thresholds, in reviewing past projects the Commission has generally accepted 180 dB as a marine mammal avoidance threshold for pulsed (non-continuous) sounds.[8]

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[3] Scripps Institution of Oceanography, Acoustic Thermometry of Ocean Climate (ATOC) Project and Marine Mammal Research Program (MMRP), CC-110-94/CDP 3-95-40.

[4] Consistency Determinations No. CD-95-97 and CD-153-97 (Navy, Low-Frequency Active (LFA) Sonar Research, Phases I and II).

[5] CD-113-00 (Surveillance Towed Array Sensor System (SURTASS) Low-Frequency Active (LFA) Sonar Program) – Commission review still pending.

[6] Richardson, John W., Charles R Greene, Jr., et all. *Marine Mammals and Noise.* San Diego: Academic Press. 1995.

[7] Howorth, Peter. Wildlife Protection Plan, Appendix 2. Appendix J of the Draft EIR. WPP prepared for Fairweather Pacific LLC. Prepared by Peter Howorth, Marine Mammal Consulting Group. October 2003.

[8] CD-14-02, CD-16-00, CD-32-99: USGS seismic surveys. CD-102-99: National Marine Fisheries Service "pulsed power" tests. CD-95-97 and CD-153-97: Navy Low-Frequency Active (LFA) Sonar Research, Phases I and II. CC-110-94/CDP 3-95-40: Scripps Institution of Oceanography, Acoustic Thermometry of Ocean Climate (ATOC) Project and Marine Mammal Research Program (MMRP).

When a sound is produced in deep ocean water, the sound pressure waves theoretically spread equally in all directions, not changing in their uniformity unless they strike layers of different temperature and salinity, or until they finally reach the sea surface or the sea floor. This is called spherical spreading. Considering this uniformity of distribution, estimating sound pressure waves in open water is relatively simple.

By contrast, shallow water sound models can be extremely complex. In shallow water, such as the 32 feet of water at Bird Island, numerous factors disrupt the uniform spherical spread of waves that occurs in open water. In shallow water, interaction with both the surface of the sea and the sea floor causes some components of the sound pressure wave to be reflected and some components to be absorbed. The reflected component can converge out of phase with the main wave, attenuating it, or can converge in phase with the main wave, strengthening it and producing higher SPLs at a distance. Elements that add further complexity to the behavior of sound in shallow water include burying charges below mudline, the presence of vegetation such as kelp, benthic topography and substrate characteristics, shoreline features, water temperature, and the "choppiness" of the sea surface.

For these reasons, and others discussed below, modeling was not performed for this project to quantify maximum expected SPLs at particular distances. Rather, specific measures are being proposed to protect marine life from potential impacts related to sound, specific to the sound being produced. As detailed below, a safety zone of 1,000 yards will be maintained, and acoustic monitoring will be conducted, during the blasting operations and pile driving operations. Specific details of all proposed safety measures, and the rationale behind each, is discussed in relevant sections below.

Mobil Seacliff Pier Demolition Project
From April through August of 1998, Exxon/Mobil demolished sets of pier caissons at the old Mobil Seacliff Pier Complex, in twenty-one explosions occurring over a total of eight blasting days.[9] The Commission permitted this project in 1997 as application No. E-96-14. Caissons measured between eight and twenty-two feet in diameter, and required individual charges between five and 35 pounds, with multiple charges per caisson. Each individual caisson required a total of between 88 pounds (for some of the 8-foot caissons) and 594.6 pounds (for the 22-foot caisson) of explosives. The purpose of the blasting project was to shatter the caissons into smaller parts, so that the pieces could be removed with a crane, and the blasting occurred above the mudline.

The applicant conducted acoustic monitoring during and after each blast, to determine actual SPLs, and to adjust wildlife protection measures if required. Modeling predicted that the threshold limit – 180 dB re 1μPa – would occur within the 1,000-yard safety/marine mammal preclusion zone, and that outside the safety zone only SPLs lower than the threshold would occur. Monitoring indicated, however, that at 1,000 yards SPLs as high as 201.8 dB re 1μPa

[9] Howorth, Peter. *Final Report: Acoustic Monitoring for Mobil Seacliff Pier Complex Decommissioning Project.* Prepared for Mobil Exploration & Producing U.S., Inc. Prepared by Peter Howorth, Marine Mammal Consulting Group. September, 1998.

were occurring. The safety zone was expanded first to 2,000 yards, and finally to 3,000 yards, to help protect marine mammal species.

The Seacliff project is essentially different from the proposed project at Bird Island, and is discussed here to highlight the much smaller scale of the Bird Island blasting operations. As described below, the Bird Island project proposes four individual charges of only 1.8 pounds, for a total of 7.2 pounds per caisson. Charges will be detonated in sets of two, resulting in a blast charge of 3.6 pounds. For the Bird Island project, linear shaped charges will be used, which are designed to channel most of the energy inward to sever the steel H-piles. The purpose of the blasting is not to shatter the caissons, but topple them intact to form part of the substrate for the artificial reef. During the Seacliff project, the caissons were toppled on eight separate days, allowing for monitoring to be conducted and adjustments to be made based on the monitoring. The proposed project at Bird Island will detonate all charges in rapid succession, in one detonation event, to avoid risks associated with separate detonation events.

Wildlife protection measures used at the Seacliff Piers project are essentially identical to those proposed for the Bird Island project, including aerial, sea and shore-based monitoring (see discussion of proposed monitoring below.) At the Seacliff project, these marine mammal monitoring methods appeared effective, as during this project, no adverse reactions, injuries, mortalities, or other significant impacts to marine mammals or sea turtles were observed during any of the caisson demolitions.[10] No strandings were reported in the general area over the two- to three-day period after each demolition. Bird mortalities included seven pigeons, one surf scoter and one double-crested cormorant. The average number of fish killed for each detonation was 108. The vast majority of fish mortalities consisted of various species of surfperches.

Wildlife[11]

Marine Mammals: NOAA Fisheries reports some 42 species of marine mammals in the overall region of the proposed project, and of the 42 species, most are offshore species that seldom come close to the coast. Considering that the project site is only 850 feet offshore, only nearshore coastal species are likely to be encountered there. The few species that may appear at or near the project site are described below, in order of probability of occurrence.

Pacific harbor seals: Pacific harbor seals (*Phoca vitulina richardsi*) are very common in the project area because a sizable rookery, sometimes inhabited by more than 100 individuals, exists about one mile west of the project site. They have their pups in winter, most of which arrive in February and March. A few are born sooner, from December through February, and occasionally a pup is born as late as May. The pups nurse for four to six weeks, then are abandoned by their mothers. No nursing pups will be present during construction activities, which is scheduled to occur over four weeks around September 2005. The presence of harbor

[10] Howorth, Peter. *Final Report: Wildlife Protection During the Decommissioning of the Mobil Seacliff Pier Complex*. Prepared for Mobil Exploration & Producing U.S., Inc. Prepared by Peter Howorth, Marine Mammal Consulting Group. December, 1998.

[11] All information in this section is taken from: Howorth, Peter. Wildlife Protection Plan. Appendix J of the Draft EIR. WPP prepared for Fairweather Pacific LLC. Prepared by Peter Howorth, Marine Mammal Consulting Group. October 2003.

seals has been noted in hazard zones during past projects in the region, sometimes causing short delays until they swam out of the area. Harbor seals will be encountered during this project.

California sea lions: California sea lions (*Zalophus californianus c.*) are abundant along the mainland coast. In the project area, they sometimes haul out on mooring buoys near the Ellwood Pier and just west of the project site. These buoys were installed for the use of crew boats used by Venoco and Exxon/Mobil. They also haul out on Venoco's oil barge mooring buoys east of the site about half a mile. California sea lions frequent the general region year-round, although in the summer months, large numbers of adults travel to various rookeries in the Channel Islands. Pupping peaks about the third week of June, and breeding starts soon afterwards. The pups stay with their mothers for at least three months, at which time they can catch their own fish but may continue nursing as well. During construction activities (to take place in September), no dependent pups will be in the project area because they will be at the island rookeries. Nonetheless, some adult California sea lions will be encountered in the area and could cause short delays until they have left.

Coastal bottlenose dolphins: A coastal stock of bottlenose dolphins (*Tursiops truncatus*) lives from San Simeon into Baja California. These animals generally keep close to shore, sometimes venturing into the breakers. Occasionally they venture further offshore, but usually stay within 0.6 miles of the coast. They usually travel in small groups of 15 to 20 individuals, and seldom linger in an area unless they are feeding, resting or nursing. They are found year-round throughout their range. Coastal bottlenose dolphins may venture past the site during the course of this project; however they are conspicuous and easily spotted by monitoring teams. When they have been encountered in past projects in the last decade since the commencement of marine mammal preclusion practices, a short wait while they pass the project site has ensured their safety.

Common dolphins: Two species of common dolphins are found in the region: the short-beaked (*Delphinus delphis*) and the long-beaked (*Delphinus capensis*). The long-beaked common dolphin generally remains within 50 nautical miles (nm) of shore, while the short-beaked is found up to 300 nm offshore. Although neither species has been observed in any hazard zone in similar past projects along the coast, long-beaked common dolphins can be abundant from one to six nm offshore from the project site. It is likely that some long-beaked common dolphins will be seen near the project site, but not so close to shore as to be near the hazard zone.

Other dolphins: Other dolphins seen in the region include the Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), the northern right whale dolphin (*Lissodelphis borealis*), the killer whale or orca (*Orcinus orca*), and Risso's dolphin (*Grampus griseus*). These animals occur sporadically, generally farther offshore, and have never been observed in any hazard zone in past coastal projects. The Pacific white-sided dolphin and northern right whale dolphin are generally associated with cooler water and most often appear in spring and early summer; thus their presence at the project site in the fall is very unlikely.

Porpoises: The only porpoise that is seen with any regularity in this region is Dall's porpoise (*Phocoenoides dalli*). This particular species favors cooler water and generally appears in spring

and early summer. It is most often seen several miles or more out and is seldom seen near shore. Dall's porpoise has not been seen in any hazard zones, and will probably not appear near the project site.

Southern sea otters: Southern sea otters (*Enhydra lutris nereis*) have been sporadically reported south of Point Conception in recent years. About 18 animals are usually seen off San Miguel Island, while another 13 are at San Nicolas Island. In 1998, about 100 otters moved just south of Point Conception, foraging in the rich kelp beds there. They left after several weeks. In 1999, about 150 animals came to the same area, then left. USFWS believes these to be mostly young males, which tend to wander. During past projects involving observing marine mammals in this area, only one sea otter was seen in the vicinity of a project site, and it was not in a hazard zone. Two sea otters were observed near the Bird Island project site in 2002, but considering the scarcity of such animals in Southern California, it is unlikely that any sea otters will be seen near the project area.

California gray whales: California gray whales (*Eschrichtius robustus*) are seasonally abundant near the project area. California gray whales migrate south from their feeding grounds in Alaska in late fall. For regulatory purposes, the migration period in California is considered to extend from 1 December through 1 May, although a few individuals sometimes are seen as early as October or November. During the southbound migration, most of the whales swim from point to point, and many swim across the channel to the islands instead of hugging the mainland coast. By mid-February, the last stragglers are usually headed south, while a few early individuals are usually returning north. By March the northbound migration is in full swing, then it tapers off toward the end of April. The northbound grays travel close to shore for much of their migration, but off Southern California, many animals journey through the Channel Islands area rather than along the mainland coast. During summer and fall, when the project is scheduled, gray whale sightings are virtually nonexistent. It is extremely unlikely that grey whales will be present in the project area during construction activities.

Beaked whales: Cuvier's beaked whale (*Ziphius cavirostris*) is a species of particular concern, because investigations of several recent strandings have attributed the deaths to anthropogenic sources at sound levels significantly lower than commonly accepted thresholds, and at frequencies not previously evoking concern. Cuvier's beaked whale inhabits deep ocean waters from Alaska to the equator. Despite extensive NOAA Fisheries marine mammal surveys, it has not been reported in the Santa Barbara Channel, nor is it known from strandings along the mainland coast of Santa Barbara County. Even sightings along the continental shelf are rare. Most sightings have been well offshore, in deep ocean waters. A few Cuvier's beaked whales have been reported off San Clemente, Santa Catalina and San Nicolas islands, but none near the four northern Channel Islands.

Baird's beaked whale (*Berardius bairdii*) and the mesoplodonts (*Mesoplodon densirostris, M. stejnegeri, M. carlhubbsi, M. gingkodens, and M. perrini* [formerly identified as *M. hectori*] are all deep ocean species that occur along the continental slopes and deep ocean waters. None have been reported in the Santa Barbara Channel or off the four northern Channel Islands. At least

one Hubb's beaked whale (*M. carlhubbsi*) and one Blaineville's beaked whale (*M. denstirostris*) have stranded in Santa Barbara County over the past 30 years.

The dearth of beaked whale sightings and strandings over the past few decades, and the one-time nature of the blasting operations, make it extremely unlikely that any of these species will appear near the project site during project activities.

Sea Turtles: Four species of sea turtles have been reported off the California coast: the green sea turtle (*Chelonia mydas*), the loggerhead sea turtle (*Caretta caretta*), the olive ridley sea turtle (*Lepodochelys olivacea*), and the leatherback sea turtle (*Dermochelys coriacea*). Leatherback sea turtles are considered endangered under the ESA, while greens, loggerheads and olive ridleys are listed as threatened. All these species normally frequent tropical, subtropical or temperate waters and are rarely seen near the project site. Most sightings have been during El Niño events. Considering the rarity of such creatures in these waters, it is extremely unlikely that any sea turtles will be present during project activities.

Birds: Several species of sea birds roost on the structure at PRC-421, including the California brown pelican, the Brandt's cormorant, probably the double-crested cormorant, and the western gull (*Larus occidentalis*). Approximately 195 species of sea birds have been reported in the region. Of particular concern for this project are diving birds, which, depending on the season, can include alcids (murres, murrelets, guillemots, auklets, puffins, and others), loons (*Gavia spp.*), grebes, cormorants (*Phalacrocorax spp.*), shearwaters (*Puffinus spp.*), and certain diving waterfowl, many of which are not sea birds. California brown pelicans also dive, but they spend only seconds submerged before bobbing back to the surface. Moreover, they are very large and easily spotted. Since the topside structures will be removed without detonations, the roosting birds will have left the structure and will probably not be present during the detonations.

Fish and invertebrates: In similar past projects, the most abundant fishes have usually included surfperches and small schooling fish, particularly northern anchovies (*Engraulis mordax*). Some rockfish (*Sebastes spp.*) and bass (*Paralabrax spp.*) may also be present, along with croakers, various flatfish, and bottom-dwelling cartilaginous fishes.

Summary: During project activities, marine species most likely to be at or near the project site include harbor seals, California sea lions, bottlenose dolphins, common dolphins, and fish. All the mammals on this list surface frequently are and thus fairly easily identified. Measures incorporated into the project to protect these species are discussed in detail below.

Caisson Toppling
The proposed project involves sequential detonation of explosives attached to pier caissons to topple the caissons. Each column was originally constructed by driving four H-piles through the sand into the substrate, then placing a framework of steel rebar around the H-piles. A cylindrical form was lowered over the steel framework, extending to the sand on the sea floor rather than to bedrock. Concrete was poured into the form and allowed to harden.[12]

[12] Howorth, Peter. *Acoustic Monitoring Plan.* January 2005.

Divers will remove debris around each column, then remove sediments from the base of the column with a water jet to expose the four H-piles. Once the H-piles have been exposed, the demolition contractor will lower linear shaped charges to the diver. One 1.8-pound charge will be placed around each of the four exposed H-piles under each column, for a total weight about 7.2 pounds per column, or approximately 57.6 pounds total for all eight columns.

The four charges under each column will be detonated in pairs a fraction of a second apart. Only two charges will be detonated at once, for a total detonation weight of 3.6 pounds. The delay between pairs of charges will prevent a build-up of sound pressure levels from multiple detonations. The charges will be shaped so they detonate inwards, severing each H-pile cleanly and expending much of the energy of the explosives in the process. The small weight of the charges will avoid significant damage to the columns, which will form the base of the artificial reef. Some of the energy will be absorbed, reflected and/or refracted by the sea floor sediments, because the charges will be placed in a depression beneath the natural sea floor created by water jetting. The substantial mass of concrete above the H-piles will also reflect, absorb, and refract much of the energy.

Use of explosives will be governed by the Explosive Transportation and Operations Plan and the Wildlife Protection Plan. The Explosive Transportation and Operations Plan includes detailed safety procedures to protect human health and safety during the transportation, installation, detonation and clean-up of explosives. The Wildlife Protection Plan includes measures to protect the marine environment during the use of explosives. The contents of the Wildlife Protection Plan are discussed in more detail below.

In addition to the detonation itself, noise associated with the detonation will include airplane and vessels conducting pre-detonation wildlife surveys, and noise associated with winches to move the barge from the explosion area. Animals such as marine mammals may be affected by sound in different ways depending upon the intensity of the sound. There may be behavioral changes ranging from a simple startle response to more complex behavioral changes such as a change in breathing rate or a change in direction of travel. Stronger sound intensities can result in temporary or permanent hearing loss, tissue and organ damage, or death. Gas-containing organs, e.g., lungs, gastrointestinal tracts, and gas bladders, are especially susceptible.

Before detonation of any of the caissons at PRC-421, the applicant will survey by boat a one-thousand-yard hazard zone, and by aircraft a buffer zone of four by eight miles, to ensure that no marine mammals, sea turtles, or seabirds are present in the hazard zone. The 1,000-yard safety zone has been used for a number of decommissioning projects in the Gulf of Mexico with no observed marine mammal injuries or deaths.[13] During the removal of four Chevron oil platforms off Santa Barbara (CDP No. E-94-006), 45-pound targeted charges were detonated below the mudline to sever steel pilings used to anchor the platforms. In a project involving the removal of a Chevron wellhead off Ventura, a single 35-pound charge was used below the mudline. In both these cases, a 1,000-yard safety zone was used. When an ocean riser platform off San Diego was

[13] Howorth, Peter. *Final Report: Wildlife Protection During the Decommissioning of the Mobil Seacliff Pier Complex. Ibid.*

removed (CCC Negative Determination ND-136-96), a 417-yard hazard zone was considered adequate for 4.6-pound charges.[14]

Richardson[15] discusses a model by Young[16], developed in 1991, that predicts safe ranges for the worst combination of blast depth and mammal depth. The ranges predicted by this model are therefore conservative, and, according to Richardson, "are said to overestimate actual safe ranges in most situations." (p. 380) Young's model depends on the body mass of the receiver (c) and the mass of the charge (M, in kilograms), and predicts a safe range (R, in meters) according to the equation $R=cM^{0.28}$. The resulting safe ranges calculated for different sizes of marine mammals exposed to a 7.2 lb (3.3 kg) charge are presented in Table 1.

Table 1. Safe Ranges for Different Sizes of Marine Mammals.

Marine Mammal	Body mass constant	Charge M	Safe Range R	
	c	(kg)	(m)	(ft)
Dolphin calf	220	3.3	307	1007
Dolphin adult	165	3.3	231	758
Small whale, 6 m	124	3.3	173	568

According to this model, a safety zone of 1,007 feet, or 335.6 yards, is conservative for a dolphin calf. The proposed safety zone of 1,000 yards is three times the range predicted by Young's model.

Although no acoustic modeling was conducted for the sounds produced by the proposed project, two sets of estimates were made for the detonations. One set of estimates was based on charges buried in mud, while the other was based on open water detonations.[17] Mud-buried charges represent a best-case scenario because mud considerably dampens the energy of a detonation. In a sense, open-water charges represent a worst-case scenario because the detonation is released directly to the water column. However, as discussed earlier, in shallow water reflected sound waves sometimes converge in phase, creating a stronger sound pulse at a given distance. The calculations do not allow for shallow water effects, and neither the mud-buried nor open-water scenario is directly applicable to the explosives deployment strategy planned for this project. The estimates also assume that all four charges in a set will be detonated simultaneously, which will not be the case unless the charges detonate sympathetically.

If convergence does not occur, the SPL levels will likely fall somewhere in between the estimates for mud-buried and open-water charges, probably slightly toward the mud-buried

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[14] Howorth, Peter. *Wildlife Protection Plan,* Appendix 2. *ibid.*
[15] Richardson, John W., Charles R Greene, Jr., et all. *Marine Mammals and Noise.* San Diego: Academic Press. 1995.
[16] Young, G.A. "Concise methods for predicting the effects of underwater explosions on marine life." NSWC/WOL MP-91-220. Naval Surf. Weap. Cent., White Oak Lab., Silver Springs, MD. 1991.
[17] Leidel, D. Explosive Effects Analysis. In: ARCO Environmental Remediation LLC PRC-421. 1999.

levels, because the charges will be set in depressions below the sea floor. The applicant proposes to set off the seaward charges first, causing the bubbles from the detonations and mass of the columns to absorb and reflect the sounds of subsequent detonations.

Although noise thresholds are currently in a state of flux, as discussed above, NOAA Fisheries accepts 12 psi as the threshold at which minimal, recoverable auditory trauma (TTS) may occur to marine mammals. The estimates discussed above calculate that the 12 psi threshold will be met at 2300 feet, or 766.6 yards, in an open-water blast, and at 560 feet, or 186.6 yards, in a mud-buried blast. The 1,000-yard safety zone would protect marine mammals even in a worst-case scenario, in which the sound behaves as if the charges were detonated in open water (i.e., not buried below mudline.)

The Seacliff project discussed above is an exception in which a larger safety zone was required. The charges used in the Seacliff project were 35-pound charges, as opposed to the 1.8 pound charges proposed for this project, and the purpose of the Seacliff blasts was to shatter the caissons, rather than merely topple them. For the Bird Island project, linear shaped charges will be used. These charges are designed to channel most of the energy inward to sever the steel H-piles. Because the charges to be used in the proposed project at Bird Island are so small, and because the blast from each charge will be directed inward to cut the caissons rather than shatter them, a 1,000-yard safety zone is conservative. As long as no marine mammals or seabirds are present in the safety zone during the detonation, blasting activities should not adversely affect these species.

To further the understanding of the effects of explosive detonations in shallow water, the applicant is proposing to conduct acoustic monitoring of the detonation event at Bird Island.[18] The Acoustic Monitoring Plan is included as Exhibit 11. The acoustic monitoring will provide sound pressure level measurements at various depths and directions from the detonation site. Six measurements will be taken at a range of 1000 yards from the site of the detonations. Two measurements will be taken to either side of the site just beyond the surf zone in approximately 10 feet of water. These hydrophones will be suspended about five feet beneath the surface. Two more measurements will be taken offshore to either side of the site in approximately 75 feet of water. These hydrophones will be suspended about 60 feet beneath the surface. Two additional hydrophones will be deployed from the monitoring vessel directly offshore in approximately 80 feet of water. One hydrophone will be about 60 feet beneath the surface; the other, about 15 feet down.

The depth deployment is designed to measure the worst-case scenario, because the most powerful sound levels can be expected just off the sea floor. The placement of each hydrophone-DAT system will be selected to allow a clear path for sound waves to travel from the detonation site to each monitoring station, taking into account localized bathymetric features. From the measurements, ranges at which sound pressure levels presently considered the threshold at which temporary (hearing) threshold shifts (TTS) can occur can be calculated. The applicant will submit a report to the Executive Director within 30 days of the detonations, including a summary

[18] See the *Acoustic Monitoring Plan.*

of the data collected, a discussion of the results and an explanation of any anomalies encountered, and recommendations for similar future projects.

In the event that a low ceiling prevents the use of aerial monitoring, monitors will be relocated to the Ellwood pier, locations onshore and/or to an additional small boat. Because the project site is very close to shore, and the edge of the hazard zone is not far from the site (1,000 yards), relocating the monitors will still allow for adequate monitoring of both the site and the hazard zone. At least eleven marine mammal monitors will be on site during the detonations.

Although there is some disagreement, some studies[19] indicate that bubble curtains reduce peak SPLs. Prior to detonation of the charges, a bubble curtain will be placed around the caisson area. The bubble curtain will create a continuous stream of bubbles around the perimeter of the caissons reducing the effects of the explosion on fish. The bubble curtain will also produce enough underwater noise and visual activity to reduce the number of fish within the area surrounding the caissons prior to detonation, which will deter fish from swimming too close to the caissons during the detonation procedure.

Observations during the Seacliff Pier demolition in 1998 revealed that fish kills from detonations attracted birds and marine mammals to the project area. These animals were seen scavenging on injured or dead fish in between each blast, thereby increasing their risk of injury and delaying the established detonation schedule. The proposed project will detonate all charges in rapid succession to avoid risks associated with separate detonation events.

Before the start of project activities, a biological monitor will determine if nesting or immature birds still occupy the structure, and if they do, project activities will be postponed until all nesting or immature birds have left. Before detonation, birds will be flushed from the PRC-421 structure by firing a starter pistol or sounding an air horn, to prevent mortality or injury to roosting birds, especially cormorants and brown pelicans. Diving seabirds are at risk from the explosion if they are nearby, underwater, at the time of detonation. The survey and flushing activities described in the Wildlife Protection Plan should also clear the area of most diving birds.

The applicant has developed a Wildlife Protection Plan to reduce or eliminate impacts to marine wildlife that might be caused by the use of explosives. Key elements of the plan include:

- The project will be timed to avoid California gray whale migration (November 30th to June 1st).
- Eleven marine mammal monitors will be onsite to monitor activity of mammals through the project area during critical phases of the project, i.e., detonations, pile driving, and the installation of quarry rock. Except in the case of a low ceiling, the aerial monitor will fly aerial line transects over the project area to survey for marine mammals that may be affected by the explosions. These transects will involve an area from the beach to 4 miles offshore and 4 miles to either side of the project site. The aircraft will fly approximately east to west, paralleling the shoreline, along a line plotted in advance. The aerial line

[19] Sources cited in Keevin and Hempen (1997), *ibid.*

transects will be spaced approximately ¼ mile apart. In the case of a low ceiling, airplane-based monitors will be re-located to the Ellwood pier, locations onshore and/or to an additional small boat. Shipboard line transect surveys will be conducted consisting of lines a quarter of a mile apart, staggered between the aerial lines. Shipboard lines will extend to one mile on either side of the project and one mile offshore. Two vessels will be used, each starting at opposite ends of the transect grid and one starting inshore while the other starts offshore. Each boat will carry an observer/recorder and one observer on each side of the vessel. Total survey coverage of the project area will consist of ⅛ mile transect spacing within one mile surrounding the project, and ¼ mile transect spacing between one and four miles from the project. Once the area is surveyed the principal marine mammal monitor will give approval prior to the detonation of explosives. The aircraft will continue circling the project site during each detonation.

- Surveys will be conducted at least one hour before the detonations. Once both the aerial and shipboard line transect surveys have been completed, the boats will patrol a hazard zone with a radius of 1,000 yards, and the aircraft will patrol an additional buffer zone to ensure that no protected wildlife is likely to enter the hazard zone.
- Two observers will be stationed onshore to ensure adequate coverage of the surf zone, which is inaccessible to monitoring vessels. One observer will select a vantage point close to the project site but slightly eastward, while the other will be stationed on Ellwood Pier. As an alternative to the Ellwood Pier location, an observer may be stationed on the coastal bluff just west of the site.
- If any birds remain roosting on the structure and do not respond to warning signals, a starter pistol will be fired or an air horn used to frighten them away for their own safety.
- As much as practicable, a berm made of jetted material will be built up on the seaward side of the columns. This will help reflect and absorb some of the energy of the detonation.
- All charges will be set below the mudline of the seafloor and be detonated in rapid succession to avoid risks associated with separate detonation events.
- The seaward sets of charges will be detonated first so the bubbles and mass of columns will help reduce sound pressure levels from subsequent detonations.
- Detonations of charges will be staggered to avoid a build-up of sound pressure levels.
- The aircraft and one boat will continue surveying the hazard and buffer zones for one-half hour after detonation of the charges to ensure that no protected species escaped detection and was injured. In the unlikely event that an animal is injured, it will be captured by approved Marine Mammal Consulting Group (MMCG) personnel and taken to the nearest approved wildlife care facility.

The WPP requires that monitoring take place according to the following requirements:

- MMCG is the consulting group retained by the applicant to provide biological monitoring for the proposed project. MMCG monitors have training and experience in identifying marine wildlife of the region. MMCG monitors also have hands-on experience in the rescue and handling of marine wildlife, as well as in marine wildlife mitigation

monitoring and data recording. All MMCG monitors have already been approved by NOAA Fisheries in consultation with DFG. Monitors will have necessary equipment to rescue wildlife in the event an animal is injured, and MMCG monitors have authority from NOAA Fisheries and DFG to rescue distressed marine wildlife. Monitors will have a means of marking any dead floating or beach-cast specimens, and MMCG monitors have authority to do this.

- Monitoring personnel in the aircraft will consist of an observer/recorder in the co-pilot's seat, one monitor on each side behind the front seats, and a monitor lying in the belly of the aircraft to see straight down. In the case of a low ceiling which precludes aerial monitoring, aerial monitoring personnel will be relocated to the Ellwood pier, locations onshore and/or to an additional small boat.
- Shipboard monitors will consist of one observer/recorder and one monitor for each of the two vessels, plus the chief monitor on one of the vessels. Vessel crews will be provided separately.
- Two land-based monitors will be provided: one on the near-by bluff or on Ellwood pier, and the other on the beach.
- A qualified biologist will be provided to identify and count fish after the detonations.

In addition to the monitors provided by the applicant, as described above, the State Lands Commission will have independent monitors at the project site during all critical project activities, including demolitions, pile driving, and the placement of quarry rock. SLC monitors will include SLC staff with appropriate expertise, outside consultants retained by SLC, or a combination of the two.

Pile Driving

Pile driving can generate very loud concussive sounds underwater. If the sounds are sufficiently loud, all of the impacts discussed in the previous section are possible. The greatest risk of impact from pile driving will come from the steady blows of the hammer as each pile is driven into the sea floor. Some of the factors upon which sound levels depend are listed below:

- The shape and size of the pile, including its wall thickness if it is hollow;
- The pile material;
- The size and energy of the pile-driving hammer;
- The repetition rate of the hammer;
- Water depth;
- Substrate composition;
- How deep the piles are driven into the sea floor;
- The bathymetry of the area; and
- Physical oceanography (e.g., temperature, salinity and thermoclines).

For the proposed project, the piles are made of round hollow steel and are 30 inches in diameter and approximately 1.5 inches thick. The water depth at the project site is 32 feet deep MLLW. The sea floor is covered with varying thicknesses of sand and sediments (from no sand to three to four feet of sand) on top of Monterey shale, which graduates from weathered to solid material with depth. The piles will be driven to a depth of 15 feet into the Monterey formation, or less if

sufficient resistance is encountered to adequately anchor the piles. The nearby bathymetry has been charted, and the physical oceanography can be generalized from available literature. The hammer specifications are not available at this time; however, the applicant expects that the hammer will generate approximately 328 to 511 kilojoules (kJ) of energy.

Two recent projects in Santa Barbara County, one at PRC-421 and one in Carpinteria, involved pile driving operations. The information from these projects cannot be applied to the proposed project because, first, these two projects only used 12-inch diameter piles, while the Bird Island project is proposing to use 30-inch diameter piles. Second, the previous two projects conducted pile-driving operations either on the beach, or in one to three feet of water. Finally, no sound level measurements were made during either of the earlier project, so no information on SPLs is available.

Extensive measurements were taken during a pile-driving demonstration for the replacement of the east span of the San Francisco-Oakland Bay Bridge. In this case, an enormous pile driver was used in deep water to drive a steel piling eight feet in diameter into mud. The pile driver generated 1700 kJ of energy. Considering the size of the pile and pile driver, the water depth, and the composition of the sea floor (mud rather than sand and shale), the data gathered from this demonstration cannot be applied to the Bird Island project.

There is a lack of applicable sound pressure level data on pile driving, therefore the applicant is proposing a two-part plan to ensure that sensitive marine species will not be impacted by pile driving activities. First, the same monitoring methods and safety zone described for the explosive detonations will be employed during pile driving operations, except that these operations will occur immediately prior to the start of pile driving operations and may continue until sunset. Specifically, aerial, sea and shore monitoring will ensure that no sensitive species are within 1,000 yards of the project site. During pile driving operations, the 1,000-yard safety zone will be patrolled, and if a sensitive species enters the safety zone, pile-driving operations will cease until the animal has left the safety zone.

Second, measurements will be made of pile driving sounds to assess the effectiveness of the proposed safety zone. Measurements will be assessed immediately, and if SPLs are higher than 180 dB re 1μPa, the safety zone will be expanded. Specific monitoring activities include:

- Sound pressure level measurements shall be taken when the first pile is driven. The first measurements shall be taken 1000 yards from the pile-driving site. Measurements shall be taken just beneath the surface, in mid-water, and just off the sea floor. Measurements shall be taken just beyond the surf zone east and west of the site and in two directions off shore.
- The measurements shall be assessed immediately to determine if sound pressure levels fall within acceptable limits (i.e., are below 180 dB re 1μPa) at the edge of the hazard zone. The hazard zone shall be adjusted if sound levels are higher than anticipated. The Executive Director of the Coastal Commission shall be notified immediately of any such changes.

- Considering that sound pressure levels sometimes increase with range in shallow water, additional measurements shall be taken 1500 yards from the pile-driving site, at the same depths and bearings indicated previously. These measurements shall also be assessed immediately to make certain that sound pressures fall within acceptable levels at this range.
- Additional measurements shall be made 2000 yards from the project site if the hazard zone is increased. This is to make certain that sound pressures fall within acceptable levels.
- If time allows, measurements shall be made 500 yards from the project site, in the same depth and directions as indicated previously.

In addition to the measures described above, the applicant also proposes to ramp up power to the pile driver prior to driving each pile. This will warn marine wildlife by gradually increasing the underwater noise level.

Quarry Rock Deposition
The placement of quarry rock will produce low frequency sounds that could result in extremely localized disruption of behavioral patterns of marine mammals. The sounds will be transmitted through the water as the rocks slide across the deck of the barge, splash into the water and land on the sea floor. Quarry rock will be placed over the course of three days. The applicant proposes to implement the following measures to avoid impacts to marine resources during the placement of the quarry rock:

- A concrete-decked barge will be used for the quarry rock. This will reduce the noise associated with moving quarry rock across steel barges.
- Prior to beginning the placement of quarry rock each day or each time a new load of quarry rock is ready, a land-based monitor will make certain that no marine mammals are present within 500 feet of the project site.

Hardbottom and Kelp

Exhibit 6 maps existing hardbottom and kelp at the project site in relation to the proposed anchor corridors and anchor placement sites.[20] Two types of hardbottom are located in the project area: natural hardbottom, and imported boulders and rubble. A major natural hardbottom structure extends from south to east of the pier. In addition, other smaller areas of hardbottom are located just west and north of the pier amid and adjacent to the rows of old steel pilings that supported the pier. The imported boulders and rubble are located in a rock pile approximately 300 feet inshore of the remnant pier structure's columns, near Well No. 7. This pile is approximately 5 feet in diameter and 4 feet high, covering an area of approximately 0.05 acres. These hardbottom areas support subtidal macrophytes such as giant kelp and other biota, and serve as safe sites for numerous subtidal fish and invertebrate species.

[20] Hardbottom habitat information is derived from a side-scan sonar survey conducted by Fugro West, Inc. for the original project in March, 1999. Surficial kelp was surveyed by L.A. de Wit, a marine and coastal environmental sciences consultant on March 20, April 17, and August 2, 2001.

Giant kelp (*Macrocystis pyrifera*) is a keystone species that transforms rocky reefs into underwater forests. The kelp forest provides food and shelter for a diverse assemblage of plants and animals. Surficial kelp was mapped during a March 2001 biology survey; the thickest kelp was found in water depths of approximately 30 feet or less. In the vicinity of the remnant pier there is thick kelp bed extending from water depths of approximately 30 feet toward shore.

The two offshore (southwest and southeast) anchor placements will be located in sediment. The northwest and northeast (nearshore) anchor placements for the barge will likely be located in hardbottom areas, and anchor lines for all four anchors will be suspended over hardbottom areas. A spot check of the northwest anchor indicates it is located on rock, while the habitat at the northeast anchor is mixed sediment and rock. As depicted in Exhibit 6, kelp is thick throughout the eastern portion of the anchoring areas, and is likely to be impacted there no matter where the eastern anchors are located. The location of the temporary moorings has not yet been determined, but that placement could also impact hardbottom habitat and/or kelp. In addition, hardbottom areas are located in close proximity to the pier structure, and may be in the fall zone of the columns when they are toppled.

Table 2. Diver Observations at Anchor Sites[1]

Anchor Corridor	Habitat and Dominant Epibiota
Southeast Anchor	Sediment to 42 ft. (*Diopatra, Kelletia*, and sea pens common; rock ridges with red and purple urchins (*Strongylocentrotus fransicanus* and *S. purpuratus*), *Kelletia*, *Parapholas*, and *Corynactis* common. One kelp bass (*Paralabrax clathratus*); sediment patch at 35 ft.
Southwest Anchor	Low relief rock ridges with isolated sediment patches to 35 ft. Common rock epibiota: kelp, *Cystoseira*, *Pterygophora*, both species of urchins, and *Aglaophenia*. *Diopatra* common in sediment patches.
Northwest Anchor	Low relief, sand-covered rock ridges grading into sand. Coralline algae present, *Cystoseira* and *Egregia* present to common; kelp abundance estimated at 1 plant per 25 ft^2.
Northeast Anchor	Sand and scattered 3 ft-high boulders grading into 3 ft-high rock ridges. Kelp common (1 plant per 10 ft^2) with *Egregia*, *Desmarestia*, and *Cystoseira* present to common. Algal cover 30 to 50% of rock ridges. *Pisaster brevispinus* present on sand-covered lower-relief rock ridges at offshore end of transect.

[1]Information taken from Draft EIR.

To minimize the impacts of the proposed project on hardbottom areas and kelp, the applicant has developed an Anchor Mitigation and Hardbottom Avoidance Plan, which incorporates the following measures into the proposed project:

- Pre-designated anchor placements have been chosen to be located, where feasible, in sedimentary-bottom habitat. These anchor placements are based on 1999 survey information and will be adjusted following the pre-project survey.

- Anchors will be "flown" through the water via one of the support vessels before being dropped at its pre-determined location. Precise pre-determined anchor placements are located using DGPS positioning system. This eliminates the dragging of anchors and their towlines across the ocean floor over hardbottom areas.
- A construction or biological monitor will confirm that the areas to which the anchors are flown are located at the pre-determined anchor placement locations.
- The anchor locations will be ground-truthed by a diver prior to project operations in order to determine whether anchor site revisions could reduce kelp and hardbottom habitat impacts.
- Anchor lines will be suspended from crown buoys to the vessel. Two weeks prior to anchoring vessels, surficial kelp will be cut to a maximum depth of 4 feet below the surface along the inshore anchor corridors, to decrease the loss of kelp from anchoring lines.
- The nearshore anchors will be pre-positioned and secured to the vessels via "soft line" from a pennant buoy attached to the anchor.
- Any kelp habitat lost due to offshore activities will be reported to the NMFS pursuant to Section 305(b) of the Marine Fishery Conservation and Management Act (MFCMA).
- The imported rock fill around Well No. 7, which supports dense kelp growth, will not be removed.

A diver survey of the area around the concrete caissons found that several areas of hardbottom exist in the vicinity of the proposed artificial reef[21] (see Exhibit 7). Much of the bedrock in the area is a low-lying siltstone "pavement" partially covered with a light veneer of sandy silt and epibiota. The largest areas of the pavement type of bedrock habitat were observed on the northwest and southeast sides of the platform. It appears that outcrops rising appreciably above the seafloor occur in only a few areas around the remnant structures, primarily in the southwest (offshore) site of the platform and off the western corner of the platform. Maximum vertical relief on these outcrops was about one foot.

The species composition of the epibiota on the "pavement" form of bedrock generally does not represent species characteristic of true hardbottom habitat. The presence of a thin veneer of sandy silt suggests that the areas of pavement are subject to periodic seasonal scouring or burial by sand. It is likely that strong winter storms transport sand into these areas and prevent the epibiota normal to areas with higher relief from becoming established and persisting.

Toppling the caissons and placement of the quarry rock may bury some areas of "pavement" hardbottom. Areas of existing higher-relief hardbottom outcrops (on the southwest side and off the western corner of the platform) are located so that it will be possible to avoid burying these

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[21] *Description of Pre-Demolition Conditions for Natural Hardbottom Substrate near the Remnant Pier Structure in State of California Tidelands Lease PRC-421, Santa Barbara County, California.* Prepared for Fairweather Pacific, LLC. Prepared by Littoral Ecological & Environmental Services (LEES). December 10, 2004.

areas when placing quarry rock for the artificial reef. No quarry rock will be placed on existing higher-relief hardbottom outcrops when the artificial reef is constructed.

With these measures in place, the applicant will minimize impacts to hardbottom. However, even with these measures in place there is the potential for unavoidable impacts to hardbottom at the anchor placements and in the anchor corridors. Any impacts to hardbottom at these locations will be mitigated by the applicant adding additional hard substrate at the project site as part of creating the 0.6-acre artificial reef.

To ensure that impacts to kelp are avoided, minimized, and/or mitigated, the applicant proposes to ground-truth the nearshore anchor locations and temporary moorings, to determine whether anchor site revisions could reduce impacts to kelp and hardbottom areas. **Special Condition No. 3** requires that the locations of the nearshore anchor placements and temporary moorings be ground-truthed by a diver no more than 30-days prior to project commencement.

Furthermore, **Special Condition No. 4** requires that a pre- and post-construction kelp survey be conducted, according to the Work Statement for Pre- and Post-Demolition Assessment of Kelp Resources Associated with Removal of Remnant Pier Structure in State of California Tidelands Lease PRC-421, Santa Barbara County, California (Kelp Survey Plan). The purpose of the survey will be to provide pre- and post-construction data on abundance and distribution of giant kelp and other kelp resources within the project impact zones and reference areas.

As required by **Special Condition No. 4**, the pre-construction kelp survey shall take place within the minimum feasible amount of time between the survey and the beginning of construction activities, and in any case within 30 days prior to the beginning of construction. The post-construction survey shall take place within the minimum feasible amount of time between the survey and the completion of construction activities, and in any case within 30 days after the completion of construction. A report shall be submitted to the Executive Director within 60 days of completion of the post-construction survey, describing the results of the surveys and containing conclusions regarding loss of kelp due to construction activities. If the report finds a loss of kelp due to construction activities, an additional post-construction survey shall be performed one year after the completion of construction activities. A second report shall be submitted to the Executive Director within 60 days of completion of this third survey. If after one year any kelp lost due to project-related construction activities has not fully reestablished, the applicant shall within 45 days from submitting the final post-construction survey report submit to the Commission an application for an amendment to this permit for kelp restoration and monitoring.

White, Pink and Green Abalone

Several special-status abalone species are potentially present at the project site, including the federally endangered white abalone (*Haliotis sorenseni*), and pink and green abalone (*H. corrugata* and *H. fulgens*), both added to the federal Species of Concern list in 2004. In comments on the Draft EIR, NOAA Fisheries recommended that the applicant survey the project area for abalone no more than 30 days prior to the start of construction activities. In the event of

an encounter with a special-status abalone, the applicant was recommended to notify NOAA Fisheries immediately, so the appropriate course of action could be identified.[22]

In December 2004, the applicant conducted a preliminary survey, during which 5.8 acres of the seafloor was surveyed for abalone over eight and a half days.[23] Surveys were performed in the vicinities of the remnant pier structures, the remnant pilings and I-beams inshore of the remnant structures, at each of the five anchor locations (four barge anchors and one mooring anchor), and on rocky habitat within the anchor cable corridors. Because of risks associated with the deterioration of the remnant pier structures, no surveys were conducted in the area immediately beneath the platform.

Divers encountered three abalone in an area potentially impacted by project activities; specifically, in the sweep corridor for the southeast anchor cable, approximately 300 feet south of the remnant structures. An additional abalone was encountered just outside of this anchor sweep corridor. The abalone within the anchor corridor varied in size: the smallest, sub-adult animal measured approximately 1.5 inches, while the two adults measured 4 and 7 inches long. The abalone were photographed, their locations flagged, and a follow-up dive was scheduled with DFG biologists.

On the return dive the two smaller animals could not be found. DFG divers found a shell of the appropriate size from a freshly killed abalone near the location recorded for the four-inch abalone, and biologists believe it suffered predation by one of the octopi abundant in the area. Based on examination of the photographs and shell, DFG biologists tentatively identified the two smaller animals as threaded abalone (*Haliotis kamtschatkana assimilis*). DFG biologists also identified the abalone found outside the anchor corridor as a threaded abalone. Threaded abalone is not a species of concern and has not been provided with any special regulatory protection.[24]

After examining the largest specimen, DFG biologists tentatively identified it as a white abalone, and NOAA Fisheries confirmed this animal to be a white abalone. Based on its size, NOAA Fisheries estimates the animal to be approximately 20 years old.[25]

White abalone were harvested heavily from the early 1970s until about 1976, when overharvesting caused the fishery to crash. NOAA Fisheries believes, based on observations on other species of abalone in the laboratory and in Australia, that abalone must be within approximately 6 feet of each other for successful fertilization to occur. Dispersal of larvae is somewhat limited, and recolonization of former habitats takes many years. Like most long-lived

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[22] March 11, 2004. Letter from Rodney McInnis of NOAA Fisheries to Eric Gillies of the State Lands Commission.
[23] *Pre-Demolition Assessment of Abalone Resources in Areas Associated with Demolition of Remnant Pier Structures in State of California Tidelands Lease PRC-421, Santa Barbara County, California.* Prepared for Fairweather Pacific. Prepared by Littoral Ecological & Environmental Services (LEES). Received January 4, 2005.
[24] *Biological Assessment for White Abalone in Habitat near the Remnant Structure for PRC-421 (Bird Island). Prepared for Fairweather Pacific.* Prepared by Littoral Ecological & Environmental Services (LEES). Appendix A prepared by Fairweather Pacific. Received January 26, 2005.
[25] E-mail correspondence from Melissa Neuman to Audrey McCombs. Subject: Re: Bird Island Abalone. January 27, 2005.

broadcast spawners, successful recruitment events occur only infrequently. Available information suggests that successful recruitment has not occurred recently for white abalone, even at Tanner Bank, which supports a large population of adults. Following the dramatic decline due to overexploitation and the likelihood that most of the remaining specimens are too far apart to achieve successful reproduction, NOAA Fisheries listed the white abalone as an endangered species in May 2001. Population estimates at that time were about 1,600 animals.[26]

Because the species is federally listed, and is not listed with the State of California, NOAA Fisheries is the agency with regulatory authority over its management. NOAA Fisheries is in the process of making a determination regarding the disposition of the animal found at the Bird Island site. At this time, the agency is entertaining two possibilities: 1) the animal can be allowed to remain in place, and 2) the animal can be moved into an on-shore breeding program.[27]

Relocating abalone is risky – according to NOAA Fisheries, abalone moved to breeding facilities experience an estimated forty percent mortality rate due to damage suffered during removal from their home rocks. In addition, removing an animal from the wild and placing it into a breeding program involves a reduction in biodiversity in the wild population.[28]

If the white abalone encountered at the Bird Island site remains in place, the proposed project has the potential to cause adverse impacts through: 1) the detonation of explosives, 2) increased turbidity from detonations and the placement of quarry rock, and 3) scouring of the bottom by the anchor cables in the anchor cable corridors.

Abalone do not have gas bladders or auditory organs, therefore sound impacts from the detonation of explosives is unlikely to adversely affect the animal. Physical damage could occur from detonations if the animal was located within several feet of the detonation; however, the white abalone encountered at the site is located approximately 300 feet from the remnant structures. As discussed below, **Special Condition No. 5** requires that another survey of the site be conducted within 30 days before the start of project activities, to ensure that no further abalone have moved into the project site.

This site has notoriously poor underwater visibility through much of the year. The offshore and nearshore portions of the project site lie within an area that is influenced by winter storms, and have high levels of sedimentation associated with storm events. The increase in turbidity caused by project activities is expected to be less severe than that caused by winter storm events. Because turbidity in this area is normally high, the turbidity caused by the detonations and the placement of quarry rock is not likely to have an adverse effect on the white abalone observed, or on any other abalone that may, at a future time, be discovered at the project site.

The anchors and anchor cables used to anchor and reposition the load-line barge could physically harm or displace abalone, resulting in direct mortality or increased risk of predation. These effects could extend to abalone living on hard substrate several hundred feet away from the

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[26] *Biological Assessment, ibid.*
[27] Melissa Neuman, NOAA Fisheries, pers. comm. January 27, 2005.
[28] The information contained in this paragraph and following is taken from the *Biological Assessment, ibid.*

remnant platform, including the white abalone already encountered at the site. The applicant conducted an analysis of the catenary (the curve formed by a the anchor cable suspended from its endpoints) for the anchor cables to assess the risk that a cable would scour the seafloor in the vicinity of the white abalone present at the site.[29] This analysis found that the anchor cable for the southeast anchor will be closest to the white abalone when the barge is positioned at its off-shore location, during detonation of the explosives. At that time, the anchor cable will be intersecting the surface of the water almost directly above the animal, in about thirty feet of water. The Biological Assessment recommends the placement of a floating buoy on the anchor cable near to the location of the white abalone, to help keep the cable from coming into contact with the seafloor.

The anchor cable for the southeast anchor also has the potential to scour the seafloor in the vicinity of the white abalone during installation and recovery of the of the anchor cable, when the cable is suspended between the barge and the anchor handling tug as the anchor is being flown into position. During this procedure, the white abalone will be located to the west of the anchor cable, however there is a slight risk that the cable might come into contact with the animal. The Biological Assessment recommends a revised route for the tugboat, further to the east, in order to avoid the area currently occupied by the white abalone.

As discussed above, NOAA Fisheries is currently reviewing the Biological Assessment prepared by the applicant, and will decide on the best course of action to take with regard to the disposition of the white abalone already encountered on site. NOAA Fisheries or DFG have regulatory authority to protect special-status abalone species that may be located at the site. **Special Condition No. 6** requires that the applicant follow the recommendations of NOAA Fisheries and/or DFG abalone experts, and that no construction activities occur until the Executive Director is satisfied that the recommendations of NOAA Fisheries and/or DFG have been followed. **Special Condition No. 6** applies both to abalone already encountered at the site, and any abalone that may be found pursuant to the abalone survey required by **Special Condition No. 5**.

Special Condition No. 5 requires the applicant, within 30 days prior to project commencement, to perform a pre-construction abalone survey in accordance with the Work Statement for Pre-Demolition Assessment of Abalone Resources in Areas Associated with Demolition of Remnant Pier Structure in State of California Tidelands Lease PRC-421, Santa Barbara County, California (Abalone Survey Plan). The survey shall examine the project area for the presence of the endangered white abalone or imperiled green and pink abalones, as well as the red abalone (*H. rufescens*). If abalone are encountered in the project area, the applicant shall immediately notify NOAA Fisheries, DFG and the Executive Director, as described in the Abalone Survey Plan.

Black abalone (*H. cracherodii*), a primarily intertidal species, is not expected to occur in the study area but will be documented if observed.

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[29] See Appendix A of the *Biological Assessment, ibid.*

Vessels Colliding with Whales

Vessel traffic will occur throughout all phases of the project as vessels will navigate to and from the project site before, during, and after the removal operations, and during the pre-detonation boat surveys. The applicant has developed a Marine Mammal Contingency Plan (MMCP) to assist personnel in avoiding the harassment or injury of marine mammals while operating any of the vessels. The MMCP has been reviewed and revised by NOAA Fisheries and DFG staff biologists. Personnel involved in the structure removal operations will be familiar with the procedures outlined in the MMCP. Although the project will be timed to avoid whale migration seasons, gray whales and other cetaceans could be present during the work period. Avoidance of marine mammals will be achieved by observing the following rules:

- Support vessels will not cross directly in front of migrating whales;
- When paralleling whales, support vessels will not operate at a speed faster than the whales; all vessels will operate at a constant speed;
- Female whales will not be separated from their calves;
- Support vessels will not herd or drive whales;
- If a whale engages in evasive or defensive action, support vessels will drop back until the animal calms or moves out of the area;
- If dolphins ride the bow or stern waves or frolic near support vessels, support vessels will slow down and keep a steady course;
- Vessels will remain at least 100 yards away from gray whales to minimize the chance of collision or disturbance; and
- A marine mammal watch will be maintained at all times while vessels are underway.

Procedures have been developed in case of a collision with a marine mammal, including reporting and notification procedures. All crew members will be required to read and understand the MMCP, which includes a guide to identifying cetaceans, pinnipeds and fissipeds.

Roosting and Nesting Seabirds

California brown pelicans, listed as "Federal Endangered," "California Endangered," and "California Fully Protected," use the PRC-421 remnant structures as a day and a night roost. The remnant structures are also used for roosting and nesting by Brandt's cormorants, and are probably used for roosting by the double-crested cormorant, a State species of special concern. The pier is considered by the California Department of Fish and Game as the only secure roost site for brown pelicans in Santa Barbara County south of Point Conception, and the only nesting site for Brandt's cormorants on the mainland coast south of Point Conception. This site ranks 12th out of 60 mainland diurnal roost sites for brown pelicans from Point Conception to the Mexican border, and was occupied 100% of the time during thirteen aerial surveys.

Communal roost sites are essential habitat for brown pelicans throughout their range. Brown pelicans (as well as cormorants) are unlike many other seabirds because they have wettable

plumage, which requires them to come ashore regularly to dry out and restore their plumage. Brown pelicans occupy a larger number of roost sites by day and then congregate into a smaller number of higher-quality roosts at night. The PRC-421 site is both a day and night roost, which indicates that the site is a favored location for brown pelicans. In addition, the PRC-421 remnant structures are used by breeding brown pelicans from Anacapa Island, the primary West Coast nesting site for the brown pelican. The distance from the Anacapa Island colony to the existing site permits birds to make energy-efficient foraging trips to the mainland, rest and dry their plumage before the return flight to Anacapa.

The nesting period for California brown pelican and Brandt's cormorants is from mid-April through late August. The removal of the existing structure will be conducted during September and October to avoid disturbing nesting and rearing activities of protected birds. This timeframe should ensure that fledgling bird species have matured and left their nests by the time project activities commence. A biological monitor shall determine if nesting birds remain on the structure at the end of August. If birds still occupy nests on the structure when work is scheduled to begin, the project activities will be postponed until all the fledging birds have left.

Roosting species will experience a short-term displacement during the period between demolition of the existing structure and the installation of the replacement habitat - approximately one month. Resident birds are expected to occupy alternative onshore and/or offshore roosts near PRC-421, such as Ellwood Pier or open beach, until the proposed new roosting/nesting platforms have been installed. The installation of the new roosting/nesting platforms will help ensure that healthy populations of special-status seabirds will be maintained and protected.

Conclusion

The applicant has designed the proposed project, including applicable mitigation and monitoring plans, in such a way that, with the addition of **Special Conditions No. 3 through 6**, the proposed project will protect marine resources. The Commission therefore finds the project consistent with Coastal Act Section 30230.

4.4.3 Water Quality

Coastal Act § 30231 states:

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

The project has the potential to affect water quality by: (a) increasing turbidity, and increasing concentrations of organic matter within the water column; (b) releasing toxic substances into the

marine environment by retaining concrete caissons on the sea floor; and (c) releasing toxic substances into the marine environment by installing a protective coating on the bird roosting/nesting platforms.

Turbidity

Project activities that will increase turbidity in the area include: underwater jetting procedures, the placement of anchors, the detonation of explosives and toppling of the caissons, and the installation of quarry rock. These activities will disturb the fine sands and silts of the ocean floor and will suspend the particles, increasing turbidity in the project area. Project activities are expected to displace approximately 24 to 40 cubic yards of sediment.

Increased turbidity is a water quality concern because suspended sediments will reduce light transmission through the water, possibly impacting biological productivity of the primary producers in the area. Reduced biological productivity in primary producers, such as kelp, could impact other marine resources that depend on primary producers. In addition, the settling of suspended sediments has the potential to smother benthic organisms. Infauna (organisms living within the sediments) are likely to be removed with the sediment, exposing them to possible physical damage and/or predation.

Project activities that will suspend sediment on the ocean floor also have the potential to introduce organic matter contained within the sediments into the water column. Large-scale increases of organic matter within the water column can increase dissolved nutrient concentrations, causing algal blooms that deplete the local water column of dissolved oxygen. Lack of dissolved oxygen can smother fish and benthic organisms in the vicinity.

According to the two underwater surveys already conducted, as well as discussions with local urchin divers, this site has notoriously poor underwater visibility through much of the year. The offshore and nearshore portions of the project site lie within an area that is influenced by winter storms, and the increased sedimentation associated with storm events. The increase in turbidity caused by project activities is expected to be less severe than that caused by winter storm events.

Increases in turbidity caused by project activities will be temporary, and the affected areas are expected to return to pre-project conditions within a very short period of time. In addition, the applicant will "fly" the anchors through the water to their pre-determined locations, ensuring that they will not be dragged across the ocean floor. The applicant has also agreed to minimize jetting of ocean floor sediments to the maximum extent feasible.

Material Leaching

The applicant proposes to topple the eight concrete caissons and retain them on the seafloor to serve as material for the artificial reef. Toxic contaminants in the caissons could leach into the marine environment. The contaminant of primary concern is asbestos – because the caissons have been in the water for over sixty years, any other contaminate leaching will have already occurred. The applicant took representative samples from the caissons and had them analyzed

for asbestos-containing material. The analysis determined that the caissons contain 100 percent non-fibrous, non-asbestos material. The caissons will therefore not impact water quality by leaching toxic material into the marine environment.

Protective Coatings

To reduce future maintenance requirements on the piles and roosting/nesting platforms, and eliminate the aggressive corrosion effects of the seawater in the splash zone, a system of preservative products (DENSO brand protective products) will be applied by divers (the submerged portion) and riggers (above water portion) to the pile(s) from -20' SWL to +10' SWL. The DENSO product is a 2-part wrap product consisting of paste-impregnated cloth tape that is covered with a bolt-on polyethylene UV-resistant cover. DENSO has a long history of corrosion prevention with this product. The portion of the pile above the +10' SWL elevation and the roosting/nesting platform structure(s) will be coated with high-build epoxy paint (Amerlok 400) for resistance to seawater and marine environments. For that portion of the pile below the DENSO protective wrap and above the seabed, sacrificial aluminum alloy anodes will be used to protect the submerged portion of the bare steel from corrosion.

A limited amount of repair to the epoxy paint is expected following installation. The epoxy paint and brackets for the anodes will be installed during fabrication on land. According to the MSDS Product Information for the DENSO coating, DENSO is a chemically stable compound, which can only be softened (released to the ambient environment) if exposed to organic solvents such as Kerosene. Since contact with organic solvents will not occur, protective products will remain stable and will not leach into the marine environment.

Conclusion

The applicant has designed the proposed project, including applicable mitigation and monitoring plans, in such a way that the proposed project will protect the biological productivity and the quality of coastal waters. The Commission therefore finds the project consistent with Coastal Act Section 30231.

4.4.4 Oil Spills

Coastal Act § 30232 states:

> *Protection against the spillage of crude oil, gas, petroleum products or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and clean-up facilities and procedures shall be provided for accidental spills that do occur.*

The proposed project involves the removal of conductor (casing) pipes from former oil Well Nos. 7 and 10 and the use of vessels and equipment that use petroleum products. While the project poses no risk of an oil or petroleum hydrocarbon spill from the oil wells themselves, there is a slight risk of oil spill from the work vessels and construction equipment. There is also a long-term risk of a petroleum hydrocarbon release due to possible vessel collisions with the proposed artificial reef and bird roost platforms.

Construction hazard

The first test of Coastal Act Section 30232 requires the applicant to undertake protective measures to prevent an oil or petroleum hydrocarbon spill from occurring. The potential for oil spill risk and the protective measures the applicant has taken to prevent or minimize the risk of a spill are discussed below.

Well Nos. 7 and 10 were plugged and abandoned in 1953 and 1954, respectively, in accordance with the Division of Oil, Gas, and Geothermal Resources (then named Division of Oil and Gas) regulations and procedures in effect at that time. A review of the methods used for the wells' abandonment in 1953 and 1954 confirms that the plugged wells are consistent with the current Division of Oil, Gas, and Geothermal Resources (DOGGR) 2004 regulations and procedures for abandonment.

While DOGGR abandonment requirements are more stringent today that they were in 1953 and 1954, the basic method for abandonment remain the same today as it did in the 1950's. Namely, isolate the hydrocarbon zones from the surface with a series of mud and cement layers in the well zone. The difference between the State's abandonment requirements in 1953 and 1954 and those in effect today is that DOGGR's 2004 abandonment regulations require greater volumes of cement to be used in the layers. However, while implementation of today's regulations theoretically results in a safer abandonment and plugging of the wells, there are no known studies that show conclusively that the volumes and quality of the cement and mud used in the subject wells will fail[30]. Since there have been no reports of oil releases in the vicinity of Well Nos. 7 and 10, the project EIR concludes that the abandonment procedures eliminate the possibility of an oil spill from the wells.

A small risk exists for a release of production fluids and/or muds from the abandoned Well Nos. 7 and 10. Due to the manner in which the wells were abandoned in 1953 and 1954, it is very unlikely that that any production fluid remains in the conductor pipes. There may be some mud or water contained in the conductor pipes, most likely sediments and seawater that may have entered the pipes from the environment. The applicant proposes to inspect the contents inside the conductor pipes, vacuum out any remaining mud or seawater down to the surface plug, and dispose of any fluids/material in a sealed tank.

To minimize the risk of an oil or petroleum hydrocarbon spill, or other hazardous substance spill, the applicant will cut and remove the conductor pipes in accordance with procedures and conditions approved by the DOGGR and SLC.

The remaining pier structure and pilings served as a support platform for the well operations and, as such, have no facilities that could contribute to an oil or petroleum hydrocarbon spill. Therefore, the only remaining potential source of an oil or petroleum hydrocarbon spill, or release, are limited to the project vessels and on-board equipment that will be used during the

[30] April 16, 2004. E-mail from Bryant Morris, Project Petroleum Engineer. Response to Santa Barbara County Comments.

pier removal activities, e.g. spills arising from leakage of fuel, motor oil, or hydraulic fluid during operation and/or equipment maintenance, or vessel collisions with remnant structures or other vessels. The vessel and construction crews will be trained to safely operate the vessels and equipment, and will monitor all operations to ensure that no release of hydrocarbons into the marine environment will occur.

Notwithstanding the implementation of the above preventive measures, a small risk remains that an accidental spill could occur during construction activities. The second test of Coastal Act Section 30232 requires the applicant to provide effective containment and cleanup equipment and procedures in the event that an accidental spill does occur.

The applicant has prepared a project-specific Oil Spill Contingency Plan (OSRP). In the event of a spill, the OSRP provides an emergency notification list and the following oil spill response equipment, personnel and procedures to avoid or minimize the potential for adverse impact to coastal and marine resources in the event of a spill:

- Three bales of Sorbent pads, 600 feet of sorbent boom, 1000 feet of oil spill containment boom and two boom tender skiffs will be onboard the work barge at the project site at all times.

- The vessel crew on the work barge will be trained in oil spill response to handle immediate response and clean up for small spills (less than five barrels) and to provide initial response for large spills (greater than five barrels) at the project site. In the event of a large spill, the crew will immediately notify Clean Seas to provide the primary response.

- Clean Seas — the Santa Barbara region's oil spill response organization — will provide the primary oil spill response in the event of a large spill (greater than 5 barrels). Clean Seas maintains two large oil spill response vessels (OSRVs) — Mr. Clean and Mr. Clean III — and several small response vessels that are equipped with on-board oil spill boom and skimmer operations. Additional oil spill response and containment equipment is also stored at the Clean Seas' storage yard in Carpinteria. Clean Seas' OSRV, Mr. Clean, can arrive at the project site in less than 2 hours, which is consistent with the OSPR's and the Commission's response time standard of 2 hours for primary oil spill response. The applicant has arranged with Clean Seas to be a "contract associate member" for the duration of the proposed project. **Special Condition No. 7** requires the applicant, prior to commencement of project activities, to submit to the Executive Director evidence of the contractual arrangement with Clean Seas.

Long-term hazard

The proposed project involves the risk of a petroleum hydrocarbon spill or release in the long-term due to possible vessel collisions with the artificial reef and bird roost platforms. Such a collision could potentially cause a spill or release of diesel fuel from the vessel, however there is

no chance that such a collision would cause an oil spill from either Well No. 7 or No. 10, because the wells have been capped and will be cut off below mudline.

The proposed project is located relatively close to shore, therefore vessel traffic in the area is limited to recreational boats, fishing vessels, and other small crafts. The four roosting/nesting platforms and associated piles will be erected shoreward of the existing remnant pier structures, in an area that is currently avoided by vessel traffic due to the existing remnant pier structures. Existing water depth at the site of the remnant pier structures is currently 30 to 34 feet. The proposed artificial reef is low-profile, and after toppling the caissons and constructing the artificial reef, water depth at the site will be approximately 22 to 26 feet. The US Coast Guard has determined that aids to navigation, such as lights, buoys, and beacons, will not be required for the artificial reef or the bird platforms.

Information regarding the proposed project will be posted in the US Coast Guard Local Notice to Mariners. The applicant will notify NOAA Nautical Date Branch of the new artificial reef and bird platforms so that nautical charts can be updated to reflect the new structures. While a long-term risk of vessel collision with the new structures exists, the risk is small and is not increased from its present level by the proposed project.

Conclusion

The Commission finds that protection against the spillage of crude oil, gas, petroleum products or hazardous substances has been provided to respond to the type of spill that could occur due to project-related construction activities. Furthermore, while a long-term risk of vessel collision with the new structures exists, the risk is small and is not increased from its present level by the proposed project. For the reasons discussed above, the Commission therefore finds the project, as conditioned, is consistent with the Coastal Act's Section 30232 oil spill prevention and response policy.

4.4.5 Commercial Fishing

Coastal Act § 30234.5 states:

> *The economic, commercial, and recreational importance of fishing activities shall be recognized and protected.*

The proposed project will temporarily preclude urchin diving, crab and lobster trapping on the area during construction activities, and permanently preclude commercial fishing at the project site due to the construction of the new artificial reef and bird roost/nesting platforms.

In general, commercial fishing is limited near the project site by the depth of the water. Commercial fishing for California halibut is conducted greater than one nautical mile offshore, for Dover sole in at least 1,800 feet of water, for rockfish in greater than 180 feet of water, and miscellaneous market fish in at least 600 feet of water. Fishing for commercial invertebrates such as ridgeback shrimp and spot prawns occurs in depths greater than 180 feet, and for crabs in 60 to 240 feet of water. Commercial urchin diving can occur from the surf zone to 100 feet.

Purse seining for squid could occur along the coast near the project site, however most squid fishing occurs at the Channel Islands.

Project activities will be conducted nearshore and in water depths shallower than those identified above as active commercial fishing depths, other than for urchin diving and crab and lobster trapping. Similar seafloor habitat as that found within the anchor preclusion area is expected within the approximately 2.7 square mile area of Fish Block 654 that encompasses water depths of from 18 to 40 feet. Because the area of preclusion will be small (about 0.07 square miles for one month), the impacts will short-term, and similar seafloor habitat is expected to be near-by, the project will have only a minor and temporary impact on the commercial fishing industry.

Conclusion

For the reasons discussed above, the Commission finds the proposed project recognizes and protects the economic, commercial and recreational importance of fishing in the project area, and is consistent with Section 30234.5 of the Coastal Act.

4.4.6 Public Access and Recreation

Coastal Act § 30210 states:

> *In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.*

Coastal Act § 30211 states:

> *Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*

Coastal Act § 30220 states:

> *Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.*

The proposed project has the potential to affect public access and recreation in the following ways: (a) Impact onshore recreational activities due to temporary construction activities; (b) Preclude nearshore and offshore recreation due to temporary construction activities; (c) Impact recreational boaters due to the long-term presence of the artificial reef and bird platforms.

Onshore Recreational Activities

A wide range of public and private facilities is available for recreation in the vicinity of the PRC-421 pier remnant, including beaches and bluff-top parks. Most of the recreational activities along the shore are water-related or coastal-dependant, and include walking, jogging, sunbathing, and beachcombing. The barge used to dismantle the pier remnants and install the proposed

roosting/nesting platforms will be stationed at the end of the structure, 850 feet from shore. The proposed project will have no physical presence on the beach. People on the beach and from some view points on the bluffs, including the Ellwood Shores area and the Sandpiper Golf Course, will be able to see the vessels, and may be able to hear various pier removal and roosting/nesting platform construction activities. This will not prevent people from continuing any of their beach and other onshore activities. Members of the public engaged in onshore recreational activities will not be at risk during the planned operational use of explosives due to the distance of these operations.

Nearshore and Offshore Recreational Activities

During the pier removal and roosting/nesting platform construction work, the public will have to be excluded from the area for safety reasons. Fishing, diving, recreational boating, swimming and surfing are the nearshore or offshore recreational activities that will be precluded during construction activities.

Due to the known presence of oil seeps, the area is not considered a prime destination for commercial sport fishing. Most sport fishing and diving in the area is conducted at Naples Reef, located approximately 2.5 miles west of Pier PRC-421. Recreational boating activity in the immediate project area is also minimal because the project site is a considerable distance from the Santa Barbara Harbor. Beach access is limited in the vicinity of the Sandpiper Golf course, so the number of people that use the beach closest to PRC-421 is low. Swimming is a beach activity that tends to occur in or near organized parks in the area, especially at Goleta Beach County Park and adjacent beaches near UCSB. Surfing is popular off Coal Oil Point and Goleta Point near UCSB, however it is very uncommon along the relatively straight shoreline in the vicinity of the project site.

For those who do visit the beach and recreate in the nearshore waters at the project site, preclusion of these activities will be temporary – lasting only the 26 days anticipated for demolition and installation.

The US Coast Guard will be contacted so that project information can be included in the Local Notice to Mariners to advise any fishermen, divers and/or boaters planning to use the area during construction activities.

Long-term Impacts

The pier remnant structures currently present a nearshore obstacle that boaters traveling along the coast have to avoid. After the completion of construction activities, the bird platforms will constitute a new obstacle to be avoided. However, the bird platforms will be in almost the same place as the existing structures, and will have a smaller footprint than the current structures. The proposed project will therefore slightly reduce impacts to boaters who must avoid the new structures, relative to the current situation in which boaters must avoid the existing remnant structures. The applicant will notify NOAA Nautical Date Branch of the new artificial reef and bird platforms so that nautical charts can be updated to reflect the new structures.

Conclusion

The Commission finds that there will be no impacts to public access and only minor impacts to recreational activities caused by the proposed project. The proposed project provides for maximum public access, does not interfere with the public's right of access to the sea, and protects coastal areas suited for water-oriented recreational activities. For this reason, the Commission finds that the proposed project is consistent with the public access and recreation sections of the Coastal Act, specifically, Sections 30210, 30211 and 30220.

4.4.7 Cultural Resources

Coastal Act § 30244 states:

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

The proposed project has the potential to affect archeological, paleontological and/or historical resources at the project site by disturbing or destroying prehistoric remains, fossils, and/or shipwrecks located at the project site. Project activities that might impact cultural resources include excavating the sea floor by jetting sediments, driving the four platform piles into bedrock, and other activities associated with cutting and removing the remnant pier structures.

A literature search was conducted to identify documented offshore cultural resources.[31] A large aboriginal population lived in the Goleta area during late prehistoric times, and the area offshore of Goleta was the scene of frequent aboriginal maritime activity. The Barbareno, one of the Chumashan-speaking Native American tribes of California, historically inhabited land onshore from the project area. Ocean fishing and nearshore collection of shellfish were important for survival of aboriginal peoples, as was hunting and trapping of large and small game.

There are no known archaeological resources in the project area, although prehistoric remains may occur in the area surrounding the project site. Prehistoric remains may be located on landforms that were previously above water, and are presently submerged and now covered with marine sediments. Preservation of intact prehistoric resources along the California coast is considered rare due to the high-energy nature of the shoreline environment. Prehistoric artifacts in the nearshore environment may be destroyed, altered, or displaced by wave action and sediment transport processes.

The proposed project involves only minor excavation of the seafloor, to four feet below the mudline around each of the eight columns and two well conductor pipes, and driving of the four piles. The likelihood that proposed project activities will disturb or destroy archaeological resources is small.

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[31] See Draft EIR p. 4.8-5.

Potential impacts to paleontological resources involve the possibility that pile driving for the bird platforms could crush fossils. There is little information on the existence of fossil evidence in the project area, and sampling to determine if fossils are present would result in approximately the same impact as the proposed project itself. The proposed project will only impact bedrock in the area of the four 30-inch diameter piles. Dr. Larry Agenbroad, Professor Emeritus of Paleontology and Quaternary Geology at Northern Arizona University, was consulted for his professional opinion regarding the potential for the proposed project to impact paleontological resources.[32] In his professional opinion, the probability of project activities damaging vertebrate resources of the Monterey Formation is low.

Historical resources potentially present at the project site include shipwrecks and artifacts from shipwrecks. Five historic shipwrecks occurred near the Goleta Slough, and are the closest known shipwrecks to the project area, approximately four miles away. All five are more than 50 years old. The likelihood of unrecorded wrecks within the project area is relatively low, because the project site is in shallow waters and is not located on an approach to a major harbor or port. In addition, extensive dive investigations of the project site and remote bathymetry studies have identified no remains of shipwrecks. With the high-energy wave movement on the southern California coast it is possible that wreck remains could be obscured by sand; however, this is unlikely due to the limited shallow sand deposits in the project area. It is unlikely that the proposed project will disturb or destroy historical resources.

The Commission therefore finds that the likelihood that the proposed project will adversely affect archaeological, paleontological or historical resources is small, and therefore the project is consistent with Section 30244 of the Coastal Act.

4.4.8 Visual Resources

Section 30251 of the Coast Act states:

> *The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas...*

Visual Setting

The project area lies off the Santa Barbara County coast in an area characterized by coastal bluffs and sandy beaches. In addition to extensive open space areas along the coast, residential and recreational areas occupy nearby portions of the coast. Generally visible marine habitats in the project area include sandy, rocky, and cobble beaches, and kelp forests. The Santa Barbara Channel dominates the region's coastal viewshed.

A flat, sandy beach lines the coast between the project site and upland areas. A steep coastal bluff separates the beach from these upland areas, abruptly rising 80 to 100 feet above the beach

[32] See Draft EIR p. 4.8-7.

in some areas. Portions of these upland areas are developed, although the majority of the area is considered open space according to the County of Santa Barbara Comprehensive Plan Open Space Element. Numerous public coastal accesses, parks and beaches are located in the area, and the public Sandpiper Golf Course occupies the coastal terrace immediately north of the project site. The Santa Barbara Shores County Park occupies a substantial portion of the remaining coastal terrace. This park is largely undeveloped and contributes open space to the area. The coastline both northeast and northwest of the project site retains a largely rural atmosphere with some residential and commercial developments within the city of Goleta, and commercial onshore oil facilities, such as the Ellwood Onshore Facility.

Views of the project site consist of a largely unbroken expanse of ocean, with the exception of several offshore oil platforms to the southeast and southwest, and the existing PRC-421 Pier remnant. The view is demarcated by the Channel Islands to the south. Ships, fishing boats, and recreational boats occasionally pass through the viewshed.

Visual impacts from the proposed project will potentially affect recreational users of beaches, trails, and public parks in the vicinity, recreational boaters, and members of the public using scenic highways in the area.

Recreational Users

Immediately shoreward of the project site is a flat, sandy beach ending in a coastal bluff and terrace occupied by the public Sandpiper Gold Course. An undeveloped area, located southeast of the project site, contains a number of undeveloped trails, which are used for walking and jogging. Much of the area has full ocean view, including the project site. The Santa Barbara County Shores Park is located northeast of the project area and consists of open space available for recreation use. The park is set back from the bluffs and is surrounded by Eucalyptus groves; consequently, the project site is not visible from any location within the park. Several beach access trails and roads are located along the coastline in the vicinity of the project area, including one from the Santa Barbara Shores County Park.

Recreational Boaters

Santa Barbara Harbor includes approximately 1,160 boat slips and several excursion boat businesses for sport fishing and whale watching in the area. The Santa Barbara Channel has become a major center for whale watching, which typically occurs from February to April and from July to September. While pier removal activities have been scheduled to avoid whale migration season (November 30 through June 1), some whale watching activity, involving viewing of blue whales feeding near the Channel Islands, extends into September. Additionally, recreational boaters may traverse the area.

Scenic Routes

The Santa Barbara County General Plan of Scenic Highways has not designated any official scenic roadway corridors in the immediate project vicinity. However, the portion of State Highway 101, throughout its entire length within Santa Barbara County, is eligible for

designation as a "Scenic Highway". In addition, Caltrans has also identified this portion of Highway 101 as eligible for designation as a State scenic highway, according to its *Guidelines for the Official Designation of Scenic Highways*. Due to the far-reaching nature of the coastal vistas, the view corridors (area visible from the road) of this highway may include the site of the proposed project within their background views.

Key Observation Points

Two Key Observation Points (KOPs) were selected to reflect representative viewing conditions of the project site. The location of each KOP is depicted in Exhibit 8. The view of the project site from each KOP is depicted in Exhibit 9.

- **KOP No. 3**[33] presents the view southwesterly toward the project site from Haskell's Beach. This KOP is located directly onshore from PRC-421 and directly below the Sandpiper Golf Course.

- **KOP No. 5** presents the view northwesterly toward the project site from a trail on the cliff edge above Ellwood Beach. This is one of many trails used by joggers in an undeveloped area southeast of the Santa Barbara Shores County Park. This KOP is also the location furthest north on the Cliffside trail from which the site is fully visible. The site is no longer visible from a location approximately 150 feet further north of KOP No. 5. This KOP represents all Cliffside views of the project area from this point south to Coal Oil Point. Any areas beyond Coal Oil Point do not have visibility of the project area due to visual screening by Coal Oil Point.

Visual Impacts of the Proposed Project

Potential impacts of the proposed project to visual resources in the area fall into two categories: temporary impacts due to construction activities, and long-term impacts due to the installation of the bird platforms.

Short-term construction activities will create a moderate to high degree of visual intrusion into the viewshed of recreational users of the project area coastline and travelers on Highway 101. The vessels used in construction activities will be located approximately 400 to 900 feet offshore, and will result in a short-term adverse impact on visual resources during the estimated 26-day construction period, due to the perceived incompatibility of construction activities with a natural beach setting. Additionally, navigational and hazard lighting aboard moored barges and vessels will be required during the removal operations, which will increase night lighting at the site and increase the contrast between the natural ocean setting and the construction activities. These impacts will be temporary, and will cease after construction activities are concluded.

Long-term visual impacts of the proposed project are associated with the installation of the bird roost platforms. The existing structures – eight concrete caissons, steel trusses, and the remains

[33] KOP numbers are taken from the Draft EIR (page 4.7-4), which presents a total of five KOP's. Commission staff has included only those KOP's relevant to an analysis under the Coastal Act.

of a wooden deck – rise approximately 18 feet above the surface of the water (see Exhibit 3). The proposed project will remove these visible remnants, and install four bird roost platforms with supporting piles. The platforms have been designed to overtop by five feet the wave generated by a 100-year storm event. Each of the four supporting piles will therefore rise approximately 40 feet above the surface of the water, and will support at its top three trapezoidal platforms totaling 200 square feet in area (see Exhibit 4). Exhibit 10 is a visual simulation of how the proposed bird platforms will look after they have been installed. The proposed bird platforms will be taller but less massive than the existing pier remnants. No night lighting or highly reflective materials are proposed. Due to the increased height of the proposed platforms, it is possible that distant views of the structures may be available from locations that presently have no view of the pier.

The pier remnants are 850 feet from the shore; therefore, the distance along with downward views tend to reduce the perceived scale of the existing remnant pier structures and the future bird platforms. The area's existing mixture of man-made and natural visual attributes accommodates some degree of change. There are currently many types of boats and equipment traveling offshore, and there are several offshore and onshore oil production facilities that occupy the viewshed in the project area. The new structures will neither block views nor be inconsistent with the existing character of the area. They will furthermore preserve the ability of some recreational users to observe California brown pelicans, cormorants, and other marine birds.

The Commission is requiring the applicant in **Special Condition No. 8** to monitor the use of the bird platforms for five years after construction to verify that seabirds are actually using the new platforms. Monitoring shall occur at least annually and include identification and abundance of seabirds and roosting and nesting behavior. The applicant shall submit to the Executive Director by the end of each calendar year an annual seabird monitoring report, with a final report due at the end of the five-year monitoring program. If after reviewing the final report the Executive Director determines that the platforms are not being used by seabirds as a nesting/roosting structure, **Special Condition No. 8** requires the applicant, within 90 days of the Executive Director's determination, to submit an amendment to this permit to remove the bird platforms. This ensures that if the platforms do not serve their intended purpose, they will be removed and the site will be returned to its pre-development state.

Conclusion

The Commission finds that, with the inclusion of **Special Condition No. 8,** the scenic and visual qualities of coastal areas at the project site will be protected by the proposed project. The Commission therefore finds that the proposed project is consistent with Section 30251 of the Coastal Act.

4.4.9 Geology

Coastal Act Section 30253 states, in relevant part:

New development shall:

(1) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.

(2) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.

The proposed project has the potential to cause geologic hazards through the following actions: (a) Toppling of bird platforms due to seismic activity; and (b) Creating or contributing to erosion through alteration of nearshore sediment transport.

Seismic Hazards

Historically, the Santa Barbara Channel has experienced a low to moderate level of seismic activity. Studies of the instrumental seismic record for the Santa Barbara Channel area show that earthquake epicenters can generally be correlated with east-west trending reverse faults and with concentrations of activity in the central and northeastern portions of the Channel. Recorded seismicity is relatively sparse in the western portion of the Channel. Only five earthquakes have exceeded magnitude 5.0 since 1900, the maximum magnitude of 6.2 occurred in 1925. PRC-421 exists upon beach sand deposits at the base of a coastal terrace. The Moore Ranch fault is the closest fault to the site. The Moore Ranch fault is a west-east fault of the late Quarternary age and is located approximately one-half mile north of the site.

The piles supporting the bird platforms have been designed so that the lowest platform will overtop by five feet a 100-year maximum breaker height. The installation of the piles for the roosting/nesting platforms will occur in weathered to competent Monterey formation that exists beneath surficial sand sediments in the area. In the project area, there may exist zero to four feet of sand sediment. Based upon the subsurface profile at the site, governing codes and regulations, loading (dead load, live load, wave forces, wind and seismic conditions) and function of the proposed roosting/nesting platform structures, Bengal Engineering prepared an analysis of pile drivability and requirements for stable roost pile design[34]. The analysis determined that piles should be driven to a minimum depth of 20 feet into bedrock. The report further states that pile driving conditions are expected to be very hard at the project site and provided recommendations for pile driving that should be able to drive the 30-inch diameter piles. The recommendations of the Bengal analysis have been incorporated into the proposed project. Recent pile driving successfully occurred at the adjacent PRC-421 beachside piers where the Monterey formation was also encountered.

Bluff Erosion

The shoreline adjacent to the project area is similar to much of the mainland shore of the Santa Barbara Channel, i.e., sandy (fine to medium-grained) beach backed by high bluffs. Long-shore sediment transport at the project site is nearly unidirectional from west to east. The estimated littoral transportation rate is approximately 275,000 cubic yards per year. The principal

[34] Bengal Engineering. *PRC-421 Pelican Roost Pile Design for Atlantic Richfield Company.* November, 2003.

components of the area's sediment budget include sediment delivery from the tributary creeks and streams of the Santa Ynez Mountain watershed (approximately three-quarters of the sand transported to the east by the long-shore drift described above) and the smaller contributions of bluff erosion between Point Conception and the project site.

The relatively limited sand supply within the shoreline reach and the characteristics of the local geology and bluff morphology explain why the beaches have eroded into the relatively narrow and sediment-limited features that exist today. Over the past 70 years, the beaches have remained relatively stable. Studies by Diener[35] have estimated that the bluffs in the area have receded about 60 feet over the past 50 years. This translates to an average annual retreat rate of 1.25 feet per year.

Temporal variation in berm width occurs regularly due to seasonal changes and short-term storm events. During winter, large, short-period waves generated by local storms will erode the beach, carrying sediment seaward. During summer, smaller, long-period waves carry sediment shoreward, regenerating the beach. Seasonal changes have been measured to be about 50 feet, but short-term storm erosion and recovery sequences can be greater.

From an examination of aerial photographs, there is no indication that the existing PRC-421 pier remnants influence the nearshore drift of sediment in the region. The proposed project will result in the removal of the pier remnants, as well as the installation of an artificial reef and piles on which the four bird platforms will be installed. This proposed reef will increase the bottom relief and has the potential to modify local wave energy.

Late last year, the applicant contracted with Noble Consultants to study the effect of the artificial reef, as it was then designed, on nearshore sediment drift and beaches[36]. The artificial reef at that time was envisioned as a solid circular mound comprised of 4,000 cubic yards of quarry rock and the eight concrete caissons. The mound would completely cover the seafloor, and would rise approximately nine feet off the substrate. Since the Noble report was prepared, the reef has been redesigned to be lower – only the caissons will be nine feet off the seafloor, and the quarry rock will be stacked to only four or five feet. Additionally, instead of forming a circular mound completely covering the seafloor, the reef will use only 3,000 cubic yards of quarry rock, and will form more of a checkerboard pattern, allowing wave energy to pass through the multiple patches of introduced hard substrate. Exhibit 5 depicts a conceptual model for the reef design.

The proposed reef has the potential to modify local wave energy, by creating a sheltering effect that will decrease wave energy within the reef shadow and increase wave energy where there is refraction around the reef. The report prepared by Noble Consultants found that the reef as originally proposed would 1) not result in significant entrapment of sand; 2) possibly cause cross-shore sediment patterns to decrease by about 11 percent or less within the zone of wave shelter and to increase by no more than 30 percent in the upcoast and downcoast zones of

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[35] Diener, B. G. "Sand Contribution from Bluff Recession between Point Conception and Santa Barbara." *California Shore and Beach.* Volume 68, No. 2. April 2000.

[36] "Coastal Engineering Assessment." Appendix T of Draft EIR. Prepared for Padre Associates, Inc. by Noble Consultants Inc. January 14, 2004.

sheltering; and 3) possibly cause long-shore transport potential to decrease by about 16 percent within the sheltered area, and increase by as much as 33 percent just outside the sheltered area.

The Noble report anticipated that the net effect of these changes will result in times of slightly increased beach width inshore of the proposed PRC-421 artificial reef and occasions when more narrow beach width will occur for short distances immediately upcoast and downcoast of the site. The changes were estimated to be less than the magnitude of the normal seasonal beach width changes that presently occur along this shoreline. The changes were expected to be temporary and to be most prominent as the beach shifted from a "winter" to a "summer" profile – so that the area in the lee of the reef will be the first to exhibit widening as sand is carried onshore. The Noble report found that the artificial reef, as originally designed, would not alter or exacerbate erosional processes, and that it would not have a significant impact on sediment transport and beaches.

The redesigned artificial reef will have less of an impact on erosional processes, sediment transport and beaches than the original design analyzed by the Noble report. The new design is less massive, lower relief and allows wave energy to pass through the patches of introduced hard substrate.

Conclusion

For the above reasons, the Commission finds that the proposed project will not present a hazard to life or property and therefore is consistent with Section 30253(1) and (2) of the Coastal Act.

4.4.10 Air Quality

Section 30253(3) of the Coastal Act states, in relevant part:

New development shall:...

(3) Be consistent with requirements imposed by an air pollution control district or the State Air Resources Control Board as to each particular development.

The Santa Barbara County Air Pollution Control District (APCD) requires permits for new, or modifications to existing, air pollution-emitting facilities. Facility operators are required to obtain an Authority to Construct permit before construction begins. APCD has established quantitative thresholds by which to assess the significance of long-term air emissions from proposed projects. According to APCD's *Scope and Content of Air Quality Sections in Environmental Documents*, a project will have a significant impact on air quality if the project would:

- Emit (from all project sources, both stationary and mobile) 240 pounds per day (ppd) or greater of ROC (reactive organic compounds) or NOx (oxides of nitrogen), or 80 ppd or greater PM_{10} (particulate matter, diameter less than or equal to 10 μm);
- Emit 25 ppd or greater of NOx or ROC from motor vehicle trips only;
- Cause or contribute to a violation of any California or National Air Quality Standard (except ozone);

- Exceed the APCD health risk public notification thresholds adopted by the APCD Board, or;
- Be inconsistent with the adopted federal or State air quality plans for Santa Barbara County.

In addition, APCD Rule 202F.3 requires emission offsets for emissions of construction equipment exceeding 25 tons of any pollutant during a 12-month period. The demolition component of the proposed project is subject to these standards. Tables 3 and 4[37] below describe total project emissions, and maximum daily emissions for the proposed project, respectively.

Table 3: Total Project Emissions

Estimated Maximum Total Project Emissions (tons)					
NOx	ROC	CO	Sox	PM	PM_{10}
4.32	0.28	1.10	0.38	0.44	0.42

Table 4: Maximum Daily Emissions

Source	Estimated Maximum Daily Emissions (pounds per day)					
	NOx	ROC	CO	SOx	PM	PM_{10}
Motor Vehicles Only	231.0	13.7	n/a	n/a	n/a	n/a
All Emissions	231.0	20.6	63.8	23.0	26.9	25.8

Total emissions for the proposed project falls under the threshold of 25 tons of any pollutant during a 12-month period. In addition, maximum daily emissions will be less than 240 ppd of ROC and NOx, and less than 80 ppd of PM_{10}. Emissions from motor vehicle trips (including sea vessels) associated with the proposed project will fall under the 25 ppd maximum daily emissions threshold for NOx and ROC. The proposed project therefore falls below APCD's significance thresholds for air quality impacts, and will have no significant impact on air quality.

In addition to the significance thresholds described above, the APCD requires modeling to be performed if maximum NOx emissions exceed 120 pounds per day. The calculation that determines whether modeling has been triggered is different from that performed under the significance thresholds described above. (For example, this calculation only requires that emissions produced in Santa Barbara County be considered, as opposed to all produced emissions as in the significance threshold calculation.) According the calculation that triggers modeling, the proposed project will produce a maximum of 110.5 ppd of NOx. Because the

[37] December 2, 2004. Letter from John Lorentz to Brian Shafritz. Enclosure:*ARCO PRC-421 Revised Project Air Emissions Calculations/Tables.*

proposed project falls below the threshold of 120 ppd, no air quality modeling is required for the proposed project.

The applicant has applied for, but has not yet received, an Authority to Construct permit from APCD. **Special Condition No. 9** requires the applicant, prior to the issuance of this permit, to submit to the Executive Director for approval evidence that the Santa Barbara County Air Pollution Control District has issued an Authority to Construct permit for the proposed project.

Conclusion

The Commission finds that as conditioned, the proposed project will be carried out consistent with the rules of the APCD and is therefore consistent with Section 30253(3) of the Coastal Act.

5.0 CALIFORNIA ENVIRONMENTAL QUALITY ACT

On June 7, 2004, the State Lands Commission certified an EIR for this project. In addition, Section 13096 of the Commission's administrative regulations requires Commission approval of coastal development permit applications to be supported by a finding showing the application, as modified by any conditions of approval, to be consistent with any applicable requirements of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(A) of CEQA prohibits approval of a proposed development if there are feasible alternatives or feasible mitigation measures available that would substantially lessen any significant impacts that the activity may have on the environment. The project as conditioned herein incorporates measures necessary to avoid any significant environmental effects under the Coastal Act, and there are no less environmentally damaging feasible alternatives or mitigation measures. Therefore, the proposed project is consistent with CEQA.

APPENDIX A

Substantive File Documents

Documents

Draft Environmental Impact Report for the Revised PRC-421 Pier Removal Project. State Clearinghouse House No. 2001021119. Prepared for the California State Lands Commission. Prepared by Padre Associates, Inc. January, 2004. Including all Appendices.

Final Environmental Impact Report for the Revised PRC-421 Pier Removal Project. State Clearinghouse House No. 2001021119. Prepared for the California State Lands Commission. Prepared by Padre Associates, Inc. January, 2004.

California State Lands Commission Minute Item 58: ARCO and DFG (Applicants). Calendar Date June 7, 2004. Including all exhibits and meeting minutes.

ARCO Revised PRC-421 Pier Removal Project Execution Plan (Option 6). Prepared by Fairweather Pacific, LLC. August 17, 2004.

Work Statement for Pre-Demolition Assessment of Abalone Resources in Areas Associated with Demolition of Remnant Pier Structure in State of California Tidelands Lease PRC-421, Santa Barbara County, California. Prepared for Fairweather Pacific. Prepared by Littoral Ecological & Environmental Services (LEES). September 1, 2004.

Pre-Demolition Assessment of Abalone Resources in Areas Associated with Demolition of Remnant Pier Structures in State of California Tidelands Lease PRC-421, Santa Barbara County, California. Prepared for Fairweather Pacific. Prepared by Littoral Ecological & Environmental Services (LEES). Received January 4, 2005.

Biological Assessment for White Abalone in Habitat near the Remnant Structure for PRC-421 (Bird Island). Prepared for Fairweather Pacific. Prepared by Littoral Ecological & Environmental Services (LEES). Appendix A prepared by Fairweather Pacific. Received January 26, 2005.

Work Statement for Pre- and Post-Demolition Assessment of Kelp Resources Associated with Removal of Remnant Pier Structures in State of California Tidelands Lease PRC-421, Santa Barbara, California. Prepared for Fairweather Pacific, LLC. Prepared by Littoral Ecological & Environmental Services (LEES). August 9, 2004. Revised December 13, 2004.

Description of Pre-Demolition Conditions for Natural Hardbottom Substrate near the Remnant Pier Structure in State of California Tidelands Lease PRC-421, Santa Barbara County, California. Prepared for Fairweather Pacific, LLC. Prepared by Littoral Ecological & Environmental Services (LEES). December 10, 2004.

Acoustic Monitoring Plan. Prepared for Fairweather Pacific, LLC. Prepared by Peter Howorth, Marine Mammal Consulting Group. January 18, 2005, revised January 26, 2005.

ARCO PRC-421 Oil Spill Contingency Plan. Revised August 17, 2004.

PRC-421 Roosting Platforms Maintenance Schedule & Estimated Costs, Four Pile-Supported Systems. Undated.

Draft Proposal Submitted to the State Lands Commission, In Response to the Need for Monitoring at Bird Island Mitigation Reef. Prepared for the California State Lands Commission. Prepared by Santa Barbara Channelkeeper. August 4, 2004. Revised October 18, 2004.

PRC-421 Draft Seabird Monitoring Proposal. Prepared for the California State Lands Commission. Prepared by Santa Barbara Audubon Society, Inc. May 31, 2004. Revised October 12, 2004.

Letter Correspondence

December 30, 2004. From John Lorentz to Audrey McCombs. With enclosures.

December 9, 2004. From John Lorentz to Audrey McCombs. With enclosures.

December 2, 2004. From John Lorentz to Brian Shafritz. With enclosures:

- Application to the Santa Barbara County Air Pollution Control District
- California State Lands Commission Notice of Determination, dated June 8, 2004
- ARCO PRC-421 Revised Project Air Emission Calculations/Tables
- Excerpts from EIR

November 30, 2004. From John Lorentz to Audrey McCombs. With enclosures:

- Fugro Bathymetry Survey
- Oceaneering Dive Survey Report

November 18, 2004. From Todd Normane to Audrey McCombs.

August 19, 2004. From John Lorentz to Audrey McCombs. With enclosures:

- Aerial Photo showing approximate locations of Well Nos. 10, 7, 4, and 1
- Draft Supplementary Notice to DOGGR for Well #7
- Draft Supplementary Notice to DOGGR for Well #10
- Report of Well Abandonment, Well #7. February 16, 1954
- Report of Well Abandonment, Well #10. February 16, 1954
- Excerpt from Munger Oil Field Map Book, Page 132

July 28, 2003 [*sic.* 2004] From Jon Moore to Simon Poulter

April 30, 2004. From John Lorentz to Alison Dettmer. With enclosures:

- Project Description
- Execution Plan
- Rigging Plan

March 11, 2004. From Rodney McInnis to Eric Gillies.

May 28, 2002. From California Department of Fish and Game to California State Lands Commission.

E-mail Correspondence

January 27, 2005. From Melissa Neuman to Audrey McCombs. Subject: Re: Bird Island Abalone.

January 7, 2005. From Peter Howorth to Audery McCombs. Subject: Re: Bird Island question.

January 7, 2005. From Marilyn Fluharty to Audery McCombs. Subject: Re: cormorant question.

January 3, 2005. From John Lorentz to Audrey McCombs. Subject: JRC Product Brochure Info. With attachments.

December 29, 2004. From Peter Howorth to John Lorentz. Subject: PRC-421 Hearing

December 3, 2004. From John Lorentz to Audrey McCombs. Subject: Reef Sketches. With attachments:

- Revised Bird Roost Platforms (elevation view) sketch
- Revised Reef (plan view) sketch

November 20, 2004. From John Lorentz to Audrey McCombs. Subject: FW: Aerial Survey

November 12, 2003. From John Lorentz to Audrey McCombs, *et all.* Subject: PRC-421 Quarry Rock Update

August 19, 2004. From John Lorentz to Audrey McCombs. Subject: DEIR Page 4.4-41

April 16, 2004. From John Lorentz to Eric Gillies. Subject: FW: PRC 421 County Comment Response

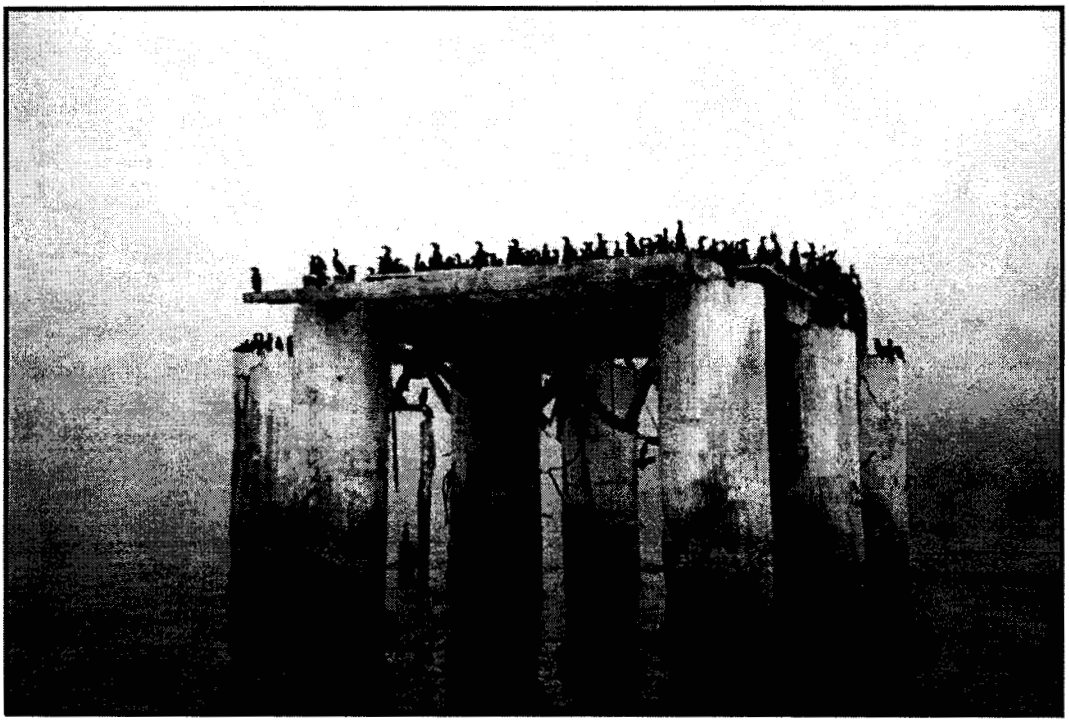
EXHIBITS

Exhibit 1: Project Location
Exhibit 2: Site Photographs
Exhibit 3: Pier Structure Diagram
Exhibit 4: Bird Roosting and Nesting Platforms
Exhibit 5: Artificial Reef
Exhibit 6: Surficial Kelp and Hardbottom in Anchor Corridors
Exhibit 7: Natural Hardbottom in the Area of the Existing Structures
Exhibit 8: Key Observation Point Locations
Exhibit 9: Key Observation Point Photographs
Exhibit 10: Post-Project Visual Simulation
Exhibit 11: Acoustic Monitoring Plan

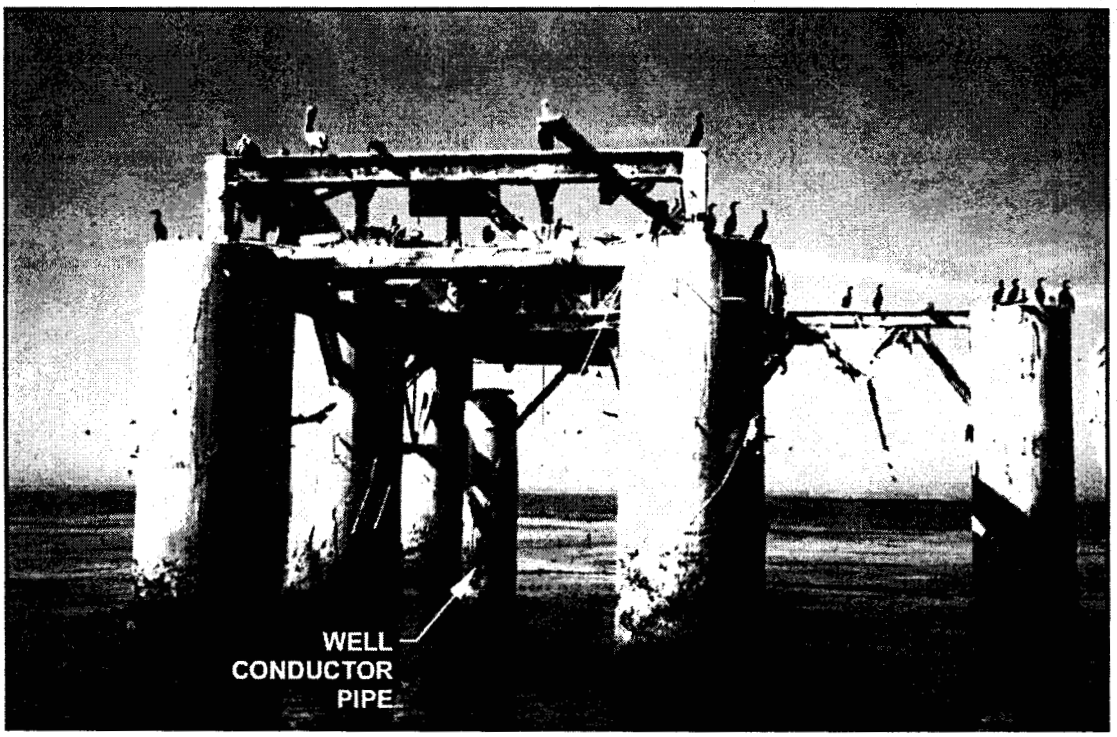
SOURCE: USGS Dos Pueblos Canyon - 1988

Project Location

EXHIBIT NO. 1
APPLICATION NO.
E-04-010



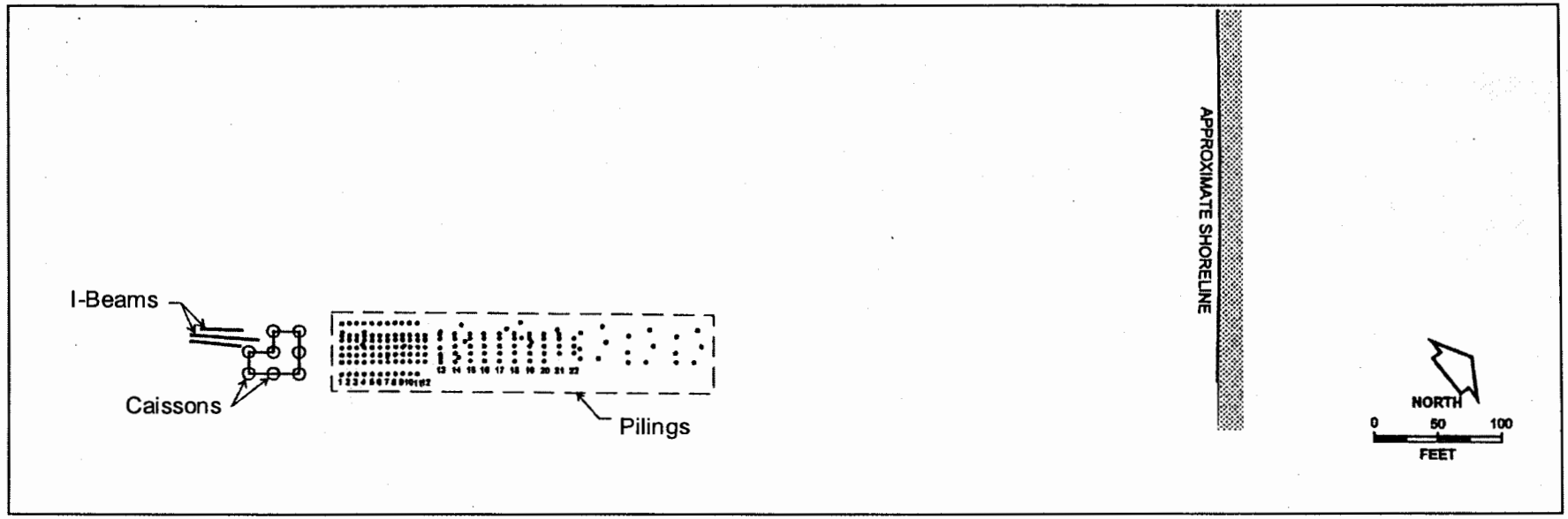
A: View North of Pier Structure

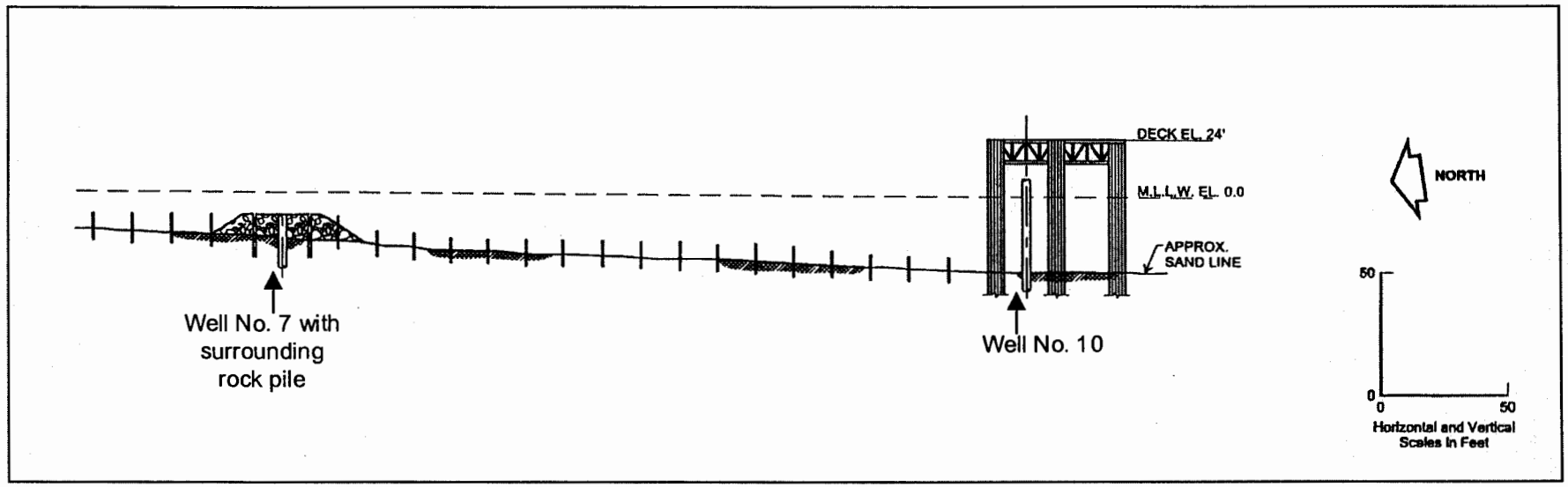


B: View South of Pier Structure, with Well Conductor Pipe #10

Site Photographs

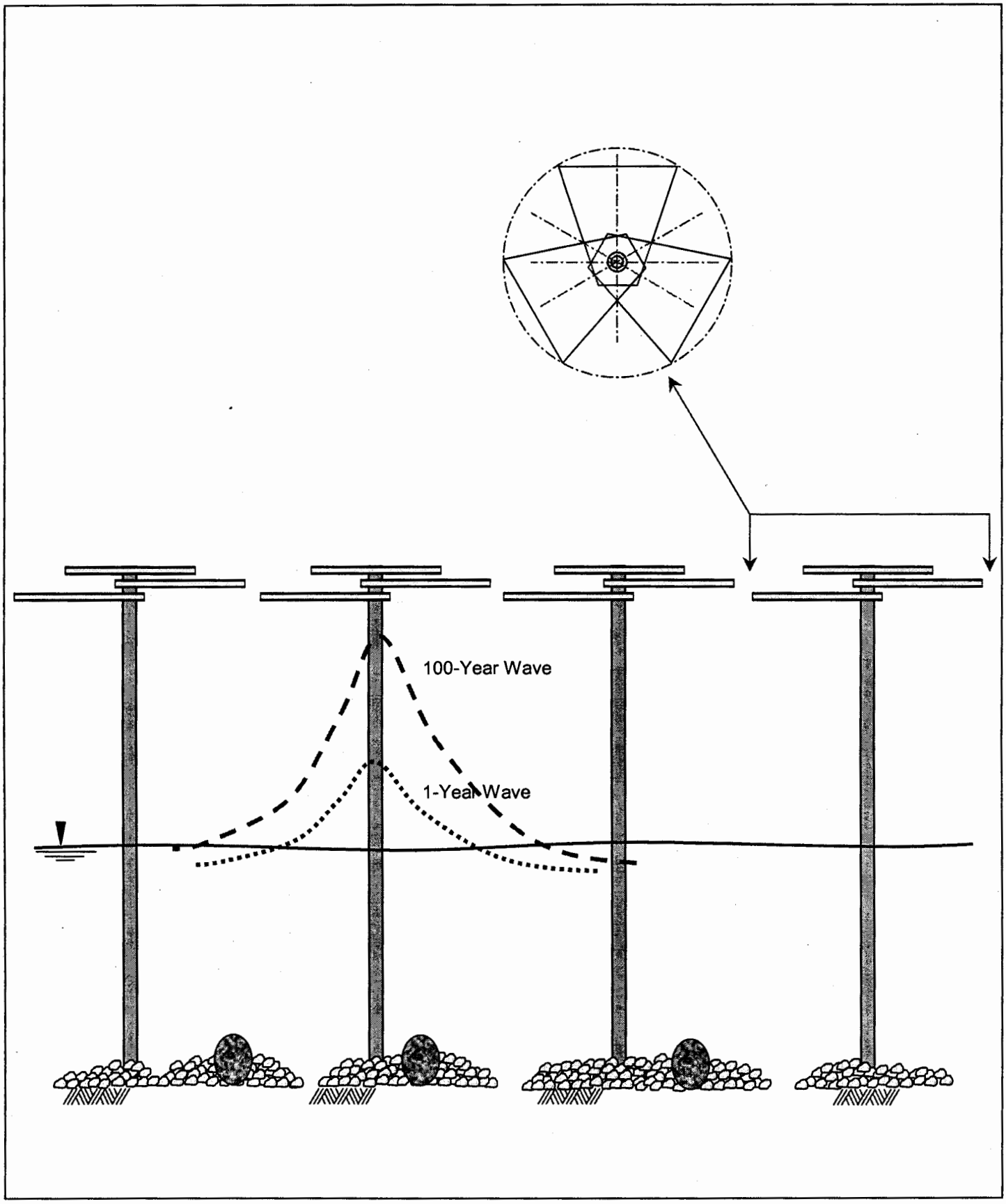
EXHIBIT NO. 2
APPLICATION NO.
E-04-010





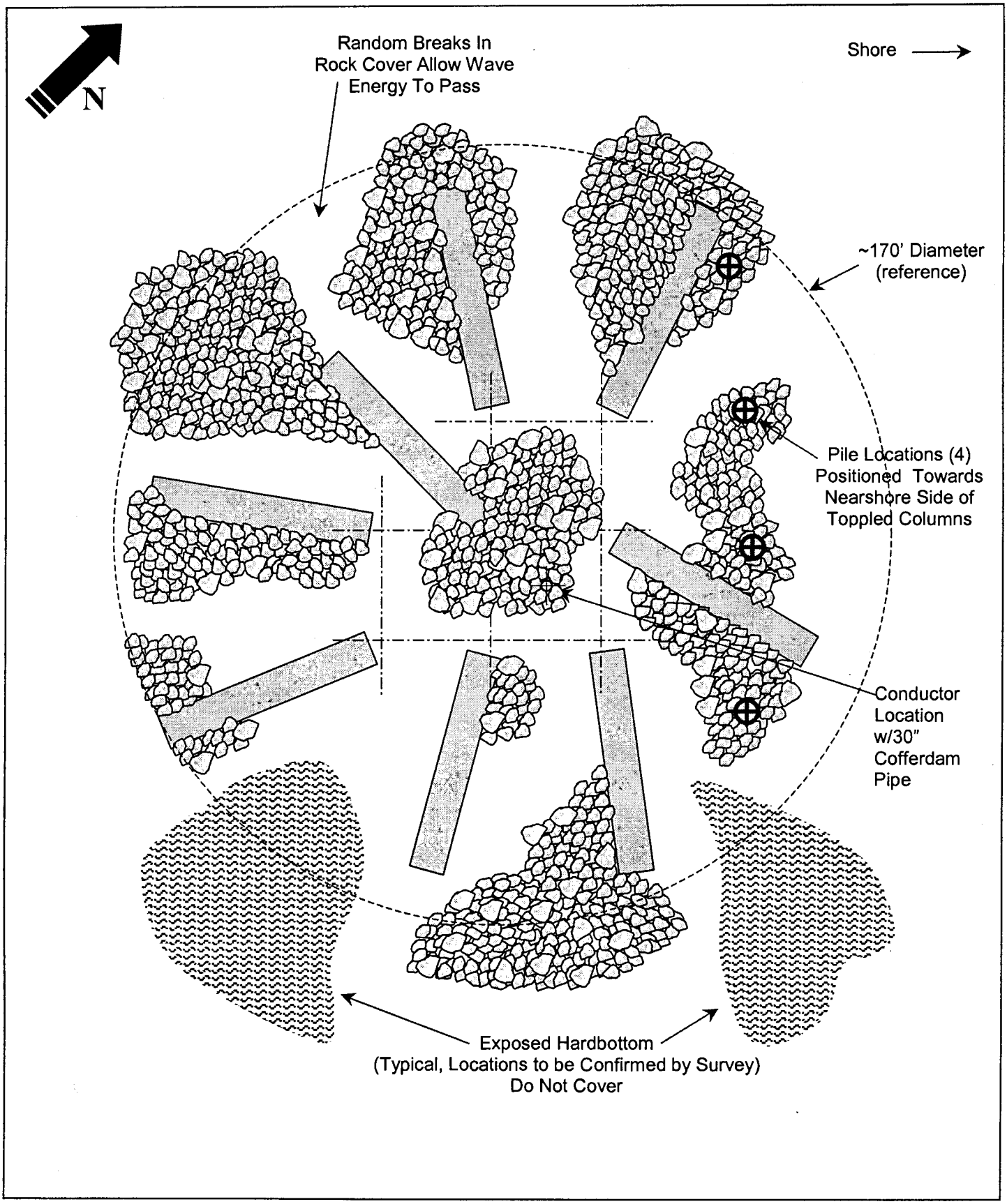
Pier Structure Diagram

EXHIBIT NO. 3
APPLICATION NO.
E-04-010



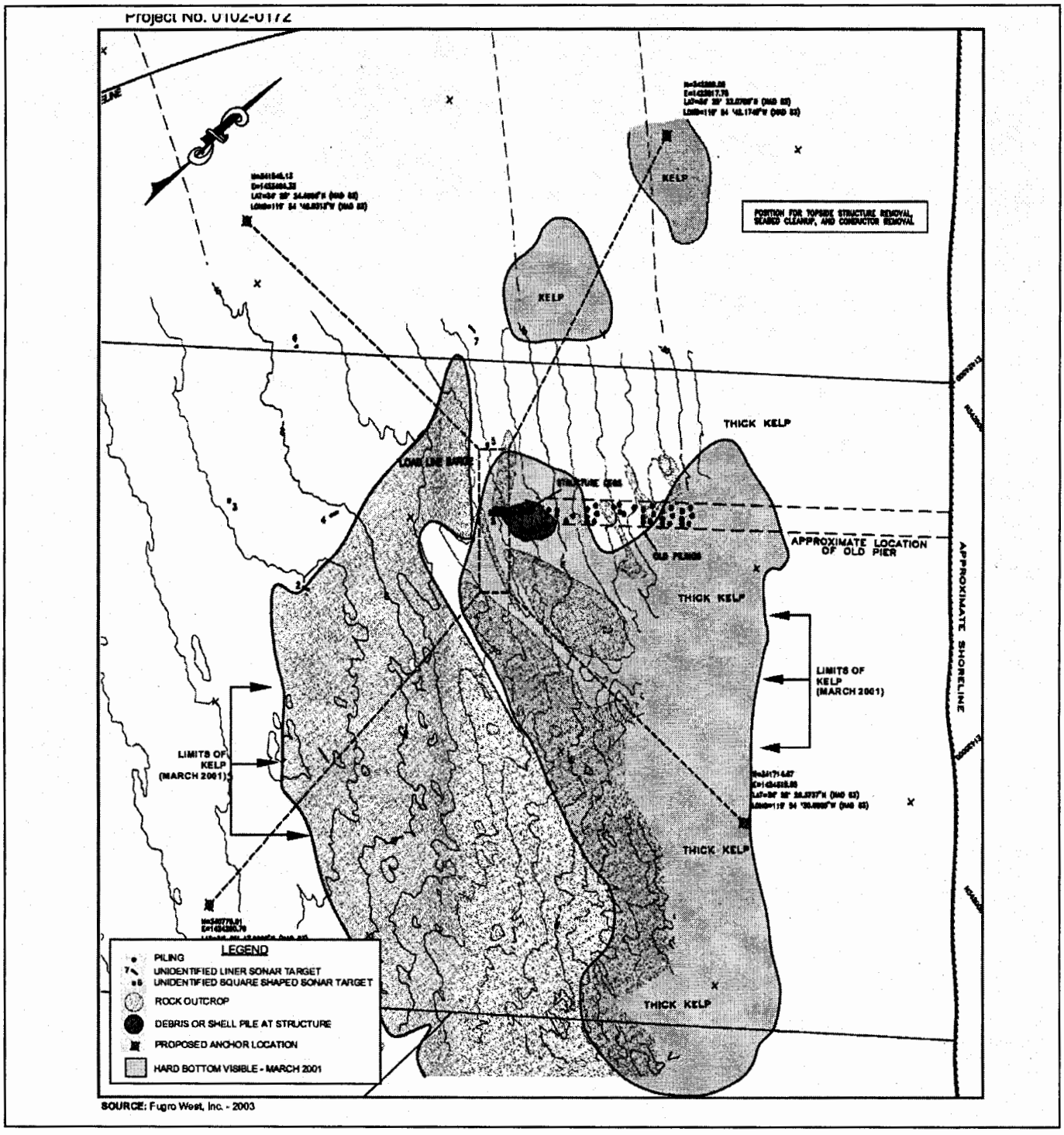
Bird Roosting and Nesting Platforms
(Elevation View)

EXHIBIT NO. 4
APPLICATION NO.
E-04-010



Artificial Reef: Conceptual
(Plan View)

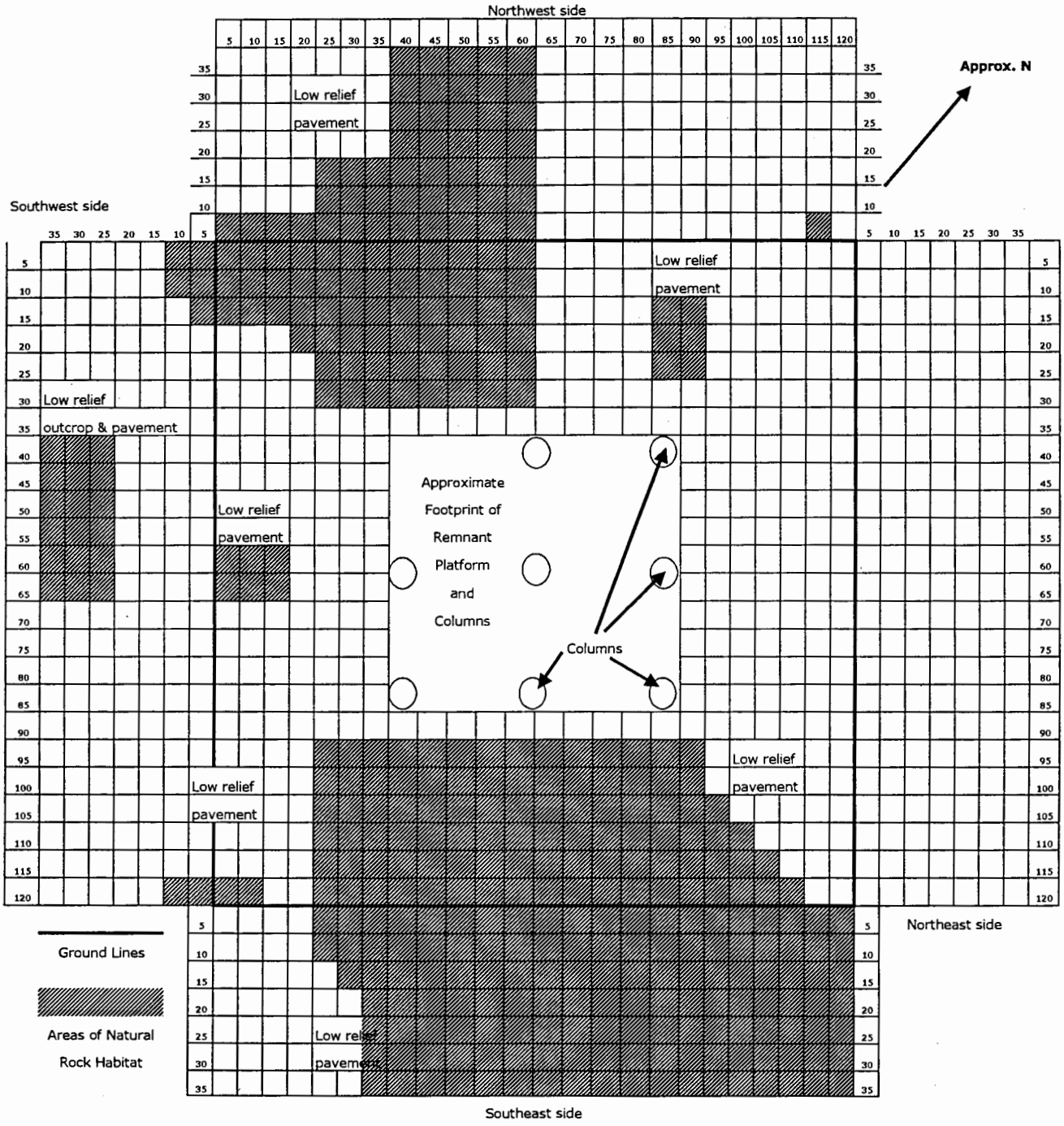
EXHIBIT NO. 5
APPLICATION NO.
E-04-010



SOURCE: Fugro West, Inc. - 2003

Surficial Kelp and Hardbottom in Anchor Corridors

EXHIBIT NO. 6
APPLICATION NO.
E-04-010

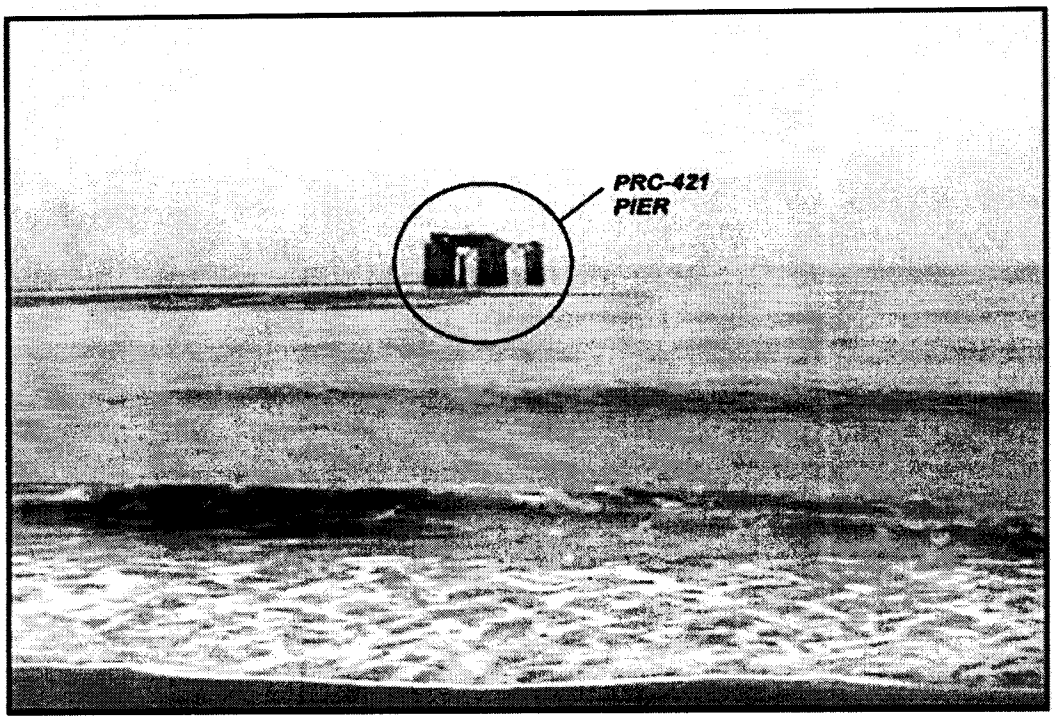


Natural Hardbottom in the Area of the Existing Caissons and Proposed Reef

EXHIBIT NO. 7
APPLICATION NO.
E-04-010

Key Observation Point (KOP) Locations

EXHIBIT NO. 8
APPLICATION NO.
E-04-010

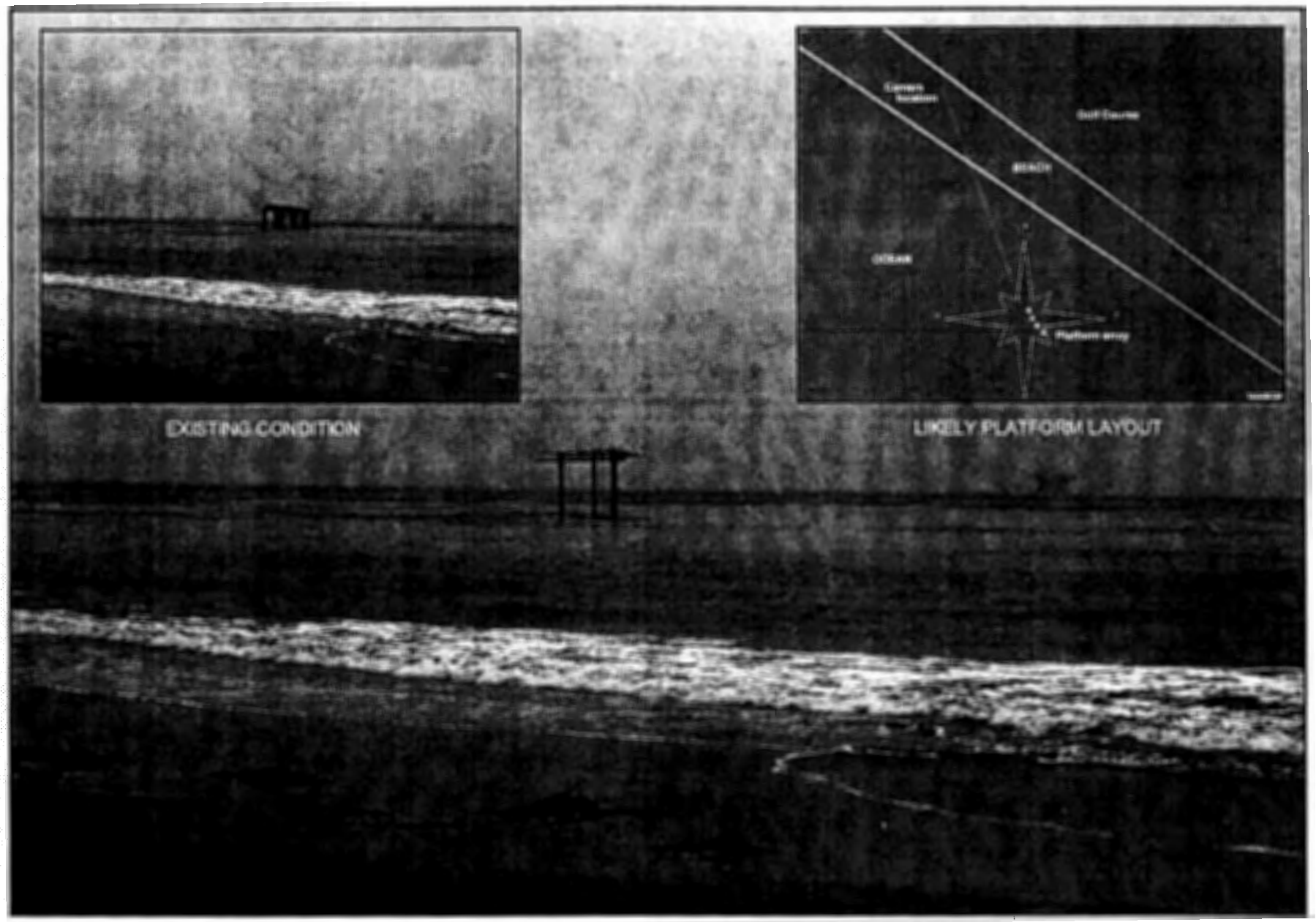


KOP 3: View toward project site from Haskell;s beach, directly onshore from PRC-421. Pier approximately 850 feet southwest.

KOP 5: View toward project site from trail along cliff edge above Ellwood Beach. Trail is within the undeveloped area southwest for Santa Barbara County Shores Park. Pier is approximately 7500 feet northward.

Site Photographs

EXHIBIT NO. 9
APPLICATION NO.
E-04-010



Post-Project Visual Simulation

EXHIBIT NO. 10
APPLICATION NO.
E-04-010

FINAL ACOUSTIC MONITORING PLAN

ARCO

TOPPLING OF CONCRETE COLUMNS AT PRC-421 ELLWOOD, CALIFORNIA

prepared for

FAIRWEATHER PACIFIC LLC
4567 Telephone Road, Suite 203
Ventura, California
93003

prepared by

Peter Howorth
MARINE MAMMAL CONSULTING GROUP
389 North Hope Avenue
Santa Barbara, CA
93110-1572

January 2005

EXHIBIT NO. 11
APPLICATION NO.
E-04-010

TABLE OF CONTENTS

1.0 Executive Summary

The California Coastal Commission (CCC) has requested acoustic monitoring of the detonations used to topple eight steel-reinforced concrete columns that are part of a remnant pier structure. Atlantic Richfield Company (ARCO), a BP affiliated company, is required to remove this structure. The structure is about 12 nautical miles (nm) west of Santa Barbara on State of California Tidelands Lease PRC-421 and approximately 850 feet offshore.

Each column was constructed by driving H-piles through the sand into the substrate, then placing a framework of steel rebar around the H-piles. A cylindrical form was then lowered over the framework. This form extended to the sand on the sea floor rather than to bedrock. Concrete was then poured into the form and allowed to harden (Lorentz, pers. comm.).

Divers will remove debris around each column, then remove sediments from the base of the column with a water jet to expose the four H-piles (ARCO 1999 and 2003; Howorth 2003b). Once the H-piles have been exposed, the demolition contractor will lower linear shaped charges to the diver. One 1.8-pound charge will be placed around each of the four exposed H-piles under each column, for a total weight about 7.2 pounds per column, or approximately 57.6 pounds total for all eight columns (ARCO 1999 and 2003).

The four charges under each column will be detonated in pairs a fraction of a second apart. First, two of the charges will be detonated at lower points on the H-piles, followed by the remaining two charges (ARCO 1999). This will help topple the columns in a pre-planned pattern. Each set of charges under all eight columns will be detonated in rapid succession. The charges will be shaped so they detonate inwards, severing each H-pile cleanly and avoiding significant damage to the columns, which will form the base of an artificial reef.

The purpose of the acoustic monitoring is to obtain sound pressure level measurements at various depths and directions from the detonation site. The measurements will be taken at a range of 1000 yards, which represents the extent of the wildlife hazard zone accepted by the regulatory agencies for this project as well as for numerous other past projects (Howorth 1996; 1997a and b; 2003a and b).

Six measurements will be taken—all 1000 yards from the detonation site. Two measurements will be taken to either side of the site just beyond the surf zone in approximately 10 feet of water. These hydrophones will be suspended about 5 feet beneath the surface. Two more measurements will be taken offshore to either side of the site in approximately 75 feet of water. These hydrophones will be suspended about 60 feet beneath the surface. Two additional hydrophones will be deployed from a monitoring vessel directly offshore in approximately 80 feet of water. One hydrophone will be about 60 feet beneath the surface; the other, about 15 feet down. This deployment by depth is designed to measure the worst-case scenario for sound levels.

DAT recordings from the monitoring vessel will be analyzed with an oscilloscope and/or specialized acoustic computer software for a rapid assessment of the sound pressure levels at the offshore monitoring station. The five remote DAT recordings will later be analyzed across a wide frequency band using a spectrum analyzer and/or specialized

acoustic computer software. The highest sound pressure levels will be noted in dB re. 1 μP^2 – second and in psi/ms.

A report will be sent to the regulatory agencies within 30 days of completion of the field monitoring. This report will describe the methods used to obtain and analyze the data. Data will be summarized in tables, graphs or columns. The report will include a discussion of the results, along with an explanation of anomalies (if any). Conclusions will be offered, along with recommendations for similar future projects.

2.0 Introduction

ARCO, plans to remove a remnant offshore pier structure and associated debris on the sea floor. The remaining structure consists of part of the wooden pier decking supported by steel trusses, which in turn are connected to eight concrete columns underneath. The columns will be toppled with explosives, then quarry rock will be deposited to create an artificial reef.

To topple the columns, the four H-piles that form the base of each column will be exposed by divers using water jet equipment. These piles will be severed beneath the mudline using small shaped charges. These charges will generate sound pressure waves that have the potential of injuring marine wildlife, particularly animals with air or gas spaces in their bodies, such as marine mammals, sea turtles, diving birds, and most types of bony fish. For this reason, a Wildlife Protection Plan was developed by the Marine Mammal Consulting Group, Inc. (MMCG), an independent firm based in Santa Barbara, California (Howorth 2003). Fairweather Pacific LLC (Fairweather), of Ventura, California, is ARCO's agent for this removal project and contracted with MMCG to produce the plan, which includes mitigation measures designed to minimize potential risks.

More recently, the California Coastal Commission (CCC) requested acoustic monitoring of the detonations used to topple the columns. This plan, also prepared by MMCG, describes how the acoustic monitoring will be performed. Background information is provided about the size, configuration and structure of the columns, the means proposed to topple them, and the dynamics of these particular underwater detonations. The plan itself includes discussions on equipment preparation, personnel briefing, mobilization, and monitoring, including equipment deployment, pre-detonation monitoring, monitoring during the detonations, and rapid sound pressure level estimates. Detailed data analysis methods are then described, along with reporting. A literature cited section lists references consulted during the preparation of this plan.

3.0 Background

3.1 Size, Configuration and Structure of the Columns

A total of eight columns make up the supports for the topside structure at PRC-421. Each column is about 8 feet in diameter and 50 feet tall. Since the water depth at the site is about 32 feet at mean lower low water, the amount of column out of the water is about 18 feet. The columns are arranged in three rows, each of which extends in a southeast-northwest direction. The first row, designated A-1 through A-3, is on the

shoreward or north side, with A-1 on the west end, A-2 in the middle, and A-3 on the east end. The next row, called B-1 through B-3, is in the middle, while the last row, named C-1 and C-2, is on the ocean or south side. Column C-1 lines up with columns B-2 and A-2, while C-2 lines up with A-3 and B-3. Together, the eight columns form a thick "L" shape about 60 feet by 60 feet (ARCO 1999 and 2003; Howorth 2003b).

The columns at PRC-421 were constructed by driving H-piles through the sand into the substrate, then placing a framework of steel rebar around each set of H-piles. A cylindrical form was then lowered over the framework. This form extended to the sand on the sea floor rather than to bedrock. Concrete was then poured into the form and allowed to harden (Lorentz, pers. comm.).

3.2 Toppling the Columns

To topple the columns, a barge serving as a crane support and dive center will be deployed to the site and anchored with a four-point mooring. Divers will remove debris around the columns. All salvaged material will be properly disposed of ashore. Sediments will then be removed from the base of the columns with a water jet to expose the four H-piles under each column (ARCO 1999 and 2003; Howorth 2003b).

Once the H-piles have been exposed, the demolition contractor will lower 1.8 lb linear shaped charges to the diver. One charge will be placed around each of the four exposed H-piles under each column, for a total weight about 7.2 pounds per column, or approximately 57.6 pounds total for all eight columns (ARCO 1999 and 2003). The total number of charges will be 32.

The four charges under each column will be detonated in pairs a fraction of a second apart. First, two of the charges will be detonated at lower points on the H-piles, followed by the remaining two charges (ARCO 1999). This will help topple the columns in a pre-planned pattern. Each set of charges under all eight columns will be detonated in rapid succession. The charges will be shaped so they detonate inwards, severing each H-pile cleanly and avoiding significant damage to the columns, which will form the base of an artificial reef.

3.3 The Dynamics of the Underwater Detonations

The methods used to topple the eight columns at PRC-421 could prove unique to this project. Few concrete columns exist in shallow water off the California coast, and to MMCG's knowledge, none are scheduled for removal. Moreover, the columns at PRC-421 will merely be toppled with small linear shaped charges, not shattered with large amounts of explosives like the concrete caissons at the Mobil Seacliff Pier Decommissioning Project (Howorth 1998a-f). Finally, the explosives deployment method for the columns at PRC-421 was designed with the unique structure of the columns in mind. Only the four H-piles beneath the concrete columns will be severed, not the concrete itself. It is important to consider these factors when considering whether the acoustic measurements obtained during this project can be applied to future projects.

The size, placement, type, and sequencing of charges are also important. For this project, very small shaped charges (1.8 pounds each) will detonate inward, severing the H-piles and expending much of the energy of the explosives in the process. The

charges will be placed in the depression beneath the natural sea floor, created by the water jetting, which means that some of the energy will be absorbed, reflected and/or refracted by the sea floor sediments. The substantial mass of concrete above the H-piles will also reflect, absorb and refract much of the energy. The reflected sound waves from the excavation and the concrete will converge out of phase, helping to attenuate sound levels. As the columns topple, additional sound attenuation can be expected for sound waves from other detonations traveling toward the toppled columns.

Two estimates were made of sound pressure levels using widely accepted formulae. One was based on buried charges and resulted in a peak pressure of 12 psi 560 feet from the detonation site. The other, based on charges detonated in open water, yielded a peak pressure of 12 psi at 2300 feet. For additional details, please see Howorth (2003b). The actual pressure yielded by the detonations will probably be closer to the buried charge estimate.

Only two charges will be detonated at once, for a total detonation weight of 3.6 pounds. The delay between pairs of charges and columns will prevent a build-up of sound pressure levels from multiple detonations. Since all eight columns will be toppled in one event, the entire risk to wildlife is confined to this single event rather than to series of detonations taking place over a period of days as has occurred in other projects off Southern California (Howorth 1994; 1996; 1997a and b; 1998a-f).

The strategy of toppling all the columns at once has obvious mitigation benefits for this project in particular. Previous projects in the Gulf of Mexico, and in some cases, in Southern California, involved individual charge weights of up to 45 pounds and still did not result in unacceptable sound levels beyond the 1000-yard wildlife hazard zone imposed for such projects (Howorth 1997a; 2003a). Based on this as well as on the factors discussed previously in this section, the 1000-yard wildlife hazard zone appears to be adequate for this project.

4.0 Acoustic Monitoring Plan

The acoustic monitoring will provide sound pressure level measurements at various depths and directions from the detonation site. The measurements will be taken at a range of 1000 yards, which represents the extent of the wildlife hazard zone accepted by the regulatory agencies for this project as well as for numerous other projects (Howorth 1996; 1997a and b; 2003a and b). The 1000-yard hazard zone concept was based on numerous shallow water decommissioning projects in the Gulf of Mexico, in which individual charge weights of up to 45 pounds were used.

Six measurements will be taken—all 1000 yards from the detonation site. Two measurements will be taken to either side of the site just beyond the surf zone in approximately 10 feet of water. These hydrophones will be suspended about five feet beneath the surface. Two more measurements will be taken offshore to either side of the site in approximately 75 feet of water. These hydrophones will be suspended about 60 feet beneath the surface. Two additional hydrophones will be deployed from the monitoring vessel directly offshore in approximately 80 feet of water. One hydrophone will be about 60 feet beneath the surface; the other, about 15 feet down.

The depth deployment is designed to measure the worst-case scenario. The most powerful sound levels can be expected just off the sea floor. Among other factors,

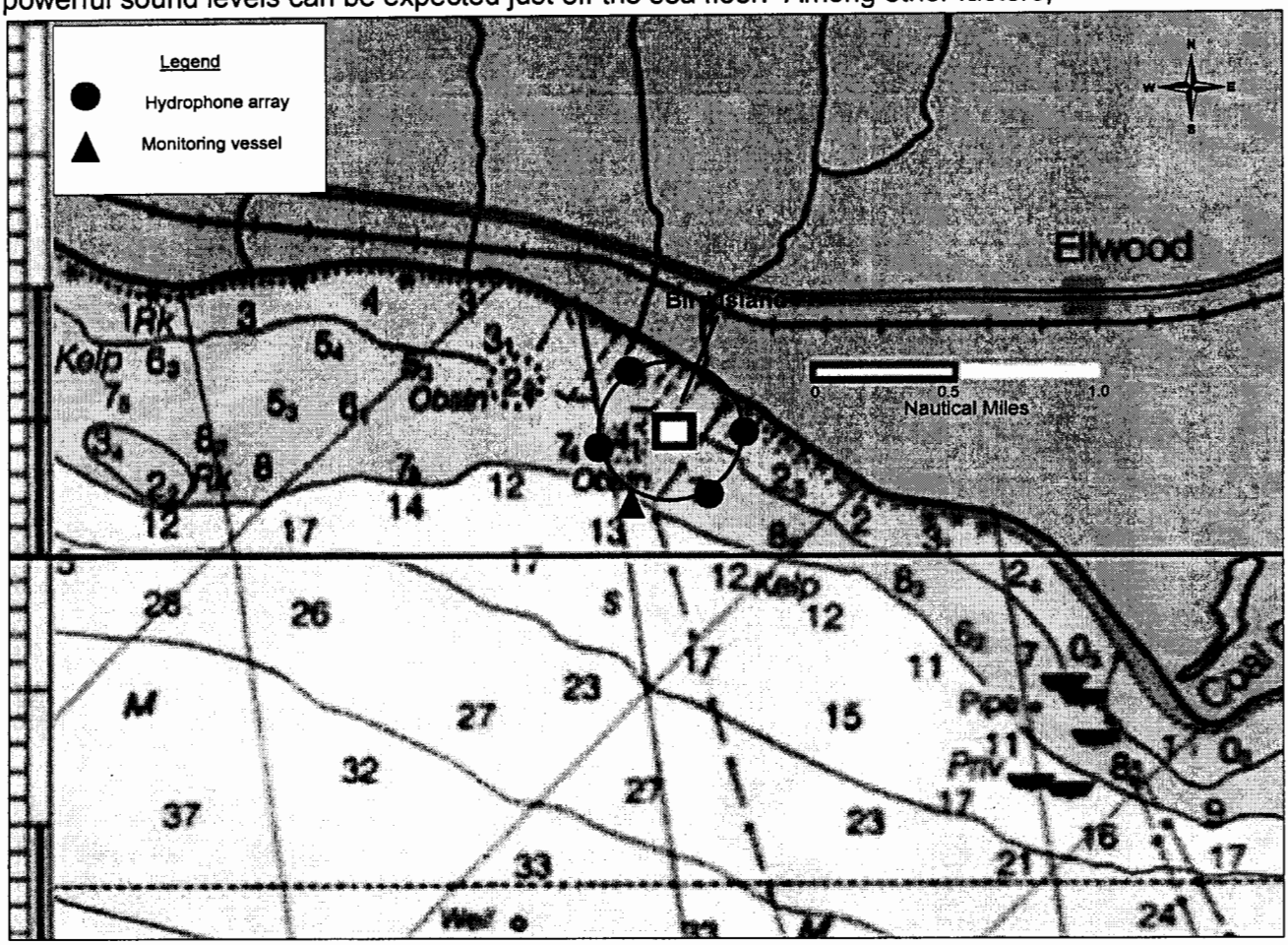


Figure 1: Acoustic Monitoring Stations at PRC-421 (Bird Island)

(Soundings are in fathoms.)

measurements near the sea floor will be closest to the detonations themselves. Reflection, cancellation, absorption, and refraction can be expected to attenuate sounds at the sea floor itself and at the sea surface, particularly in shallow water. If the kelp beds remain thick, some sound attenuation can be expected when sound waves strike the gas-filled floats of the kelp. In deeper water, some spreading can be expected as the sound propagates seaward. In general, the sea floor spreads gently into the depths from the shallows, with few conspicuous features to reflect or channel sound. The most conspicuous feature is Naples Reef, nearly 2 nm west of the site. The placement of each hydrophone-DAT system will be selected to allow a clear path for sound waves to travel from the detonation site to each monitoring station, taking into account localized bathymetric features.

From the measurements, ranges at which sound pressure levels presently considered the threshold at which temporary (hearing) threshold shifts (TTS) can occur will be calculated. These values are 12 psi/millisecond or 182 dB re. 1μPa² - second,

whichever is greater. For a detailed explanation of these levels, please see Howorth (2003b).

4.1 Equipment Preparation

Prior to deployment, the hydrophones (undersea microphones) will be calibrated in a test facility to determine the receiving characteristics of each sensor and electronics. Additionally, each DAT output will be calibrated and set to 0 dB gain and the controls locked in that position. Hydrophone cables will be set up with motion and sound dampening devices. All equipment will be tested, labeled and packaged for safe shipment and handling prior to deployment. The DAT recorders will either be housed in floating, watertight containers, which will be prepared prior to the project, or placed aboard small dinghies or skiffs secured in position.

4.2 Personnel Briefing

The acoustic team will be provided with this plan and with all appropriate equipment operation manuals. Prior to the project start-up, the acoustic personnel will receive a briefing to make certain each team member understands the purpose of the monitoring and the respective roles of all personnel. All procedures will be discussed and rehearsed, including a brief field test of at least one hydrophone-DAT system.

4.3 Mobilization

The equipment will be taken to Santa Barbara Harbor and loaded aboard the monitoring vessel. The acoustic monitoring team will board the vessel in the harbor as well. The team will arrive on site at least four hours prior to the detonations to allow time to deploy the system, obtain sound velocity profiles and measure ambient sound levels.

4.4 Monitoring

The monitoring team will consist of one senior acoustic technician who will analyze data from the monitoring vessel and supervise the other team members. The senior technician will be under the overall supervision of the project director. Two other persons will be selected to deploy and retrieve the remote hydrophone-DAT systems. Vessel operators will also be provided.

4.4.1 Equipment Deployment

Upon arrival at the site, the team will position each remote hydrophone-DAT system as discussed in 4.0, above.

4.4.2 Pre-detonation Measurements

Sound velocity profiles will be taken for later calculations. Measurements of ambient sounds will be taken at each station (in dB re. 1 µPa), then the monitoring vessel will position itself at its station and deploy its acoustic monitoring system.

4.4.3 Rapid Sound Level Estimates

DAT recordings will be taken from the monitoring vessel at depths of approximately 15

and 60 feet. These signals will be analyzed with an oscilloscope and/or specialized acoustic computer software for a rapid assessment of the sound pressure levels at the offshore monitoring station. Measurements will be presented in dB re. 1 μP^2 – second and in psi/ms.

4.5 Data Analysis

The DAT recordings will be analyzed across a wide frequency band using a spectrum analyzer and/or specialized acoustic computer software. The highest sound pressure levels will be noted in dB re. 1 μP^2 – second and in psi/ms.

4.6 Reporting

A report will be sent to the regulatory agencies within 30 days of completion of data analysis. This report will describe the methods used to obtain and analyze the data. Data will be summarized in tables, graphs or columns. The report will include a discussion of the results, along with an explanation of anomalies (if any). Conclusions will be offered, along with recommendations for similar future projects.

5.0 Literature Cited

ARCO (Atlantic Richfield Company). 1999. ARCO Environmental Remediation, Lease PRC-421 Removal Procedure.

_____. 2003. Revised PRC-421 Pier Removal Project: Project Description.

Howorth, P. 1994. U.S. Navy, A Summary of Marine Animal Capture Specialists Activities in Connection with the U.S. Navy's Ship Shock Trials of DDG 53, *John Paul Jones.* U.S. Government Prime Contract N00123-93-D-5115, Delivery Order EW14.

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_____. 1997b. Final Report: Wildlife Monitoring, South Bay Ocean Outfall, Piling Removal Blasting Project. Report for Case Foundation Company in satisfaction of agency requirements.

_____. 1998a. Acoustic Monitoring Plan for Mobil Seacliff Pier Decommissioning Project Northwest of Ventura, California. Plan to satisfy California Coastal Commission requirements. Prepared for Mobil.

_____. 1998b. Wildlife Protection Plan for Mobil Seacliff Pier Decommissioning Project Northwest of Ventura, California. Plan in satisfaction of agency requirements. Prepared for Mobil.

_____. 1998c. Final Report, Part One: Acoustic Monitoring for Mobil Seacliff Pier Complex Decommissioning Project Northwest of Ventura, California. Report for Mobil in satisfaction of agency requirements.

_____. 1998d. Final Report, Part Two: Technical Report: Underwater Acoustic Source Level Measurements, Explosive Caisson Demolitions, Mobil Seacliff Pier Complex Northwest of Ventura, California. [Edited by Howorth.]

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Lorentz, J. 2003. Personal communications. Fairweather Pacific, LLC, Ventura, California.

WRITTEN COMMENTS

County of Santa Barbara, December 14, 2004
City of Goleta, December 14, 2004
Sally Bromfield, January 3, 2005
Fairweather Pacific, LLC (ARCO Representative), January 19, 2005

BOARD OF SUPERVISORS
County Administration Building
105 East Anapamu Street
Santa Barbara, CA 93101
Telephone: (805) 568-2190
www.countyofsb.org

COUNTY OF SANTA BARBARA

December 14, 2004

Meg Caldwell, Chair
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Re: ARCO PRC-421 Pier Removal Project, Coastal Development Permit application

Dear Ms. Caldwell:

As you are aware, the Atlantic Richfield Company (ARCO) in conjunction with the State Lands Commission and at the petition of the Department of Fish and Game, proposes to topple and partially abandon-in-place its remnant oil pier structure off the coast of Goleta in Santa Barbara County, replacing the deteriorated pier with new bird roosting/nesting platforms that would extend 40 ft. above the sea surface, thereby setting a precedent for other "rigs-to-reef" projects along the California coastline. The Santa Barbara County Energy Division, also representing the City of Goleta, formally opposed this landmark project at the California State Lands Commission hearing in El Segundo on June 7, 2004. Santa Barbara County and your Commission have, in the past, required that all subsea structures related to oil and gas production be fully removed during facility abandonment. If approved, ARCO's current proposal would be an exception to this long-held standard. If an exception is to be made, substantial evidence to warrant such an aberration must be presented. It is our opinion that to date, the evidence has been lacking and we recommend that your Commission deny ARCO's application for a Coastal Development Permit based on the following:

1. Lack of evidence for calling the site significant habitat for the federally endangered, California brown pelican. The Draft EIR states, "Brown pelicans use the PRC 421 remnant structure as a day roost and probably as a night roost... generally, these pelicans are identified as having a moderate level of site fidelity [emphasis added]." The discussion is more anecdotal than factual and lacks supporting data indicating the need for *in situ* habitat replacement.

2. Lack of evidence that the site would be re-colonized by marine birds (especially Brandt's cormorants and California brown pelicans) after the new facility is built. In addition, no deadlines for colonization have been identified. The new structure

would be leased to the Department of Fish and Game (CDFG) for maintenance over a period of 49 years, however no plans for removal have been put forward if the project is unsuccessful in recruiting marine birds.

3. Lack of evidence demonstrating the need to enhance kelp habitat and supplement hard bottom substrate at the site. As stated in the Final EIR, "The quantity of giant kelp on all of the [underwater pier] structures, except the rock pile, appeared to be small according to Littoral Services' analysis. Thus the loss of the existing steel supports and caisson remnants supporting kelp should not create a significant reduction in kelp biomass." Therefore, toppling of the caissons without removal and the addition of rock rip-rap is excessive and constitutes unnecessary artificial reefing.

4. Inadequate evidence supporting the 72 ft. height requirement for the proposed roosting/nesting platforms. It is likely that the structural integrity of the platforms could withstand the 100 year wave in a different configuration that would not be as visually intrusive.

Recommendation

The original project identified in the Draft EIR of 2002 was complete removal of the caissons and pier structure; no roosting/nesting platforms were to be constructed. The Draft EIR of 2004 assesses an unavoidable biological resource impact to this original alternative due to the loss of "valuable offshore roosting/nesting areas, as defined by the CDFG for California brown pelican and Brandt's cormorants." However, as noted above we believe the proposed roosting/nesting platforms would create a negative visual impact on the recreational quality of this area. It is preferable that our beach and nearshore resources remain undeveloped.

The Santa Barbara County Board of Supervisors recommends that the California Coastal Commission deny this project and instead, support full abandonment and removal of the remnant pier structure, in favor of an alternative site restoration program that would provide appropriate mitigation for loss of marine bird habitat without erecting new free-standing structures off our coastline, thus avoiding creation of a precedent for approval of other rigs-to-reef projects.

Sincerely,

JOSEPH CENTENO, CHAIR
SANTA BARBARA COUNTY BOARD OF SUPERVISORS

cc. Goleta City Council members
Ken Curtis, City of Goleta
Peter M. Douglas, Executive Officer of the California Coastal Commission
Paul D. Thayer, Executive Officer of the California State Lands Commission

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CITY OF GOLETA

December 14, 2004

Meg Caldwell, Chair
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Re: ARCO PRC-421 Pier Removal Project, Coastal Development Permit Application

Dear Ms. Caldwell:

At its January 2005 meeting, your Commission will be considering a proposal by the Atlantic Richfield Company (ARCO), in conjunction with the State Lands Commission and the Department of Fish and Game, to topple and partially abandon-in-place a remnant oil pier structure off the coast of Goleta in Santa Barbara County. The proposal includes replacing the deteriorated pier with new bird roosting/nesting platforms that would extend 40 feet in height above the sea surface.

This matter was considered by the City Council of the City of Goleta at a special meeting on December 13, 2004. The Council directed that this letter in opposition to the project and requesting denial of the Coastal Development Permit application be sent for your Commission's consideration. The reasons for the City request for denial are the following:

1. The pier structure and the proposed replacement platforms are less than 1,000 feet off-shore of the Sandpiper Golf Course, which is adjacent to a 137-acre property on the Ellwood Mesa that the City of Goleta is in the process of acquiring with the assistance of the Trust for Public Land. The Ellwood Mesa property will become part of a 230-acre open space preserve that will be maintained in as natural a condition as possible, and the large 40-foot high, visually obtrusive replacement structure is a non-natural element that would substantially detract from the quality of the recreational experience by visitors to the open space

preserve and other adjacent coastal areas. The replacement structure is about twice as high above sea level as the existing remnant pier structure.

2. The City has concerns about the costs required for ongoing maintenance of the proposed new structure as it ages, and whether the state will be able to allocate sufficient funds for proper maintenance. If the structure is allowed to deteriorate over time, potentially hazardous conditions could result if winter storms were to damage or break apart portions of the new structure.

3. The proposed structure could be a hazard to navigation by the numerous small pleasure boats that use this stretch of coastline.

4. There is no certainty that the two specified species of seabirds will successfully re-colonize the replacement roosting platforms. This uncertainty undermines the justification for the project in light of the substantial adverse visual impacts and the impacts on the quality of the recreation experience by users of the Ellwood Mesa open space preserve.

5. The original project proposal evaluated in the Draft EIR of 2002 included complete removal of the caissons and pier structure, and no roosting platforms were proposed to be constructed. The City prefers this approach, with alternative off-site mitigation areas as appropriate for any loss of habitat for cormorants and brown pelicans. Mitigation through enhancement of natural habitats is preferred over the creation of an entirely artificial habitat on the proposed roosting platforms.

6. The City of Goleta prefers that its beach and nearshore open water areas remain undeveloped, and opposes construction of new off-shore structures. It shares the concerns stated in the December 14, 2004 letter by the County of Santa Barbara that any action be avoided that could create a precedent for other "rigs-to-reefs" projects on the South Coast.

To reiterate, the City of Goleta requests that the California Coastal Commission deny the proposed project and instead support the full abandonment and removal of the pier structure from the marine environment, with appropriate off-site mitigation of any loss of habitat for seabirds.

Respectfully submitted,

Jean W. Blois

Jean W. Blois
Mayor

C: Peter M. Douglas, Executive Director, California Coastal Commission
Paul D. Thayer, Executive Director, State Lands Commission
Steve Chase, Deputy Director, Planning and Development Department, County of Santa Barbara

January 3, 2005

California Coastal Commission
45 Fremont Street; Suite 2000
San Francisco, CA 94105-2219

To the staff of the California Coastal Commissioner:

I am writing concerning the project called "Bird Island" in Santa Barbara County which will be on your January 12, 2005 agenda. Unfortunately, I will not be in California at that time as I would very much prefer to be able to present my ideas to you in person.

My family has lived in Santa Barbara for five generations and all of us have been fond users of the coastal resources that our area provides. I have been a surfer for almost 50 years and presently am a Board member of the Santa Barbara Wildlife Care Network.
I volunteer each Monday afternoon at this organization's Seabird Rescue Pond currently located in a member's back yard in the Goleta Foothill section of Santa Barbara. Here we care for injured and starving pelicans and other seabirds which are brought to us by concerned members of the public who call our volunteers for the pick up and delivery of damaged seabirds.

Over the years, I have come to realize that most of the injuries we see on these birds are caused by their interaction with humans: broken wings, deep cuts from fishing lines either wound around their legs or from hooks ripping holes in their necks.

Several months ago I had the opportunity to take a boat trip out to see the nesting pelicans and cormorants on what is called "Bird Island". I only wish all of you Commissioners could do the same. Every square inch is being used as a nesting site. At that time, I was informed that Arco was going to expand the remainder of the old pier to make more nesting area available for the seabirds. I was overjoyed to hear of this decision knowing how extremely rare such nesting sites are along the mainland coast for the endangered Brown Pelican and a unique species of cormorant.

We humans have availed ourselves to almost every inch of shoreline. We have built for ourselves piers, breakwaters, groins into the sea to conserve sand and constructed seawalls to protect OUR homes but have built nothing along this stretch coast to help the seabirds save THEIR homes!

Now comes Arco who is willing to modify the remainder of an old pier structure to help create a larger space for more nesting sites, i.e. homes for seabirds and suddenly we read that certain Santa Barbara politicians are against such an idea. To me this speaks of extreme human selfishness! Can we not look past ourselves for once and help those creatures who can not appear before you to speak for themselves.

In my opinion, we should be building more offshore nesting platforms since we have taken over almost all of the beach and shoreline area for ourselves and our dogs!

Believe me, it is not a pretty sight to see what a dog can do to a pelican's wing. These seabirds

need a safe place to escape humanity and our pets. "Bird Island" provides one small spot where they can do just that.

Some critics of this project have said other "future projects" could be designated to provide seabird nesting sites if Bird Island is removed. One wonders where such sites could be found and how these opponents can guarantee that these wild birds would even occupy such a new site? If these negative people feel so strongly, why haven't they proposed alternative projects and raised the money to build them on the mainland coast like the Santa Barbara Wildlife Care Network has done for their rescue operations?

I am also aware that in past discussions of raptor and bird habitat before your Commission, Commissioner Wan has focused those discussions on how unlikely the transfer of existing nesting sites to possible new locations would be.

Please see the bigger picture here and support Arco's plan to increase Bird Island's seabird nesting site. It is time we humans do something FOR the birds and not just always think about our own selfish needs!

Thank you for your time and consideration.

Sincerely,

Sally Bromfield

Sally Bromfield
1316 Danielson Road, Santa Barbara, CA 93108

I am sending a copy of this letter to CC Commissioners Caldwell, Kruer, Burke, Iseman, Neely, Reilly, Kram, Peters, Potter, Secord and Wan

FAIRWEATHER
PACIFIC LLC

RECEIVED

JAN 1 9 2005

CALIFORNIA
COASTAL COMMISSION

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

January 19, 2005

Attention: Mr. Peter Douglas, Executive Director

Subject: PRC-421 Coastal Development Permit Application E-04-010

References:

1. Santa Barbara County Letter to California Coastal Commission Chair, Mike Reilly, dated December 14, 2004
2. City of Goleta Letter to California Coastal Commission Chair, Meg Caldwell, dated December 14, 2004

Dear Mr. Douglas,

Fairweather Pacific is the agent and primary consultant to Atlantic Richfield (ARCO) on the PRC-421 project and has represented ARCO previously before the CCC and other governmental entities. The PRC-421 project has been in various stages of permitting, EIR preparation, review and change since mid-2000 and ARCO would like to be in a position to plan to execute the work in the second half of 2005.

Initially, ARCO proposed, and was prepared to perform, a complete removal of the remnant structures; however, the California Department of Fish & Game (CDFG) cited, in response to the EIR prepared by the CSLC, what they considered to be Class I (significant, unavoidable) impacts to the endangered Californian brown pelican as a result of removal of the structure. Over a period of the next year and following several meetings between ARCO, California State Lands Commission (CSLC), CDFG, PADRE Associates and Fairweather Pacific (ARCO's agent), an agreement, embodied in the proposed project, was reached whereby ARCO could satisfy its lease requirements with the CSLC, provide onsite replacement habitat for the CDFG and also incorporate seabed enhancement in the form of a new artificial reef. An EIR was prepared on the revised project and subsequently certified by the CSLC and the project approved in June, 2004.

As representative for ARCO on the PRC-421 project, we respectfully submit, for your consideration, the following information in light of the concerns expressed in the above referenced documents. ARCO is the applicant in the subject CDP action.

4567 Telephone Road • Suite 203 • Ventura, CA 93003
Tel: (805) 658-5600 • Fax: (805) 658-5605

Santa Barbara County's Letter

Intro We do not agree that the project is properly characterized as a "rigs-to-reef" proposal. Clearly, the evolution of the project as described above and in the CCC staff report reveals otherwise. While it is true that the remaining concrete columns will be toppled and left in place, such columns are remnants of a pier and meet CDFG's criteria for suitable material for the creation of artificial kelp reefs, "*A Guide to the Artificial Reefs of Southern California*" (1989), by Robin D. Lewis and Kimberly K. McKee, with the Nearshore Sportfish Habitat Enhancement Program". Dennis Bedford updated this guide in 2001. Further, all other seabed remnants of pilings and debris on the lease will be collected and removed.

In addition, we are aware of no other location along the coast of California where both comparable facilities and resource interrelationships exist. It would, therefore, be unlikely or difficult to regard the project as a precedent.

Intro It is an incorrect statement that "...Santa Barbara County and your Commission have, in the past, required that all subsea structures related to oil and gas production be fully removed..." There have been numerous instances where the CCC, CSLC and Santa Barbara County have allowed abandoned subsea oil and gas pipelines to remain in-place following the appropriate cleaning, flushing and plugging procedures. These have occurred in water depths greater than 15 feet, beyond the surf zone and where there are not subject to exposure or movement. Examples include the subsea pipelines associated with the former Platforms Herman and Helen, pipelines that led to the former Tajiguas Gas Plant, ChevronTexaco, Shell, AREA and ARCO subsea lines offshore of the Gaviota Marine Terminal and pipelines associated with the former El Capitan Marine Terminal.

1. CDFG, in their comments to the original 2002 EIR analyzing the complete removal of all facilities, stated that the PRC-421 site was used 100% of the time and ranks as 12th out of 60 mainland diurnal roost sites. Further, CDFG has advised that the site is used by the seabirds as a rest stop to dry plumage before traveling to the Channel Islands. Most importantly, the site is isolated from predators. Among other references, CDFG quoted extensively from, *"Brown Pelican Roost Sites on the Mainland Coast of Southern California: Size, Quality, and Value of Diurnal Roost Sites"* April 2002 American Trader Trust Council by Craig Strong Crescent Coastal Research, *"Night Roost Sites for Brown Pelicans on the Mainland Coast of Southern California"* May 2002 American Trader Trust Council by Craig Strong, Crescent Coastal Research.

2. ARCO is funding a 5-year program designed and to be administered by the Santa Barbara County Audubon Society to monitor colonization of the new roosting platforms. CDFG seabird specialists suggest that replacing roosting habitat at the same location is the most likely option to attract seabirds. Considering the various locations around the area where pelicans and other seabirds can be observed, it is highly likely that seabirds would be attracted to these new structures, given that, like the remnant PRC-421 structure, they are removed from harassment elements. Further, in the unlikely event that seabirds are not attracted to the new platforms after 5 years, and it is determined by the CSLC, the CDFG

and the Executive Director that the structures should be removed, ARCO will use the remaining maintenance funds (see City of Goleta #2) and additional funding, in the form of a bond that will be posted with the CSLC in conjunction with the lease to CDFG, to remove them.

3. Hard bottom rocky reef habitat is generally considered an important biological resource in the Santa Barbara Channel as it supports a variety of epibiota, subtidal fish, and invertebrate species and is not commonly found. Because of its biological importance, offshore projects are required to avoid hard bottom habitat to the maximum extent feasible and restore impacts to hard bottom or kelp resources should they occur. Numerous mitigation measures have been incorporated into the proposed project for this very purpose. Section 30230 of the California Coastal Act states that "M*arine resources shall be maintained, enhanced and where feasible, restored.*" The Act requires maintenance of the biological productivity and the quality of coastal water to maintain optimum populations of marine organisms. Furthermore, CDFG has a program for the creation of artificial reefs in Southern California for the purpose of aggregating and producing fish. More than 24 artificial reefs have been created as part of this program in Southern California. The enhancement of kelp habitat through the efforts of the Santa Barbara Channelkeeper, also funded by ARCO, and addition of hard bottom substrate is considered a beneficial enhancement of existing area resources.

   Finally, Foster and Schiel, U.S. Fish and Wildlife Service, Biological Report 85 (1985) found that the seaward fringe of a kelp forest supports a high diversity of bird species, including brown pelicans and Brandt's cormorant. The invertebrates and fish that occur on this fringe provide a food source. The expansion of area kelp resources will thereby expand available food and serve as an additional inducement for brown pelicans and Brandt's cormorants to re-colonize the new roosting/nesting platforms.

4. As submitted in previous documents, the design environmental conditions for the original 1930s PRC-421 structure are unavailable. Today's standards for permanent marine structures require consideration of a 100-year event during design. Per such standards, decks are generally located 5' above the top of a predicted maximum wave crest; in this case the decks are the roost platforms. Hindcasting was used to predict the 100-year event in the general area and recognized engineering methods (based on U.S. Army Corps of Engineers documentation) were used to estimate the actual maximum wave height at this nearshore site. A series of single piles was chosen because, individually, they are the most transparent to the waves and the forces associated with wave particle velocity, thus minimizing the size required to withstand the applied forces. Certainly, a smaller, truss-type structure could be designed; however this could resemble a small oil platform. A lower profile structure within the wave regime, i.e., wave overtopping, must be able to resist significant additional forces, both dynamic and slam, resulting in "beefy" structural elements. In addition to these engineering considerations, a smaller structure would reduce the ability of the seabirds to remain during wave overtopping. Accordingly, we believe that the proposed structures are the least intrusive that will serve the needs of the

brown pelican and Brandt's cormorant and that meet current engineering requirements and standards.

Rec The EIR examined the visual impacts of the roosting platform and concluded that "...this change in the structural elements at the site would not adversely affect the existing visual character of the area." In addition, the CDFG's priority is onsite habitat to replace that, which will be removed.

City of Goleta's Letter

1. The proposed bird roosting/nesting structures would be visible from the areas noted in the comment, however, it is questionable whether they will "substantially detract from the quality of the recreational experience by visitors to the open space preserve and other adjacent coastal areas." They will be less massive than the existing dilapidated structure and designed for the specific purpose of creating habitat for an endangered seabird.

   Rather than a detraction from a recreational experience, the new bird roosting/nesting platforms could be considered an educational and recreational asset. For example, educational signboards could be posted for visitors to the open space park so that they may acquire knowledge about the brown pelicans, other seabirds and their habits. Similar educational signs were developed for the Bacara Resort and Spa to point out important sensitive resources in the area. ARCO would certainly entertain discussions with the city of Goleta to provide funding assistance for these types of educational materials.

2. Atlantic Richfield has, in furtherance of the project as approved by the CSLC, recently provided funds in the amount of $210,000 to the Kapiloff Land Bank Trust administered by the CSLC. These funds will be subsequently transferred to the CDFG for the purpose of maintaining the proposed structures for a period of 49 years, the term of the proposed CSLC lease of the facilities to the CDFG.

3. The existing remnant structures have been at this location in one form or another since the 1930s. The CSLC's EIR addressed the issue of a potential navigational hazard. The USCG, in response to the EIR, determined, by letter, that the new structures are not a hazard to general navigation as they are in relatively shallow waters and the existing structure is already marked on navigational charts, as would the new structures.

4. The CSLC and CCC staff have addressed this concern. Please refer to the response to Santa Barbara County Letter Comment #2 above.

5. As noted in the CCC Staff Report, other off-site mitigation sites for the loss of roosting habitat was considered and rejected by the CDFG. Research conducted by the CDFG and others indicates that the primary roost sties for brown pelicans in the western U.S. are offshore rocks and islands on the outer coast, and sand islands within large estuaries. The research found that important factors to roost selection include isolation from potential predators and human disturbance and distance to prey resources. Night roosts are usually

6. Please refer to our comments above to the same concerns raised by the County of Santa Barbara in the introductory comments of its letter of December 14, 2004.

The CSLC, the CDFG and CCC staff, as well as local environmental groups, have come together to make this project what it is today. ARCO has diligently worked to respond to various agencies' environmental and biological concerns, while also trying to comply with its CSLC lease obligations. ARCO is looking forward to the successful completion of the project before you. Thank you for the opportunity to provide this information.

Sincerely,

John F. Lorentz, P.E.
ARCO PRC-421 Representative
Fairweather Pacific LLC

cc: California State Lands Commission; Paul Thayer, Dwight Sanders
California Department of Fish & Game; Marilyn Fluharty
California Coastal Commission; Alison Dettmer, Audrey McCombs
Atlantic Richfield; Tony Brown
BP; Dan Cummings