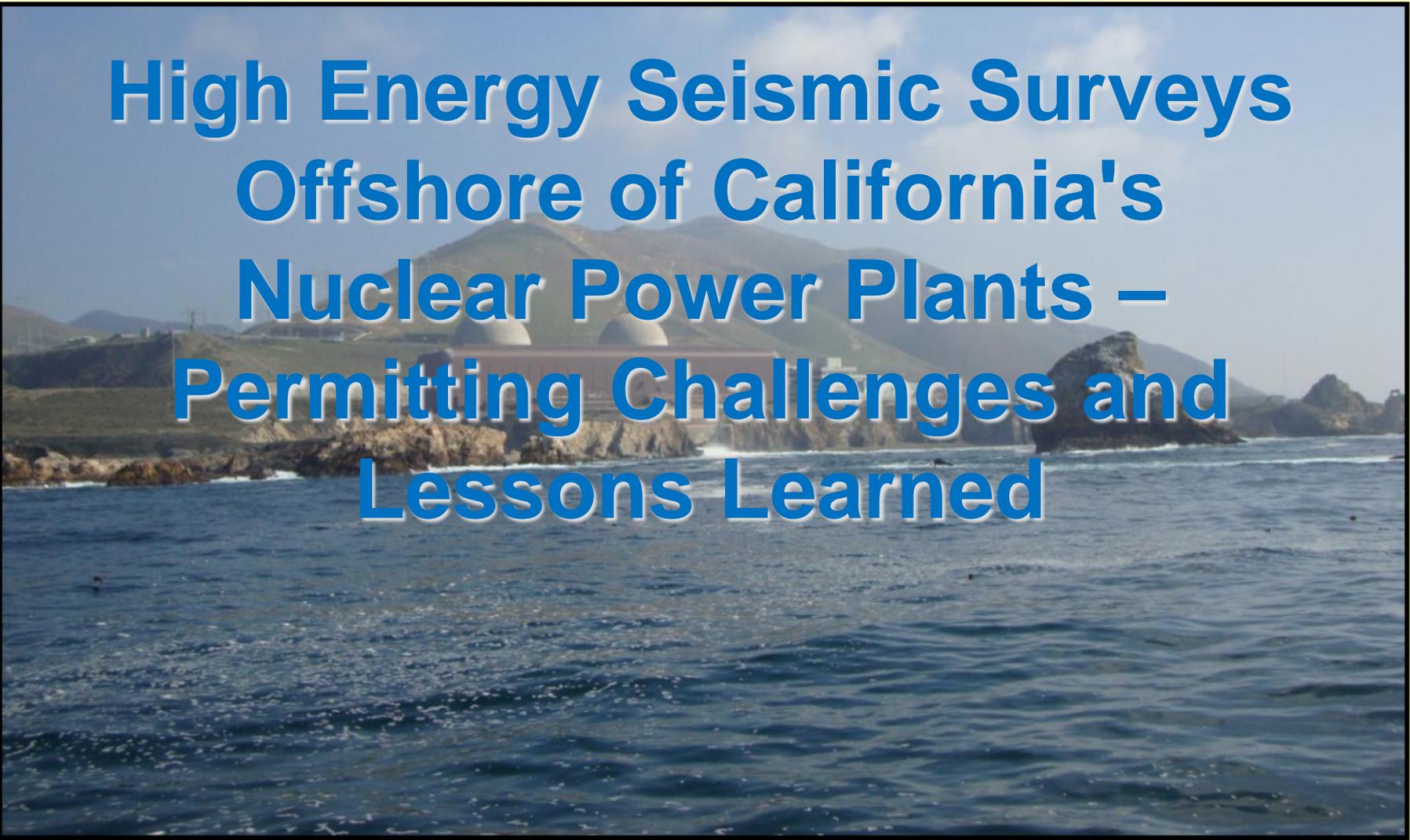


Prevention First 2014

High Energy Seismic Surveys Offshore of California's Nuclear Power Plants

The background image shows a coastal scene with a nuclear power plant. Two large, white, dome-shaped containment domes are visible on a rocky, elevated shoreline. The ocean is in the foreground, with blue water and white-capped waves crashing against the rocks. In the distance, there are green hills under a clear blue sky. The text is overlaid on this image in a large, blue, bold font with a white outline.

High Energy Seismic Surveys Offshore of California's Nuclear Power Plants – Permitting Challenges and Lessons Learned

Presentation Overview

- Background and Objectives
 - Proposed Offshore Seismic Imaging Project
 - Federal, State and Local Agency Requirements
 - CEQA/NEPA Process Overview
 - Key Permitting Agency Issues and Process
 - Final Outcome
-

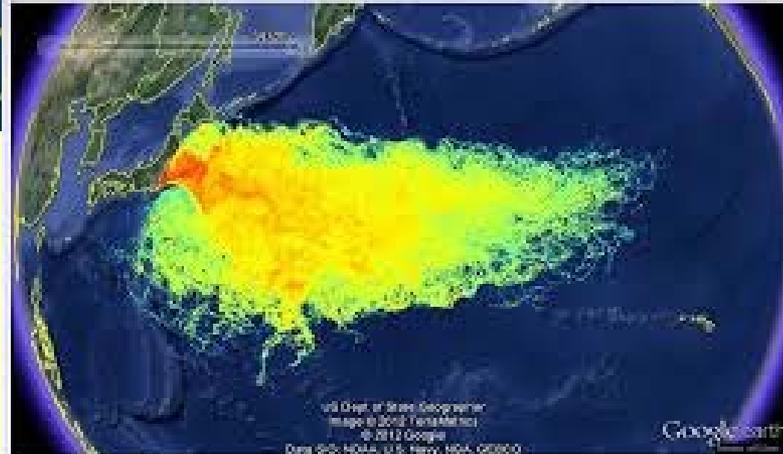
Legislative History

- 2006 California Assembly Bill (AB) 1632 (Blakeslee)
 - 2007 Japan's KKR earthquake; 21-month nuclear plant outage
 - 2008 USGS & PG&E discover Shoreline fault near Diablo Canyon (DCPP)
 - 2008 CEC recommends 3D seismic reflection mapping at DCPP & SONGS
 - 2009 CPUC & CEC direct PG&E to perform studies before seeking license renewal
 - 2009 AB 42 – required 3D seismic surveys; governor's veto says bill not necessary because happening anyway
 - 2010 CCC directs PG&E to submit any 3D studies that may be performed before it will process CDP & consistency certification for license renewal
 - 2010 CPUC approves PG&E's application to conduct 3D studies and creates Independent Peer Review Panel (IPRP)
 - 2011 Fukushima Daiichi Nuclear Disaster
 - 2011 PG&E submits application for geophysical survey permit (GSP) to State Lands Commission (SLC)
-

Fukushima



Radioactive Seawater Impact



Project Location



Project Components

- Onshore and Offshore Low Energy Surveys
 - Ocean Bottom Seismometer Array (OBS)
 - Offshore High Energy Seismic Survey (HESS)
-

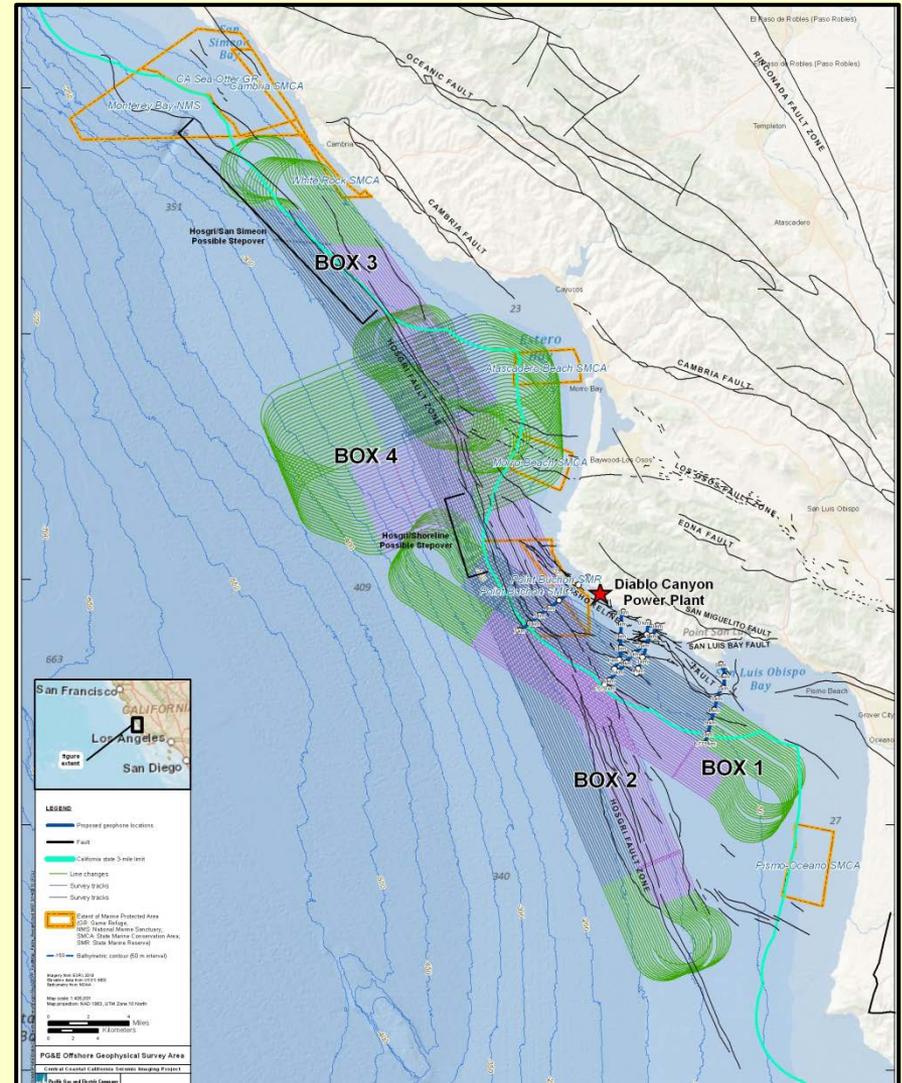
Offshore Seismic Imaging Survey

- Cambria to Point San Luis in water up to 1,400 ft.
- Specialized survey vessel approximately 235 ft in length
- Two strings of tuned air guns with a volume of 3,300 in³
- Vessel-towed hydrophone streamer array of 3.7 miles in length
- Additional scout and support vessels
- Scheduled for September through December 2012



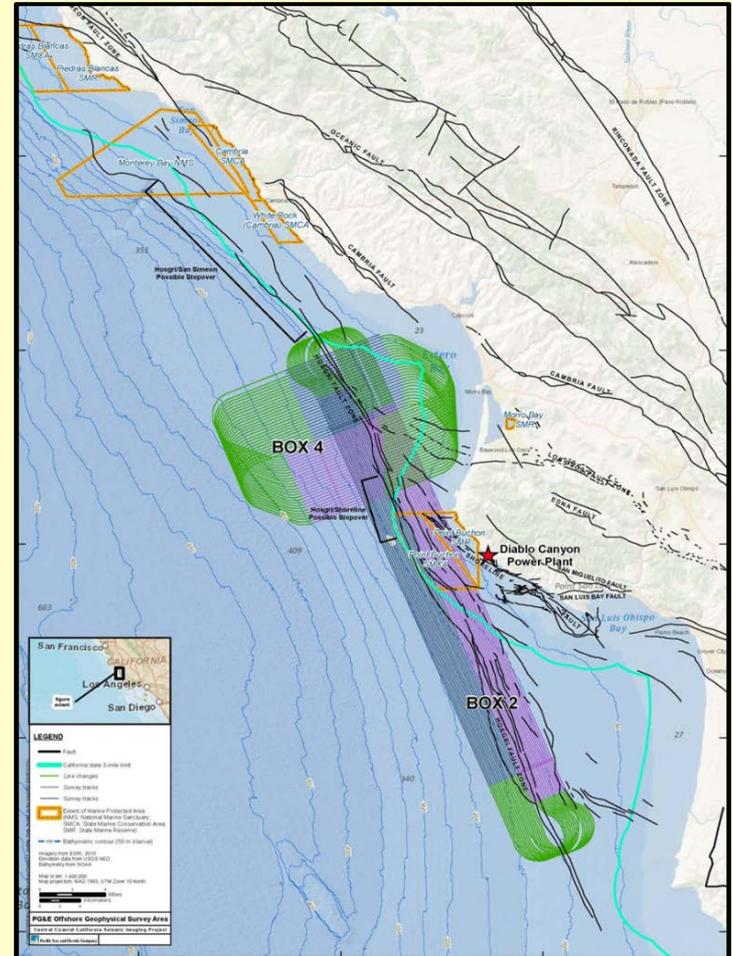
Original Survey Track Lines

- Within 25 meter depth
- 82-days
- Actual survey duration is 42 days

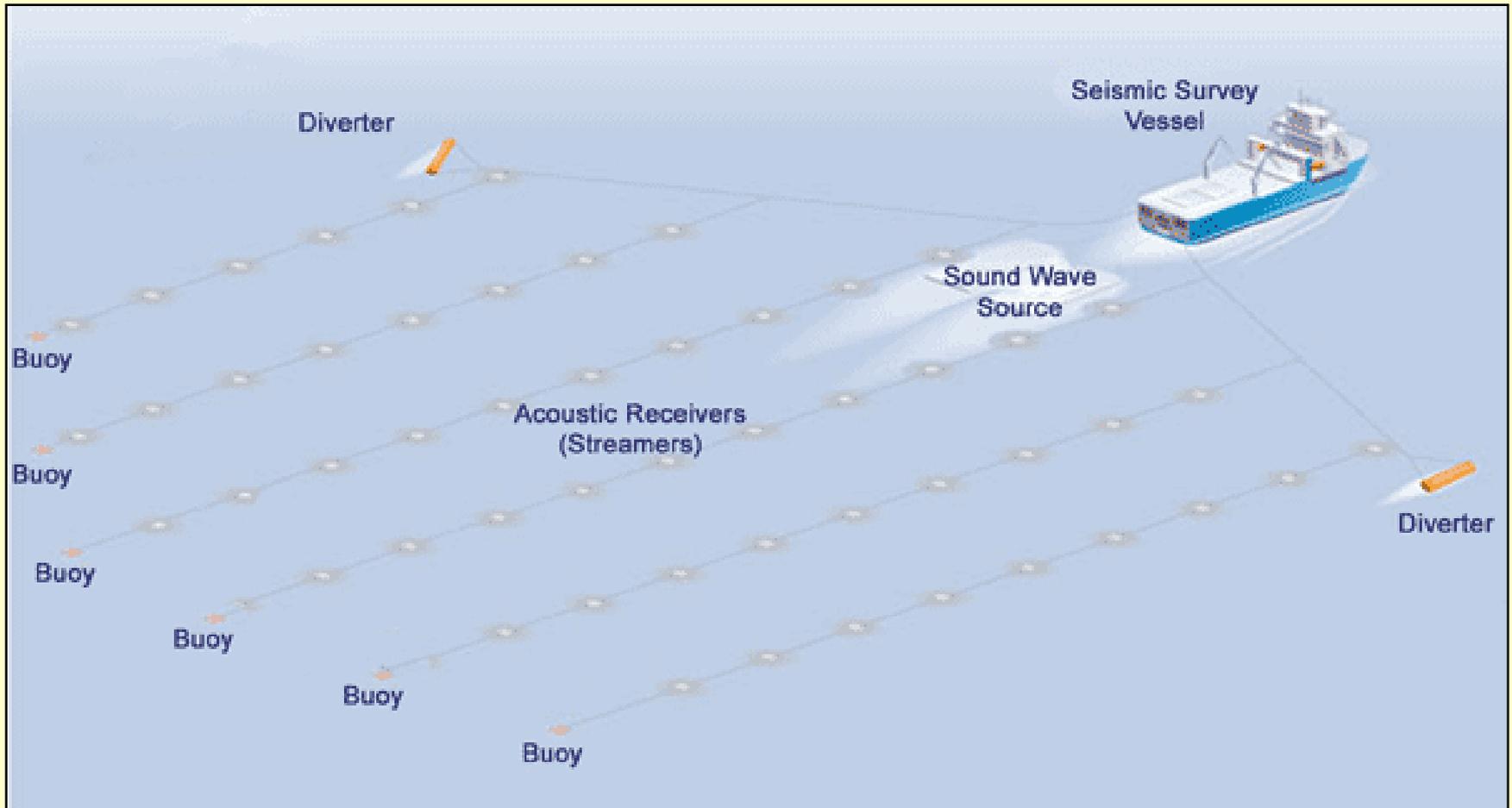


Offshore Survey Racetrack - 2012

- Boxes 4 and 2 only (Box 1 in 2013)
- November – December (no seismic activity in October)
- 49-day survey operation (reduced from 68 days) of which only 23.25 day of seismic activity



Towed Air Gun Array and Acoustic Streamers



Offshore Survey Procedures

- Marine Wildlife Contingency Plan approved by NOAA Fisheries/USFWS as part of the IHA approval process
 - Procedures consistent with HESS Protocols, NSF FEIS, and NOAA Fisheries Guidance.
 - Pre-activity aerial surveys and equipment noise level testing
 - Established Safety (160 db) and Exclusion Zones (180 db) as approved by NOAA
 - Ramp-up of all air guns
 - Mitigation air gun on during all turns and temporary shut-downs
 - Passive Acoustic Monitoring (PAM)
 - Marine mammal monitors onboard all survey vessels and if necessary aircraft
 - Local commercial fishing vessels used to support operations
 - Scheduled to coincide with low marine mammal activity (late fall/early winter)
 - Notification to mariners and commercial fishers
 - Avoidance of sensitive resource areas to extent feasible
-

Anticipated Agency Approvals

- California State Lands Commission
 - Geophysical Permit (Seismic Survey)
 - California Environmental Quality Act (CEQA) Lead Agency
 - NOAA Fisheries
 - Incidental Harassment Authorization (IHA)
 - Endangered Species Act (ESA) Consultation
 - National Science Foundation
 - Contract Approval
 - National Environmental Policy Act (NEPA) Lead
 - Army Corps of Engineers
 - Section 404 Certification (NWP 5)
 - U.S. Fish and Wildlife Service (FWS)
 - Incidental Harassment Authorization (IHA) - (Sea Otter)
 - ESA Consultation
 - California Coastal Commission
 - Coastal Development Permit (CDP)
 - Federal Consistency
 - California Department of Fish & Game – MPA Authorization
 - California Dept. of Parks and Recreation – Encroachment Permit
 - County of San Luis Obispo – Encroachment Permit
 - U.S. Coast Guard – Notice to Mariners
-

Incidental Take Authorization

- NOAA Fisheries and US Fish and Wildlife Service
 - Marine Mammal Protection Act of 1971 (MMPA)
 - Endangered Species Act (ESA)
 - Harassment aka “take” of Marine Mammals
 - Incidental Take Authorization or Letter of Authorization
 - Section 7 versus Section 10 Consultation Process
 - Requires completion of NEPA Process and Federal Consistency Determination
-

Marine Geophysical Permit

- Issued by the California State Lands Commission
 - High Energy Seismic Surveys have been prohibited in State Waters since early 1990's
 - Requires completion of an Environmental Impact Report (CEQA)
-

Coastal Development Permit/Federal Consistency Certification

- Issued by the California Coastal Commission
 - Projects must comply with the State's Approved Coastal Plan
 - Prohibits project approvals by either State or Federal agencies without mitigation for all potential significant impacts
 - Stated opposition to high energy sources in the marine environment.
-

Project Approval Schedule

| Action | Date |
|---|-----------------|
| Submission of Project Application to CSLC | April 29, 2011 |
| Release of Draft EIR by CSLC | March 16, 2012 |
| Draft EIR Public Workshops | April 19, 2012 |
| Final EIR and CSLC Approval Hearing | August 20, 2012 |

National Environmental Policy Act (NEPA)

- Required when a project has the potential to impact the natural and manmade environment
 - Lead Agency was the National Science Foundation
 - Determined due to the fact they would be taking the first discretionary action on the project (approval of use of federal property)
 - Environmental Assessment (EA)
 - Keys on interagency consultations
 - ESA
 - Essential Fish Habitat
 - Section 106
 - Clean Air Act
 - Clean Water Act
-

Federal NEPA Review Timeline (2012)

- April 16 – May 31: State/Federal Agency Coordination
- June 1 – June 22: Prepare Draft Environmental Assessment (DEA) which:
 - Incorporates, and tiers from, NSF PEIS
 - Incorporates CSLC DEIR information to the extent practicable/feasible/agreeable
 - Reflects new agreements with California State agencies regarding monitoring/mitigation measures
- June 25 – July 25: Release DEA for 30 day public comment period
- July 25 – August 1: Prepare responses to public comments
- August 1: Release Final EA
- August 1 – 31: Agency 30-day cooling off period
- September 1: Record of Agency Decision (assuming coincides with IHA/ESA processes)

Monitoring Programs/Bond

- IHA/MWCP Monitoring Program
 - Harbor Porpoise Monitoring Program
 - Sea Otter Monitoring Program
 - Aerial Surveys conducted by NMFS
 - Adaptive Management Program
 - Stranding Response Plan
 - CSLC Mitigation Monitoring Plan
 - Fish and Invertebrate Monitoring Program
 - Fisheries Notifications
 - \$5 million Bond for Geophysical Survey Permit
-

Sound Level Predictions and Mitigations

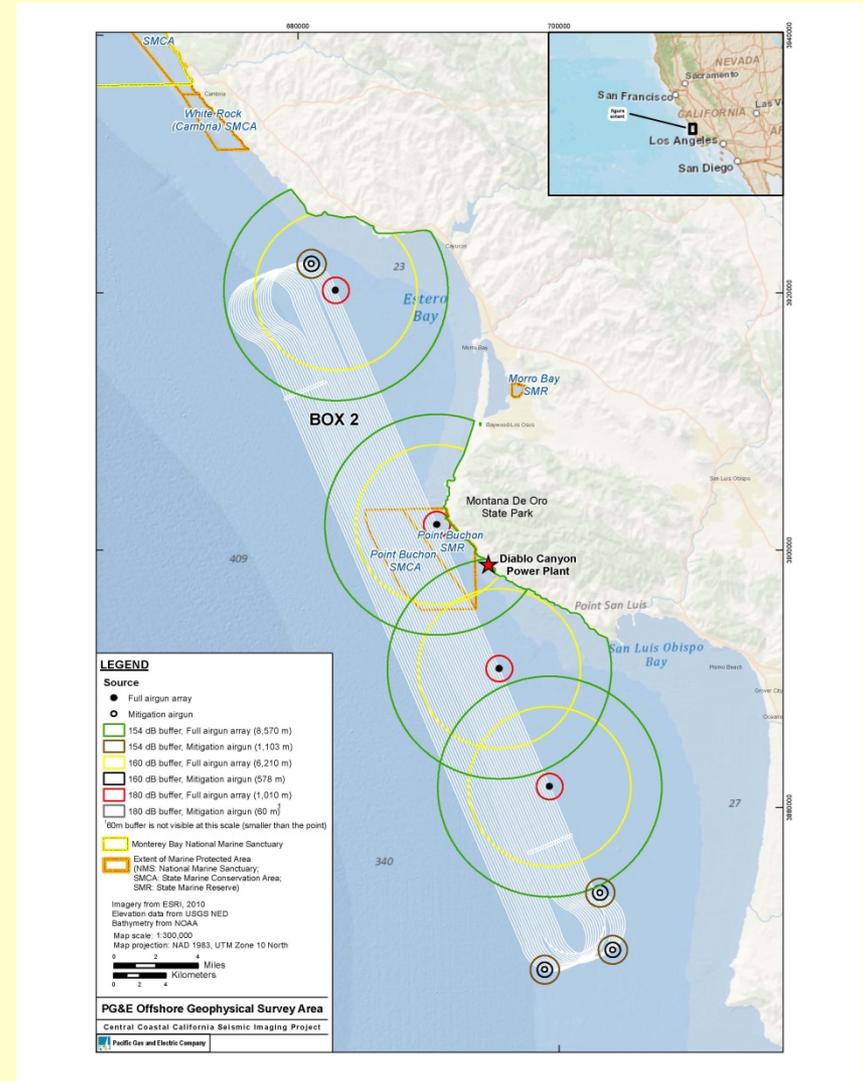
- Southall vs. NMFS Methodology
 - Level A vs. Level B Take
 - 1.2-mile Exclusion Zone
 - Undefined Safety Zone
 - Aerial Surveys 10 days in advance
 - Weekly Aerial Surveys
 - 3 Shutdowns - Reconsultation
-

Comparison of Exclusion Zones

Comparison of Distances to the 180 dB SEL (meters/statute miles)

| PG&E IHA Application | Previous Columbia IHA Approvals | CSLC EIR Noise Modeling | EIR Mitigation Measure |
|--|--|---|-------------------------------|
| 1,010 / 0.6 | 852 / 0.5 | 856 / 0.5 | 1,931 / 1.2 |
| Greeneridge Sciences, Inc. modeling for upslope transect | Diebold, et al. (2010) for intermediate depth water (100 to 1,000 m) | JASCO modeling for EIR (Range of R _{95%} for Site 1) | |

Safety and Exclusion Zones



Monitoring of Impacts to Fish/Invertebrates

- Monitoring of short- and long-term impacts to fish and invertebrates
 - Short-Term Effects: ROV High definition video of demersal fishes, invertebrates, and seafloor habitat
 - Long-Term Effects: California Collaborative Fisheries Research Program
 - Before-After/Control-Impact (BACI) Study Design
-

Sea Otter

- Endangered under ESA and Protected under the MMPA
- Incidental Take Permit Required by USFWS
- No documented impacts from marine seismic operations
- Monitoring Program Required by USFWS



Denial

- On November 14, 2012 the California Coastal Commission Denied the CDP and Objected to the Federal Consistency Request



Reason for Denial

- Inability to effectively detect marine wildlife within the Exclusion and Safety Zones
 - Believe a Level A Take will Result from Project
 - PG&E did not effectively demonstrate a need for the project that would result in an Override of the Coastal Act Requirements
-

Results of the Denial

- Due to restrictive timing and availability of the RV Langseth, PG&E had initiated mobilization of vessel to survey area.
 - Vessel returned to the Atlantic Coast
 - Currently no available HESS vessels available on the West Coast
 - PG&E suspended all HESS activities and have focused on interpretation of existing data.
-

Question/Answer Session

