



Via Electronic and First Class Mail

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RE: Venoco South Ellwood Field Project Draft Environmental Impact Report; SCH No. 2015051001, CLSC EIR No. 782

Dear Mr. Gilles:

The Center for Biological Diversity submits the following comments to the California State Lands Commission (the “Commission”) on Venoco’s South Ellwood Field Project and the Commission’s Draft Environmental Impact Report (“Draft EIR”) on the Project. The Commission must reject Venoco’s dangerous proposal to significantly expand its offshore oil and gas drilling operation from Platform Holly.

As the Commission is well aware, California generally prohibits new leasing in state waters. And it does so for good reason. Offshore oil drilling causes oil spills that pollute our beaches and kill wildlife. Offshore drilling also pollutes our air, contaminates our water, and worsens the climate crisis. But Venoco is attempting to use a loophole in that law that allows oil companies to amend the boundaries of their leases if certain conditions are met. One of those conditions is that the proposal is the least environmentally damaging feasible alternative for production of the resource.

Venoco’s proposal is clearly not the least environmentally damaging alternative. Venoco’s Proposed Project would drill for oil in the protected California Coastal Sanctuary; increase greenhouse gas emissions and exacerbate climate change; increase stress on aging, decaying infrastructure and risk yet more devastating oil spills; increase the production of dirty wastewater and dangerous wastewater injection; and increase toxic air pollution, among other harms. Rather than allowing expanded offshore drilling, the Commission should instead work toward decommissioning Platform Holly and its associated infrastructure.

If, however, the Commission does not reject the Proposed Project, the Commission cannot approve it unless and until the Commission substantially revises the Draft EIR and recirculates a draft for public notice and comment. As it stands, the Draft EIR wholly fails to

comply with the California Environmental Quality Act (“CEQA”). The Draft EIR fails to adequately consider the impacts of climate change; fails to properly consider or mitigate the impacts oil spills; fails to consider or mitigate the impacts of increased wastewater pollution and wastewater injection; fails to consider or mitigate the impacts of the acidizing practices it acknowledges Venoco uses at Platform Holly; fails to sufficiently consider or mitigate the impacts of ocean noise and ship strikes on marine life; fails to consider an adequate range of alternatives; and fails to fulfil the Commission’s duties under the public trust doctrine. The Draft EIR also wholly fails to quantify the greenhouse gas emissions from the transportation, refining and consumption of the oil and gas to be extracted; and it therefore fails to analyze or mitigate the impacts of these greenhouse gas emissions.

But the only true way to mitigate the numerous destructive impacts from offshore oil and gas drilling is to prevent them from occurring in the first place. The Center therefore urges the Commission to reject Venoco’s proposal and prevent dangerous increased oil drilling in currently protected waters.

I. The Commission Must Reject Venoco’s Proposal Because it Does Not Meet the Statutory Criteria For Approval

The Commission must reject Venoco’s proposal because it does not meet the legal standard for approval. California generally prohibits new leasing in state waters. California Public Resources Code § 6243. But Venoco is attempting to use a loophole in that law that allows oil companies to amend the boundaries of their leases if certain conditions are met. Specifically, California Public Resources Code § 6872.5 allows the Commission to “adjust the boundaries of existing leases to encompass all of a field partially contained within the existing lease” if the Commission finds that:

- (1) The adjustment will permit more efficient utilization of state resources;
- (2) The number and size of existing offshore platforms will not be increased, except that modifications to a platform within the existing boundaries of a lease shall be permitted where the modifications are reasonably necessary for development of all of the resources within the reconfigured lease;
- (3) The boundary adjustment will not require the construction or major modification of a refinery in this state to permit development of any increased production resulting from the boundary adjustment, unless that construction or major modification is to a field production facility servicing the lease; [and]
- (4) The boundary adjustment represents the environmentally least damaging feasible alternative for the extraction and production of affected resources.

Here, Venoco’s proposal fails to satisfy the fourth factor because Venoco’s proposal is not the least environmentally damaging feasible alternative. The proposal gives back land that has never produced oil and never will in exchange for new drilling in currently protected waters that are among the most biologically rich and diverse waters in the world. And the proposal would nearly quadruple the amount of oil and gas produced every day above baseline conditions. This, in turn, would lead to the emission of substantial amounts of greenhouse gases; increase the quantity of dirty produced water and dangerous wastewater injection; increase the risk of

devastating oil spills by putting additional stress on offshore oil and gas infrastructure that is a half-century old; and increase dangerous truck traffic, among other harms.

A. Venoco's Proposal Would Exacerbate Climate Change By Causing Significant Emissions of Greenhouse Gases

Venoco's proposal would emit substantial amounts of greenhouse gas pollution at every stage of the project, from the construction and operational phases to the transportation, refining and consumption of the oil and gas to be extracted. Such emissions will exacerbate climate change at a time when California should be rapidly transitioning away from dirty fossil fuel development and toward clean energy.

Climate change, driven primarily by the combustion of fossil fuels, poses a severe and immediate threat to the health, welfare, ecosystems, and economy of the United States and the world. In recognition of these threats, the Paris Agreement codifies the international, scientific consensus that climate change is an "*urgent and potentially irreversible threat to human societies and the planet* and thus requires the widest possible cooperation by all countries."¹ Accordingly, the Paris Agreement commits all signatories to an articulated target to hold the long-term global average temperature "to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels."² Immediate and aggressive greenhouse gas emissions reductions are necessary to keep warming below a 1.5° or 2°C rise above pre-industrial levels.

According to a large body of scientific research, holding temperature rise to "well below 2°C" requires that the vast majority of global and U.S. fossil fuels stay in the ground. The global carbon budget—the remaining amount of carbon that can be released into the atmosphere before we lose any reasonable chance of holding global temperature increases well below 2°C—is extremely limited and rapidly being consumed by continued fossil fuel use. For example, a recent study by Oil Change International entitled *The Sky's Limit*, shows that meeting the Paris climate goals requires a managed decline in *currently operating* fossil fuel production activities, such as coal, oil and gas extraction, transport and combustion.³ Specifically:

- The potential carbon emissions from the oil, gas, and coal in the world's currently operating fields and mines would take us beyond 2°C of warming.
- The reserves in currently operating oil and gas fields alone, even with no coal, would take the world beyond 1.5°C.

Based on these findings, the report recommends: "No new fossil fuel extraction or transportation infrastructure should be built, and governments should grant no new permits for them." The science is clear that the path to avoiding the worst impacts of climate change involves ending business as usual for fossil fuel development. As the *Sky's Limit* report points out, "if you are in a hole, stop digging."

¹ Paris Agreement, Decision, Dec. 2015, Art. 4(3); Recitals.

² *Id.*, Art. 2 (emphasis added).

³ Oil Change International, *The Sky's Limit*, Sept. 2016, http://priceofoil.org/content/uploads/2016/09/OCI_the_skys_limit_2016_FINAL_2.pdf.

And, as the Commission acknowledges in its Draft EIR, in order to meet California's statewide greenhouse gas reduction targets for 2020, 2030 and 2050, projects must contribute to slowing the increase in greenhouse gas emissions, and, ultimately, should contribute to reducing the State's output of greenhouse gas emissions. Draft EIR at 4.4-7. As stated in the Draft EIR, to reach California's greenhouse gas reduction targets, per capita emissions will need to be reduced by nearly 5 percent annually between 2020 and 2030, with continued reductions required through midcentury. *Id.*

Yet Venoco's proposal would substantially increase the amount of oil extracted, and thus the amount of greenhouse gases to be emitted. Specifically, the Commission estimates that Venoco's proposal would allow the company to *nearly quadruple* the amount of oil it produces every day at peak production, and recover *nearly 2.5 times* the amount of oil it would recover under its current lease boundaries.⁴ Transporting, refining and consuming the oil to be extracted under the proposal would result in the emission of 19.6 million tons of greenhouse gas emissions—the equivalent of operating more than 5 coal plants for a year.⁵ Venoco's proposal is clearly not the least environmentally damaging alternative.

B. Venoco's Proposal Would Increase Stress on Aging Infrastructure, Increasing the Risk of More Dangerous Oil Spills

Venoco's proposal would intensify stress on offshore oil and gas infrastructure that is 50 years old, and well beyond the age federal data show significantly increase the risk of an oil spill. An oil spill would have devastating consequences on California's marine environment, its beaches and coastal communities. Indeed, the Commission's own meager analysis admits that an oil spill would have several significant and unavoidable harmful impacts. All this information clearly counsels in favor of rejecting Venoco's proposal.

i. Venoco's Proposed Project Increases the Risk of Oil Spills by Relying on an Old Offshore Platform and Old Pipelines

As the Commission is well-aware, on May 19, 2015, Line 901 of the Plains All American Pipeline ruptured, spewing more than 140,000 gallons of crude oil into California's coastal environment. That pipeline was 28 years old, whereas Platform Holly and its pipelines are half-a-century old, substantially increasing the likelihood of yet more harmful oil spills.

Federal reports on the causes of the Plains All American Pipeline spill indicate that the spill was due to extensive corrosion of Line 901. Specifically, inspectors determined that the part

⁴ At current oil prices, remaining recoverable reserves within Venoco's current lease boundaries are estimated at approximately 25 million barrels of oil. Draft EIR at 1-7. In contrast, the projected recovery for the proposed project is approximately 60 million barrels of oil – nearly 2.5 times the amount of oil. *Id.*

⁵ Center for Biological Diversity, Climate Pollution Calculator, <http://www.biologicaldiversity.org/climatepollutioncalculator/>; EPA, Greenhouse Gas Equivalencies Calculator <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>; *see also* Center for Biological Diversity, The Potential Greenhouse Gas Emissions from U.S. Federal Fossil Fuels, Aug. 2015, <http://www.ecoshiftconsulting.com/wp-content/uploads/Potential-Greenhouse-Gas-Emissions-U-S-Federal-Fossil-Fuels.pdf> (describing the methodology used to develop the Center's carbon calculator).

of the pipeline that failed was so corroded that it degraded *to 1/16 of an inch*.⁶ The Plains pipeline was built in 1987. The environmental impact statement that was prepared for the construction and operation of the Plains pipeline in 1985 by the Bureau of Land Management and the Commission acknowledged that spills happen, and determined that the risk of a spill *more than doubles* as the pipeline aged from 20 to 40 years.⁷

According to scientists, aging poses risks of corrosion, erosion and fatigue stress to subsea pipelines.⁸ Subsea pipeline corrosion appears to accelerate over time,⁹ and can act synergistically with fatigue stress to increase the rate of crack propagation.¹⁰ Marine environments are especially known to produce significant corrosion on steel surfaces, and when a steel structure is at or beyond its elastic limit, the rate of corrosion increases 10-15 percent.¹¹ One offshore pipeline study found that after 20 years the annual probability of pipeline failure increases rapidly, with values in the range of 0.1 to 1.0, which equates to a probability of failure of 10 percent *to 100 percent per year*.¹² Another study covering 1996-2010 found that accident incident rates, including spills, increased significantly with the age of infrastructure.¹³

The U.S. Department of Transportation itself found that offshore pipelines can be more vulnerable than onshore pipelines. They have a greater vulnerability to severe weather conditions than onshore pipelines, especially during hurricane events. And massive wave action can alter the pipeline stability, causing gradual displacement, especially in small diameter pipelines.¹⁴ Offshore pipelines can also face more corrosion than onshore pipelines due to higher temperature and pressure conditions that occur during the laying of these pipelines.¹⁵

Consistent with these findings, a report published in 2010 found that the number of oil spills from offshore rigs and pipelines between 2000 and 2009 *more than quadrupled* the rate of

⁶ PHMSA, Plains Pipeline, LP - Failure Investigation Report, May 2016, http://www.phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/Files/PHMSA_Failure_Investigation_Report_Plains_Pipeline_LP_Line_901_Public.pdf.

⁷ California State Lands Commission & Bureau of Land Management, Draft Environmental Impact Report/ Environmental Impact Statement for the Celeron/All American And Getty Pipeline Projects (Aug. 1984) at 4-166.

⁸ Petroleum Safety Authority Norway. 2006. Material Risk – Ageing offshore installations. Prepared by Det Norske Veritas on request from Petroleum Safety Authority Norway. Available at <http://www.psa.no/report-archive/category1033.html>.

⁹ Mohd, M.H. and J.K. Paik. 2013. Investigation of the corrosion progress characteristics offshore oil well tubes. Corrosion Science 67:130-141.

¹⁰ PSA Norway 2006.

¹¹ Mohd, M.H. and J.K. Paik (2013) Investigation of the corrosion progress characteristics of offshore subsea oil well tubes. Corrosion Science 67: 130-141; A. Igor, R.E. Melchers, Pitting corrosion in pipeline steel weld zones, Corros. Sci. 53 (12) (2011) 4026–4032; R.E. Melchers, M. Ahammed, R. Jeffrey, G. Simundic, Statistical characterization of surfaces of corroded, Mar. Struct. 23 (2010) 274–287.

¹² Bea, R., C. Smith, B. Smith, J. Rosenmoeller, T. Beuker, and B. Brown. 2002. Real-time Reliability Assessment & Management of Marine Pipelines. 21st International Conference on Offshore Mechanics & Arctic Engineering. ASME.

¹³ Muehlenbachs, et al. 2013. The impact of water depth on safety and environmental performance in offshore oil and gas production. Energy Policy 55:699-705.

¹⁴ U.S. Department of Transportation: Federal Highway Administration. Impacts of Climate Change and Variability on Transportation Systems and Infrastructure: The Gulf Coast Study, Phase 2. 2015.

¹⁵ Keuter, J. (2014). In-line Inspection of Pipes Using Corrosion Resistant Alloys (CRA). Rosen Technology and Research Center GmbH, Rosen Group, Germany; Standard Oil Company (1981) Drilling fluid bypass for marine riser. U.S. Grant. US4291772 A.

spills in prior decades.¹⁶ In particular, from the early 1970s through the 1990s, offshore rigs and pipelines averaged about four spills per year of at least 50 barrels (or 2,100 gallons). The average annual total skyrocketed to more than 17 from 2000 to 2009, and averaged 22 per year from 2005 to 2009 alone.¹⁷ And the number of spills, as well as the quantity of spilled oil, grew significantly worse even when taking increased production in account.¹⁸

Thus, there is a significant risk of yet another large oil spill from the activities to be conducted under Venoco's proposal. Indeed, the offshore pipeline running from Platform Holly to the Ellwood Onshore Facility is nearly 50 years old, with a surf-zone crossing that was replaced in 1997. A "June 2010 inspection of the crude oil emulsion pipeline identified 'extensive' corrosion, primarily internal and found along the bottom half of the pipeline, ranging in wall loss from 20 percent to 67.3 percent."¹⁹ And the Draft EIR admits that inspections of the subsea pipeline connecting Platform Holly to shore has consistently shown substantial corrosion, with the deepest anomalies consistently being between 64 and 73 percent over the last 10 years. Draft EIR at 4.1-7. Similarly, the Draft EIR admits that Platform Holly currently has at least one significant crack and may not be able to withstand the additional weight of construction materials needed for the Proposed Project. *Id.* at 4.1-39.

At the time Platform Holly was constructed, it was anticipated to be decommissioned between 2015 and 2020. However, the Proposed Project is aimed at expanding oil and gas development at this Platform by bringing new wells online and increasing oil and gas production. Increasing stress on this aging, decaying infrastructure increases the risk of oil spills. Thus, Venoco's proposal is not the least environmentally damaging alternative and counsels in favor of denying the proposal.

In light of this overwhelming evidence it is hard to see how the Commission could ever make the other requisite finding that the project will not result "in the seepage or spillage of oil... or in the destruction of scenic or aesthetic values." See Cal. Pub. Res. Code § 6870(a) ("[n]otwithstanding any other provision of law to the contrary, no leases shall be let for the extraction of oil and gas from coastal tidelands or submerged lands in state waters within the Santa Barbara Channel unless the commission determines that such a lease will not result in the seepage or spillage of oil... or in the destruction of scenic or aesthetic values"). Indeed, the Commission's Draft EIR admits that there would regularly be small oil spills from the Proposed Project. Draft EIR at 4.1-14.

ii. *An Oil Spill Would Have Devastating Consequences on California's Coastal Environment and Public Welfare*

Oil spills have a wide array of lethal and sublethal impacts on marine species, both

¹⁶ Alan Levin, *Oil Spills Escalated in this Decade*, USA Today, June 8, 2010, available at http://usatoday30.usatoday.com/news/nation/2010-06-07-oil-spill-mess_N.htm.

¹⁷ *Id.*

¹⁸ *Id.*

¹⁹ County of Santa Barbara, Line 96 Pipeline Modification Project Final Environmental Impact Report at 4.2-10 (June 2011).

immediate and long-term.²⁰ Direct impacts to wildlife from exposure to oil include behavioral alteration, suppressed growth, induced or inhibited enzyme systems, reduced immunity to disease and parasites, lesions, tainted flesh and chronic mortality.²¹ Oil destroys the water-proofing and insulating properties of feathers and fur of birds and mammals, respectively, thereby compromising their buoyancy and ability to thermoregulate.²²

Marine mammals can be exposed to oil internally by inhaling volatile compounds at the surface, swallowing oil, consuming oil-contaminated prey and externally by swimming in oil.²³ Exposure to toxic fumes from petroleum hydrocarbons during oil spills have been recently linked to mortality in cetaceans, even years after such accidents.²⁴ A recent scientific study determined that the Deepwater Horizon oil spill caused adrenal and lung lesions in bottlenose dolphins which led to an unusual mortality event in which dolphins died from 2010 to 2014.²⁵ The unusual mortality event is still ongoing; more than 1,300 cetaceans have died since the spill.²⁶

ESA-listed sea otters are particularly vulnerable to contamination from oil spills. When sea otters come into contact with oil, it causes their fur to mat, which prevents the fur from insulating their bodies. Without this natural protection from the cold water temperature, sea otters can quickly die from hypothermia. The toxicity of oil can also be harmful to sea otters, causing liver and kidney failure and damage to their lungs and eyes.²⁷

In addition, oiled shores can affect nesting and foraging areas of bird species. Oiled adults returning to the nest can contaminate their eggs and chicks with oil. Studies on the effects of oil on eggs have shown significant mortality and developmental defects in embryos.²⁸ Oiled birds are also at high risk of ingesting oil when they preen their feathers. Ingested oil can damage the gastrointestinal tract, evidenced by ulcers, diarrhea, and a decreased ability to absorb nutrients, and inhibit proper hormone function.²⁹ ESA-listed western snowy plovers and the California least tern are extremely sensitive to disturbances such as oil spills, especially during the nesting season.³⁰

²⁰ Peterson, C. H., S. D. Rice, J. W. Short, D. Esler, J. L. Bodkin, B. E. Ballachey, and D. B. Irons. 2003. Long-term ecosystem response to the Exxon Valdez oil spill. *Science* 302:2082-2086; Venn-Watson, S. *et al.* Adrenal Gland and Lung Lesions in Gulf of Mexico Common Bottlenose Dolphins (*Tursiops truncatus*) Found Dead following the Deepwater Horizon Oil Spill. *PLoS ONE* 10, e0126538 (2015).

²¹ Holdway, D. A. 2002. The acute and chronic effects of wastes associated with offshore oil and gas production on temperate and tropical marine ecological processes. *Marine Pollution Bulletin* 44:185-203.

²² Jenssen, B. M. 1994. Review Article: Effects of oil pollution, chemically treated oil, and cleaning on the thermal balance of birds. *Environmental Pollution* 86:207-215; Peterson *et al.* 2003.

²³ NOAA. 2010. Analysis of Hydrocarbons in Samples Provided from the Cruise of the R/V WEATHERBIRD II, May 23-26, 2010, National Oceanic and Atmospheric Administration, Silver Spring, Maryland, 20910.

²⁴ Venn-Watson *et al.* 2015.

²⁵ *Id.*

²⁶ NMFS, Cetacean Unusual Mortality Event in Northern Gulf of Mexico (2010-present), http://www.nmfs.noaa.gov/pr/health/mmume/cetacean_gulfofmexico.htm.

²⁷ USFWS, Southern Sea Otter (*Enhydra lutris nereis*) 5-Year Review: Summary and Evaluation, Sept. 15, 2015.

²⁸ Jenssen 1994.

²⁹ *Id.*

³⁰ *Id.*

Exposure to crude oil also adversely affects fish at all stages.³¹ Early life stages of fish are particularly sensitive to the effects of toxic oil components such as polycyclic aromatic hydrocarbons which can cause larval deformation and death. Adult fish exposed to oil can suffer from reduced growth, enlarged liver, changes in heart and respiration rates, fin erosion, and reproductive impairment.³² Additionally, fish and sharks are at risk from lethal coating of their gills with oil, and declines in and contamination of their food sources. Exposure to crude oil has also been linked to long-term population effects in fish. A recent study based on 25 years of research demonstrated that embryonic salmon and herring exposed to very low levels of crude oil can develop heart defects that impede their later survival, indicating that the spill may have had much more widespread impacts than previously thought.³³

Oil spills can also adversely affect public health. For example, the 50,000 people involved in cleanup efforts following the Deepwater Horizon disaster suffer from an increased risk of physical and psychological injury.³⁴ Gulf residents are still suffering from increased symptoms of depression, anxiety, mental illness, and posttraumatic stress.³⁵ And oil spills can close beaches and commercial and recreational fishing grounds. This information shows that Venoco's proposal does not meet the criteria for approval.

C. Venoco's Proposal Would Increase the Quantity of Produced Wastewater and Underground Injection, Increasing the Risk of Contamination and Earthquakes

Venoco's proposal would also significantly increase the amount of produced water generated every day, and as a result, would also significantly increase the amount of underground injection of wastewater. Data from state oil regulators demonstrate that there is proportional relationship between the amount of barrels of oil produced and the amount of barrels of wastewater produced.³⁶ In other words, nearly quadrupling the amount of oil produced every day would also nearly quadruple the amount of wastewater generated every day.

This is a considerable concern given the harmful sludge of wastewater chemicals produced by oil and gas drilling, including benzene, arsenic, lead, hexavalent chromium, barium, chloride, sodium, and boron, as well as dispersed oils, aromatic hydrocarbons and alkylphenols, biocides, corrosion inhibitors, emulsion breakers, coagulants, oxygen scavengers, and radioactive

³¹ Carls, M. G., S. D. Rice, and J. E. Hose. 1999. Sensitivity of fish embryos to weathered crude oil: part I. Low-level exposure during incubation causes malformations, genetic damage, and mortality in larval pacific herring (*Clupea pallasii*). *Environmental Toxicology and Chemistry* 18:481-493; Bernanke, J., and H.-R. Kohler. 2009. The impact of environmental chemicals on wildlife vertebrates. *Reviews of Environmental Contamination and Toxicology* 198:1-47.

³² Bernanke and Kohler 2009, USFWS 2010.

³³ Incardona, et al. 2015. Very low embryonic crude oil exposures cause lasting cardiac defects in salmon and herring. *Scientific Reports* 5, Article number: 13499, doi:10.1038/srep13499.

³⁴ See e.g., Oceana, Time For Action Six Years After Deepwater Horizon, Apr. 2016, http://usa.oceana.org/sites/default/files/deepwater_horizon_anniversary_report_updated_4-28.pdf.

³⁵ *Id.*

³⁶ See John Veil, Veil Environmental, LLC, U.S. Produced Water Volumes and Management Practices, Apr. 2015 at 56, http://www.veilenvironmental.com/publications/pw/prod_water_volume_2012.pdf (information from state oil regulators indicating that there is roughly a 15:1 ratio of barrels of oil produced to amount of produced water).

materials.³⁷ The most common metals in produced waters are arsenic, cadmium, copper, chromium, lead, mercury, nickel, and zinc.³⁸ In addition, produced waters can contain substantial amounts of organic material, inorganic salts, small particles, organic acids (e.g., acetic acid and propionic acid), and can have high levels of sulfur and sulphide.³⁹ Underground disposal of produced wastewaters has been known to cause groundwater contamination, and drinking water contamination, among other problems. For example, studies have shown that oil companies in California have injected wastewaters into aquifers that could supply drinking water and farming irrigation, increasing the changes of contamination.⁴⁰

Moreover, the Commission's Draft EIR acknowledges that Venoco uses acidizing at Platform Holly. Oil companies use dozens of extremely hazardous chemicals to acidize wells in California. Specifically, one study found that almost 200 different chemicals have been used and that at least 28 of these substances are F-graded hazardous chemicals—carcinogens, mutagens, reproductive toxins, developmental toxins, endocrine disruptors or high acute toxicity chemicals.⁴¹ Hydrofluoric acid, for example, is acutely toxic, and exposure to fumes or very short-term contact with its liquid form can cause severe burns. The study notes that these chemicals can make up as much as 18 percent of the fluid used in these procedures.⁴² Further, as much as 90,000 kg of these chemicals are used per treatment for matrix acidizing, and 50,000 kg are used for well maintenance.⁴³

In addition, underground injection can result in leaks and contamination through the loss of well casing integrity. This is a serious concern given that well casing is already vulnerable in the South Ellwood Field because of the age of many offshore wells. Oil companies have been drilling in the field for roughly 50 years. Studies have shown that 30 percent of offshore oil wells in the Gulf of Mexico experienced well casing damage in the first five years after drilling, and damage increased over time to 50 percent after 20 years.⁴⁴ And a recent study by California scientists found that older wells can become pathways for fluid migration, and that the high injection pressures can “increase this risk significantly.”⁴⁵

³⁷ Neff, J., K. Lee, and E. M. DeBlois. 2011. Produced water: overview of composition, fates, and effects. Pp. 3–54 *Produced water*. Springer.

³⁸ Bakke, T., J. Klungsøyr, and S. Sanni. 2013. Environmental impacts of produced water and drilling waste discharges from the Norwegian offshore petroleum industry. *Marine Environmental Research* 92:154–169.

³⁹ *Id.*

⁴⁰ Stephen Stock, *Waste Water from Oil Fracking Injected into Clean Aquifers*, NBC Bay Area, Nov. 14, 2014, <http://www.nbcbayarea.com/investigations/Waste-Water-from-Oil-Fracking-Injected-into-Clean-Aquifers-282733051.html>; Letter from California Water Resources Control Board to Jared Blumenfeld, Regional Administrator, EPA, Sept. 15, 2014.

⁴¹ Khadeeja Abdullah, Timothy Malloy, Michael K. Stenstrom & I. H. (Mel) Suffet. 2016. Toxicity of acidization fluids used in California oil exploration, *Toxicological & Environmental Chemistry*.

⁴² *Id.*

⁴³ *Id.*

⁴⁴ Vengosh, A. et al. 2014. A critical review of the risks to water resources from unconventional shale gas development and hydraulic fracturing in the United States. *Environmental Science & Technology* 48:8334-8348; Davies, R.J. et al. 2014. Oil and gas wells and their integrity: Implications for shale and unconventional resource exploitation. *Marine and Petroleum Geology* 56:239-254.

⁴⁵ California Council on Science and Technology. 2015. *An Independent Scientific Assessment of Well Stimulation in California, Volume II. Potential Environmental Impacts of Hydraulic Fracturing and Acid Stimulation*, 20 July, at 39 (“CCST”).

Injecting wastewater underground increases the risk of earthquakes. Recent studies have drawn a strong connection between the recent rise in wastewater injection and increased earthquake rates.⁴⁶ For example, the USGS has recognized that wastewater disposal from fracking is a “contributing factor” to the six-fold increase in the number of earthquakes in Oklahoma.⁴⁷ Another recent study also found that wastewater injection is responsible for the dramatic rise in the number of earthquakes in Colorado and New Mexico since 2001.⁴⁸ Wastewater injection has been scientifically linked to earthquakes of magnitude three and greater in at least six states: Arkansas,⁴⁹ Colorado,⁵⁰ Ohio,⁵¹ Oklahoma,⁵² Texas,⁵³ and New Mexico.⁵⁴ And a recent study attributed wastewater injection from fracking operations to earthquakes in California.⁵⁵ While some of these studies were based on increased underground injection because of fracking, which the Commission says will not be used under the Proposed Project, the studies demonstrate the increased earthquake risk from underground injection of oil and gas drilling wastewater. The Proposed Project, which would nearly quadruple the amount of produced water injected underground, is therefore not the least environmentally damaging alternative.

D. Venoco’s Proposal Would Increase Truck Traffic, Threatening Public Health and Safety

Venoco’s proposal would also threaten public health and safety by increasing truck traffic, thereby increasing the risk of accidents and spills, and increasing harmful air pollution. The Commission’s Draft EIR admits that Venoco’s Proposed Project would increase heavy-duty truck traffic to 712 trips per year because of the need to transport additional natural gas liquids, liquefied petroleum gas, and elemental sulfur. Draft EIR at 4.1-30. The Draft EIR also admits that the threats to public health and safety from increased truck traffic would be significant and unavoidable.

Motor vehicle accidents are the leading cause of death in the oil and gas industry.⁵⁶ And because these accidents occur on highways and roads shared by the general public, they

⁴⁶ Van de Elst, Nicholas J. et al. 2013. Enhanced Remote Earthquake Triggering at Fluid-Injection Sites in the Midwestern United States, 341 *Science* 164.

⁴⁷ Sumy, D. F., et al. 2014. Observations of static Coulomb stress triggering of the November 2011 M5.7 Oklahoma earthquake sequence, *J. Geophys. Res. Solid Earth*, 119, 1904–1923, DOI:10.1002/2013JB010612; USGS, Record Number of Oklahoma Tremors Raises Possibility of Damaging Earthquakes, May 2, 2014, <http://www.usgs.gov/newsroom/article.asp?ID=3880>.

⁴⁸ Justin L. Rubinstein, et al. 2014. The 2001 – Present Induced Earthquake Sequence in the Raton Basin of Northern New Mexico and Southern Colorado. *Bulletin of the Seismological Society of America*, 2014 DOI: 10.1785/0120140009.

⁴⁹ E&E News, USGS, Okla. warn of more drilling-related earthquakes in State, Mike Soraghan. Oct. 25, 2013.

⁵⁰ *Id.*

⁵¹ Ohio Dept. of Nat. Resources (2012) *Executive Summary: Preliminary Report on the Northstar 1 Class II Injection Well and the Seismic Events in the Youngstown, Ohio Area*; Fountain, Henry, Disposal halted at well after new quake in Ohio, *New York Times*, Jan. 1, 2012.

⁵² Holland, Austin, Examination of possibly induced seismicity from hydraulic fracturing in the Eola Field, Garvin County, Oklahoma, Oklahoma Geological Survey Open-File Report OF1-2011 (2011).

⁵³ Frohlich, Cliff (2012) Two-year survey comparing earthquake activity and injection-well locations in the Barnett Shale, Texas. *Proceedings of the National Academy of Sciences*. Vol 109. No. 35.

⁵⁴ Rubinstein, J. L., et al.

⁵⁵ T. H. W. Goebel, et al. 2016. Wastewater disposal and earthquake swarm activity at the southern end of the Central Valley, California, *Geophysical Research Letters*. Vol. 43, Issue 3. Pages 1092–1099.

⁵⁶ Center for Disease Control and Prevention, <http://www.cdc.gov/niosh/programs/oilgas/projects.html>.

represent a significant threat to public safety. According to a 2009 report by American Petroleum Institute, tanker trucks spill an average of 9,200 barrels of oil—or 386,400 gallons—per year.⁵⁷ Truck accidents carrying other hazardous liquids routinely occur every year as well. A 2004 federal study indicated that approximately 200 hazmat trucks are involved in fatal crashes annually and 5,000 hazmat trucks each year are involved in nonfatal crashes.⁵⁸ As the report states, “[a]lthough these numbers are small relative to the totals of almost 5,000 trucks involved in fatal crashes and 400,000 involved in nonfatal crashes annually, the potential for human injury and property damage in hazmat crashes is much greater.”⁵⁹ These accidents and spills from such accidents can cause fires and explosions, increasing the risk of injuries and fatalities.

And a study by the Associated Press of six states where truck traffic has increased due to an increase in oil and gas drilling found that fatalities in traffic accidents have more than quadrupled since 2004 in some counties.⁶⁰ The study found that from 2009-2013, traffic fatalities in West Virginia’s most heavily drilled counties rose 42 percent, while traffic deaths in the rest of the state declined 8 percent; in Pennsylvania, traffic fatalities in drilling counties rose by 4 percent, while they fell by 19 percent in the rest of the state; and in 21 Texas counties where drilling had recently expanded, deaths/100,000 people from traffic accidents rose an average of 18 percent, while they dropped by 20 percent for the rest of Texas.⁶¹

In California alone, from 1997 to 2004 there were 1,786 incidents involving trucks transporting oil—an average of 255 per year.⁶² These incidents included 159 overturned trucks, 132 of which involved oil spills.⁶³ Some of these incidents were catastrophic. For example, in 2000, a double tank oil truck skidded across the road and into a ravine, killing the truck driver and spilling nearly 7,000 gallons into the environment. The spill covered over 20 miles, and caused extensive environmental damage, including destroyed vegetation and birds soaked in oil.⁶⁴ The more trucks there are carrying hazardous materials, the greater the chances of other similar incidents.

The substantial risks from transporting hazardous materials by truck would be exacerbated given the routes Venoco’s truck would take. Highway 101 is extremely curvy and windy—it is dangerous under the best of conditions. Moreover, many of the trucks could travel through densely populated areas such as Santa Maria, increasing the risk of accidents, injury and property destruction in the event of a fiery spill. The trucks would also travel over county roads,

⁵⁷ API, *Analysis of U.S. Oil Spillage* (Aug. 2009), available at <http://www.api.org/environment-health-and-safety/clean-water/oil-spill-prevention-and-response/~media/93371EDFB94C4B4D9C6BBC766F0C4A40.ashx>; see also Susan Christopherson and Kushan Dave, *A New Era of Crude Oil Transport: Risks and Impacts in the Great Lakes Basin*, CARDI Reports, Cornell University, Issue No. 15 (Nov. 2014).

⁵⁸ U.S. Dep’t of Transportation, *Crashes Involving Trucks Carrying Hazardous Materials*, 2004, <http://ntl.bts.gov/lib/51000/51300/51302/fmcsa-ri-04-024.pdf>.

⁵⁹ *Id.*

⁶⁰ Kevin Begos and Jonathan Fahey, AP Impact: Deadly Side of Fracking Boom, May 5, 2014, <http://bigstory.ap.org/article/ap-impact-deadly-side-effect-fracking-boom-0>.

⁶¹ *Id.*

⁶² Oil Spills from Trucks: Prevention, Preparedness, and Response, Roundtable of Pacific States/British Columbia Oil Spill Task Force, Summary Notes, Portland, Oregon (Mar. 24, 2005), at 6, available at http://oilspilltaskforce.org/docs/project_reports/TruckingSpillsRtSummaryNotes.pdf.

⁶³ *Id.*

⁶⁴ *Id.*

the quality of which would degrade with heavy tanker trucks traveling over it every day.⁶⁵ This is a significant concern as many roads in Santa Barbara County are already in poor condition, increasing the risk of accidents.

In addition to increasing the risk of accidents, the trucks would emit harmful air pollution. The emissions from combusting the fuel used by heavy-duty trucks and vessels include several noxious pollutants such as particulate matter (“PM”) and nitrous oxide, a precursor to PM. The effects associated with PM exposure are “premature mortality, increased hospital admissions and emergency department visits, and development of chronic respiratory disease.”⁶⁶ California has identified diesel PM as a toxic air contaminant and has estimated that 70 percent of the cancer risk from the air Californians breathe is attributable to diesel PM; the Environmental Protection Agency says that diesel PM is “likely to be a carcinogen.”⁶⁷ The increase in PM that would result from the proposal is a significant concern as Santa Barbara County is already designated as non-attainment for state PM-10 standards. Draft EIR at 4.3-3. The substantial risks from the increase in truck traffic demonstrate that the Proposed Project is not the least environmentally damaging alternative.

II. The Commission’s Draft EIR Fails to Comply With CEQA

The Commission’s Draft EIR fails to comply with CEQA in several respects. The Draft EIR fails to quantify the greenhouse gas emissions from transportation, refining and consumption of the oil and gas to be extracted, and it therefore fails to analyze or mitigate the impacts of these greenhouse gas emissions. The Draft EIR also fails to adequately consider the direct, indirect and cumulative impacts of: oil spills, increased wastewater pollution and wastewater injection, the acidizing it acknowledges is used at Platform Holly, and ocean noise and ship strikes on marine life. Because the Draft EIR fails to adequately consider such impacts, it also fails to adequately mitigate such impacts. The Draft EIR also fails to consider an adequate range of alternatives, and fails to fulfil the Commission’s duties under the public trust doctrine. Accordingly, the Commission must substantially revise its Draft EIR and recirculate the document for public notice and comment.

A. The Commission’s Draft EIR Fails to Quantify, Analyze or Mitigate the Impacts of the Lifecycle Greenhouse Gas and Other Emissions from the Project and Fails to Adequately Mitigate the Emissions it Does Analyze

As explained above, Venoco’s proposal would emit significant amounts of greenhouse gases through all phases of the project—from construction and operation to transporting, refining, and consuming the oil and gas to be extracted. Yet the Commission’s Draft EIR wholly

⁶⁵ Dave Fehling, NPR, Roads Killed: Texas Adds Up Damage from Drilling, March 19, 2012, <http://stateimpact.npr.org/texas/2012/03/19/roads-killed-texas-adds-up-damages-from-drilling/>.

⁶⁶ EPA, Fine Particulate Matter National Ambient Air Quality Standards, 80 Fed. Reg. 15340, 15347 (Mar. 23, 2015).

⁶⁷ Union of Concerned Scientists, *California: Diesel Trucks, Air Pollution and Public Health*, http://www.ucsusa.org/clean_vehicles/why-clean-cars/air-pollution-and-health/trucks-buses-and-other-commercial-vehicles/diesel-trucks-air-pollution.html#.VXRuhc9Viko; Trade, Health and Environmental Impact Project, *Driving Harm: Health and Community Impacts of Living Near Truck Corridors* (Jan. 2012), <http://hydra.usc.edu/scehsc/pdfs/Trucks%20issue%20brief.%20January%202012.pdf>.

fails to quantify or analyze the impacts of the greenhouse gas from transporting, refining and burning the oil and gas to be extracted under the project. Similarly, the Commission's Draft EIR fails to quantify or analyze other emissions of other air pollutants from transporting, refining and consuming the oil and gas to be extracted. Such failures violate CEQA.

As the Commission is aware, the legislature enacted CEQA in order to, *inter alia*, “[d]evelop and maintain a high-quality environment now and in the future, and take all action necessary to protect, rehabilitate, and enhance the environmental quality of the state.” Cal. Pub. Res. Code § 21001(a). To accomplish this objective, CEQA contains both procedural and substantive requirements with which all agencies must comply. In particular, CEQA requires the Commission to not only publically identify and analyze the environmental impacts of a Proposed Project, but also “to mitigate *or avoid* the significant effects on the environment of projects that it...approves whenever it is feasible to do so.” Cal. Pub. Res. Code § 21002.1 (emphasis added).

Under CEQA, the Commission must analyze the environmental impacts of a future action if “(1) it is a reasonably foreseeable consequence of the initial project; and (2) the future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects.” *Laurel Heights Improvement Ass’n of San Francisco v. Regents of University of Cal.*, 47 Cal. 3d 376, 396 (1998). Here, transportation, refining, and consumption of the oil and gas to be extracted under Venoco’s proposal is certainly a reasonably foreseeable consequence of the project, as are the air pollutants, including greenhouse gases, to be emitted during transporting, refining, and consumption of the oil and gas. For example, as explained above, the life cycle greenhouse gas emissions for the 60 million barrels of oil to be extracted under Venoco’s proposal will result in the emission of roughly 19.6 million tons of greenhouse gases.⁶⁸ These greenhouse gas emissions and the other pollutants emitted through transporting, refining and consuming the oil and gas Venoco plans to extract would have significant environmental impacts beyond those analyzed in the Commission’s Draft EIR. The Commission must quantify, disclose, analyze, and mitigate all the air pollution resulting from Venoco’s proposal. Failure to do so violates CEQA.

Moreover, while the Draft EIR finds that there would be significant impacts from the emissions of greenhouse gases from construction and operation of Venoco’s Proposed Project, the Draft EIR fails to include proper mitigation measures to address such impacts. Specifically, rather than including precise mitigation measures within the Draft EIR itself, the Draft EIR requires Venoco to develop and implement a program to reduce net greenhouse gas emissions to zero in the future. Draft EIR at 4.4-15. But as courts have made perfectly clear, “the novelty of greenhouse gas mitigation measures is one of the most important reasons ‘that mitigation measures timely be set forth, that environmental information be complete and relevant, and that environmental decisions be made in an account-able arena.’” *Communities for a Better Environment v. City of Richmond*, 184 Cal. App. 3d 70, 90 (2010) (quoting *Oro Fino Gold Mining Corp. v. County of El Dorado*, 225 Cal. App. 3d 872, 885 (1990)).

⁶⁸ Numerous greenhouse gas calculation tools exist to develop lifecycle analyses, particularly for fossil fuel extraction, operations, transport, and end-use emissions. See Council on Environmental Quality, Greenhouse Gas Accounting Tools, https://ceq.doe.gov/current_developments/GHG-accounting-tools.html.

Nor can the Commission rely on a purported reduction in natural seeps as a measure to mitigate the impacts of greenhouse gas emissions. See Draft EIR at 4.4-15. The notion that oil and gas drilling can reduce greenhouse gas emissions is preposterous. The oil and gas sector is a leading source of global methane emissions, accounting for more than 30 percent of U.S. emissions,⁶⁹ and is expected to be one of the most rapidly growing sources of anthropogenic methane emissions in the coming decades.⁷⁰ Indeed, a recent report indicates that methane leakage from some wells may be higher than 17 percent.⁷¹ Another recent report indicates that the oil and gas sector is the largest emitting sector for methane in the United States.⁷² This is a serious concern as methane is a greenhouse gas pollutant with a warming potential that is 87 times that of carbon dioxide over a 20-year period.⁷³ Moreover, as explained above, the consumption of the oil and gas to be extracted would result in millions of tons of greenhouse gas emissions.

Put simply, greenhouse gas mitigation measures cannot be put off for future study, but must be incorporated into a project and fully effective before approval is granted. Accordingly, the Draft EIR's greenhouse gas mitigation measure—that Venoco develop a plan in the future—violates CEQA. See *id.*; CEQA Guidelines § 15126.4(c). Indeed, the greenhouse gas mitigation measure contained within the Draft EIR is the exact mitigation measure that was rejected in *Communities for a Better Environment*, 184 Cal. App. 3d at 91-96. And the measure fails to account for the substantial greenhouse gas emissions from transporting, refining, and consuming the oil and gas to be extracted under Venoco's proposal.

Available and feasible mitigation measures during construction and operation of the Proposed Project would lower the Proposed Project's overall greenhouse gas emissions. The California Air Pollution Control Officers Association has identified existing and potential mitigation measures that could be applied to projects during the CEQA process to reduce a project's greenhouse gas emissions.⁷⁴ The California Office of the Attorney General also has developed a list of reduction mechanisms to be incorporated through the CEQA process.⁷⁵ For example, the Proposed Project could require zero or near zero emission trucks; and require the

⁶⁹ U.S. Environmental Protection Agency, Climate Change Overview of Greenhouse Gases, <https://www.epa.gov/ghgemissions/overview-greenhouse-gases#methane> (accessed Nov. 12, 2016).

⁷⁰ Institutional Investors Group on Climate Change et al, Controlling Fugitive Methane Emissions in the Oil and Gas Sector (2012), available at <http://www.ceres.org/files/methane-emissions/investor-joint-statement-on-methane-emissions>.

⁷¹ Caulton, Dana R. et al., Toward a Better Understanding and Quantification of Methane Emissions from Shale Gas Development, 111 Proc. Natl. Acad. Sciences 17 (2014); Allen, D. T. et al. 2013. Measurements of Methane Emissions at Natural Gas Production Sites in the United States, 110 Proc. Natl. Acad. Sci. 44.

⁷² U.S. EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2014, Executive Summary, Apr. 15, 2016, <https://www3.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2016-Chapter-Executive-Summary.pdf>.

⁷³ Intergovernmental Panel on Climate Change, Chapter 8: Anthropogenic and Natural Radiative Forcing in Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, Table 8.7 (2013).

⁷⁴ California Air Pollution Control Officers Association, Quantifying Greenhouse Gas Mitigation Measures, Aug. 2010, <http://www.aqmd.gov/docs/default-source/ceqa/handbook/capcoa-quantifying-greenhouse-gas-mitigation-measures.pdf?sfvrsn=2>.

⁷⁵ California Attorney General's Office, Addressing Climate Change at the Project Level, Jan. 2010, http://ag.ca.gov/globalwarming/pdf/GW_mitigation_measures.pdf.

Proposed Project to generate all or a portion of its own power through alternative, renewable means, and to the extent feasible, on-site.

Mitigation of a project's environmental impacts is one of the "most important" functions of CEQA. *Sierra Club v. Gilroy City Council*, 222 Cal.App.3d 30, 41 (1990). It is the "policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures which will avoid or substantially lessen the significant environmental effects of such projects." Cal. Pub. Res. Code § 21002. Accordingly, the Commission cannot approve Venoco's proposal unless and until specific mitigation measures are formulated within the EIR to mitigate and reduce *all* the greenhouse gas emissions caused by Venoco's Proposed Project to zero.

B. The Commission's Draft EIR Fails to Adequately Analyze the Impacts of Climate Change on the Environment

In addition to failing to quantify and analyze the impacts from the greenhouse gas emissions that would result from refining, transporting, and consuming the oil and gas to be extracted by Venoco pursuant to a lifecycle analysis, the Commission failed to adequately describe baseline conditions related to climate change or consider the impacts of climate change on the ocean environment.

While the Commission's analysis acknowledges that climate change is occurring, its analysis is cursory and fails to properly disclose the enormity of the problem, or the contribution of its proposal to the problem. For example, the Commission fails to adequately analyze the unique impacts of ocean acidification and black carbon emissions over the course of Venoco's proposal and its contribution to these significant environmental problems. The Commission also failed to adequately consider sea level rise, coastal erosion, and increased storm severity and the impacts of these effects on oil and gas infrastructure.

i. *The Commission Failed To Adequately Analyze the Impacts of Ocean Acidification*

Greenhouse gas pollution is causing the oceans to acidify at an alarming rate. The ocean's absorption of anthropogenic carbon dioxide is changing its chemistry, lowering its pH and causing ocean acidification.⁷⁶ Surface ocean pH has already dropped by about 0.1 pH units from 8.16 in 1800 to 8.05 today, resulting in a rise in surface ocean acidity of about thirty percent.⁷⁷ The pH of the ocean is currently changing rapidly at a rate 100 times anything seen in hundreds of millennia, and may drop by another 0.3 or 0.4 (resulting in a 100–150 percent

⁷⁶ Feely, R. A., S. C. Doney, and S. R. Cooley. 2009. Ocean acidification: present conditions and future changes in a high-CO₂ world. *Oceanography* 22:36-47.

⁷⁷ Orr, J. C., V. J. Fabry, O. Aumont, L. Bopp, S. C. Doney, R. A. Feely, A. Gnanadesikan, N. Gruber, A. Ishida, F. Joos, R. M. Key, K. Lindsay, E. Maier-Reimer, R. Matear, P. Monfray, A. Mouchet, R. G. Najjar, G. K. Plattner, K. B. Rodgers, C. L. Sabine, J. L. Sarmiento, R. Schlitzer, R. D. Slater, I. J. Totterdell, M. F. Weirig, Y. Yamanaka, and A. Yool. 2005. Anthropogenic ocean acidification over the twenty-first century and its impact on calcifying organisms. *Nature* 437:681-686.

increase in acidity) by the end of this century.⁷⁸ If carbon dioxide emissions continue unabated, resulting changes in ocean acidity could exceed anything experienced in the past 300 million years.⁷⁹ Even if greenhouse gas emissions stopped immediately, the ocean would continue to absorb the excess carbon dioxide in the atmosphere, resulting in further acidification until the planet's carbon budget returned to equilibrium.

A primary impact of ocean acidification is that it depletes seawater of the carbonate compounds—aragonite and calcite—that many marine creatures need to build shells and skeletons.⁸⁰ As a result, ocean acidification hinders organisms such as corals, crabs, seastars, sea urchins and plankton from building the protective armor they need to survive. Rising acidity also affects the basic functions of fish, squid, invertebrates, and other marine species, including detrimental effects on metabolism, respiration and photosynthesis, which can thwart their growth and lead to higher mortality.⁸¹ Because of its serious impacts to so many species, ocean acidification threatens to disrupt the entire marine food web.

Rising acidification will also significantly increase ocean noise pollution. Scientists found that ocean acidification is reducing the absorption of low frequency sound important to marine mammals (~300 Hz–10 kHz), resulting in ever-increasing noise pollution in the oceans, and that significant changes in noise pollution will happen by mid-century.⁸² With increasing ocean acidification, low-frequency sound travels much farther due to changes in the amounts of pH-dependent species such as dissolved borate and carbonate ions, which absorb acoustic waves. Under the pH change from a doubling of carbon dioxide, which is expected to happen in the surface ocean by mid-century, sound at frequencies important for marine mammals will travel some 70 percent farther.⁸³ Scientists have also found that increases in ocean temperature have the effect of decreasing sound absorption in the lower frequency range even more.⁸⁴

In addition, ocean acidification has the potential to profoundly affect the growth and toxicity of phytoplankton associated with harmful algae blooms (“HABs”).⁸⁵ HABs can cause

⁷⁸ Meehl, G. A., T. F. Stocker, W. D. Collins, P. Friedlingstein, A. T. Gaye, J. M. Gregory, A. Kitoh, R. Knutti, J. M. Murphy, A. Noda, S. C. B. Raper, I. G. Watterson, A. J. Weaver, and Z.-C. Zhao. 2007. 2007: Global Climate Projections. in S. Solomon, D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Averyt, M. Tignor, and G. H. Miller, editors. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge University Press, Cambridge, UK, and New York, NY, USA.

⁷⁹ Caldeira, K., and M. E. Wickett. 2003. Anthropogenic carbon and ocean pH. *Nature* 425:365.

⁸⁰ Fabry, V. J., B. A. Seibel, R. A. Feely, and J. C. Orr. 2008. Impacts of ocean acidification on marine fauna and ecosystem processes. *ICES Journal of Marine Sciences* 65:414-432.

⁸¹ *Id.*

⁸² Brewer, P. G., and K. C. Hester. 2009. Ocean acidification and the increasing transparency of the ocean to low-frequency sound. *Oceanography* 22:86-93.

⁸³ *Id.*

⁸⁴ Hester, K. C., E. T. Peltzer, W. J. Kirkwood, and P. G. Brewer. 2008. Unanticipated consequences of ocean acidification: a noisier ocean at lower pH. *Geophysical Research Letters* 35, L19601, doi:10.1029/2008GL034913.

⁸⁵ Tatters, A. O., F.-X. Fu, and D. A. Hutchins. 2012. High CO₂ and Silicate Limitation Synergistically Increase the Toxicity of *Pseudo-nitzschia fraudulenta*. *PLoS ONE* 7:e32116; Fu, F., A. Tatters, and D. Hutchins. 2012. Global change and the future of harmful algal blooms in the ocean. *Marine Ecology Progress Series* 470:207–233; Flynn, K. J., D. R. Clark, A. Mitra, H. Fabian, P. J. Hansen, P. M. Glibert, G. L. Wheeler, D. K. Stoecker, J. C. Blackford, and C. Brownlee. 2015. Ocean acidification with (de)eutrophication will alter future phytoplankton growth and succession. *Proceedings of the Royal Society of London B: Biological Sciences* 282:20142604.

mortality in marine mammals through contamination of food sources. Some strains of phytoplankton in HABs produce copious amount of domoic acid, a kanic acid analog neurotoxin.⁸⁶ Exposure to this toxin via food sources can affect the brain, causing seizures, provoke organ failure, and ultimately death in several marine mammal species, from small sea otters, seals, sea lions, to large whales.⁸⁷

In the past three decades, HABs seem to have become more frequent, more intense, and more widespread.⁸⁸ Indeed, scientists and federal officials believe a HAB from central California to the Alaska Peninsula in the summer of 2015 caused sea lion strandings and bird deaths along the West Coast, and the deaths of at least 30 large whales in the Gulf of Alaska, including ESA-listed humpback and fin whales.⁸⁹ The unusual mortality event is ongoing, with a total of 45 large whale strandings in the Western Gulf of Alaska in 2015, and 25 since September 12, 2016.⁹⁰ And commercial and recreational fisheries in California were closed or shortened during the 2015-2016 fishing season because of toxic algae, including the Dungeness crab and rock crab fisheries.⁹¹ The Commission's Draft EIR unlawfully ignores these significant impacts.

ii. *The Commission Failed To Adequately Analyze the Impacts of Climate Change on Oil and Gas Infrastructure*

Climate change is already impacting many areas of the country, including California. Recent studies have found that a mean global sea-level rise of at least 1 to 2 meters is highly likely within this century.⁹² Studies that have reconstructed sea-level rise based on the geological record, including oxygen isotope and coral records, have found that larger rates of sea-level rise of 2.4 to 4 meters per century are possible.⁹³ A recent report by the California State Assembly Select Committee on Sea Level Rise and the California Economy found that sea-level rise could

⁸⁶ Anderson, D. M., et al. 2014. Understanding interannual, decadal level variability in paralytic shellfish poisoning toxicity in the Gulf of Maine: The HAB Index. *Deep Sea Research Part II: Topical Studies in Oceanography* 103:264–276.

⁸⁷ McHuron, E. A., D. J. Greig, K. M. Colegrove, M. Fleetwood, T. R. Spraker, F. M. D. Gulland, J. T. Harvey, K. A. Lefebvre, and E. R. Frame. 2013. Domoic acid exposure and associated clinical signs and histopathology in Pacific harbor seals (*Phoca vitulina richardii*). *Harmful Algae* 23:28–33; Kirkley, K. S., J. E. Madl, C. Duncan, F. M. Gulland, and R. B. Tjalkens. 2014. Domoic acid-induced seizures in California sea lions (*Zalophus californianus*) are associated with neuroinflammatory brain injury. *Aquatic Toxicology* 156:259–268; Jensen, S.-K., J.-P. Lacaze, G. Hermann, J. Kershaw, A. Brownlow, A. Turner, and A. Hall. 2015. Detection and effects of harmful algal toxins in Scottish harbour seals and potential links to population decline. *Toxicon* 97:1–14.

⁸⁸ Lewitus, A. J., et al. 2012. Harmful algal blooms along the North American west coast region: History, trends, causes, and impacts. *Harmful Algae* 19:133–159; Hallegraeff, G. M., editor. 2014. *Impacts of climate change on harmful algal blooms and seafood safety. Assessment and management of seafood safety and quality: current practices and emerging issues*. Rome.

⁸⁹ NOAA, West Coast Harmful Algal Bloom, <http://oceanservice.noaa.gov/news/sep15/westcoast-habs.html>, updated May 2, 2016.

⁹⁰ NMFS, 2016 Large Whale Unusual Mortality Event in the Western Gulf of Alaska, updated Sept. 12, 2016, http://www.nmfs.noaa.gov/pr/health/mmume/large_whales_2015.html.

⁹¹ See e.g., CDFW, California Commercial Dungeness Crab Fishery Remains Closed While Crab Testing Continues, Mar. 15, 2016

<https://cdfwmarine.wordpress.com/2016/03/15/california-crab-testing-continues>.

⁹² Jevrejeva, S., J. C. Moore, and A. Grinsted. 2010. How will sea level respond to changes in natural and anthropogenic forcing by 2100. *Geophysical Research Letters* 37:L07703, doi:07710.01029/02010GL042947.

⁹³ Milne, G. A., W. R. Gehrels, C. W. Hughes, and M. E. Tamisiea. 2009. Identifying the causes of sea-level change. *Nature Geoscience* 2:471–478.

total 1.4 to 5.5 feet in Southern California by the end of the century.⁹⁴ And climate change has, and will, increase the frequency and severity of storms.⁹⁵

These changing conditions will impact the stability and operations of oil and gas drilling in California, including Platform Holly, its associated infrastructure and the Ellwood onshore processing facility. This will also impact the safety and vulnerability of the operations, increasing the risk of accidents, oil spills, and other hazards. These predictable changes in the near future must be evaluated, modeled, and disclosed by the Commission. While the Commission acknowledges some of these changes in its Draft EIR, its analysis fails to adequately evaluate and disclose the risks and impacts.

For example, while the Commission acknowledges that permit conditions for the Ellwood onshore facility require Venoco to empty its emulsion pipeline and fill it with seawater during large storm events (defined as waves measuring more than 12 feet in height) when more than 20 feet of the pipeline is exposed, Draft EIR at 4.1-36, it does not discuss the possibility of damage to the pipeline before shutdown occurs; nor does it discuss potential impacts to storage tanks, or Platform Holly or its offshore pipelines in the face of increased storm severity because of climate change. Such failures violate CEQA.

iii. The Commission Failed To Adequately Address Other Climate Change Impacts

The Commission's Draft EIR also fails to sufficiently address other climate change impacts. While the Commission acknowledges climate change will increase negative impacts to the coastal environment and public health, the Commission's analysis is entirely cursory.

Numerous studies demonstrate the harmful impacts of climate change on these resources and must be adequately accounted for and analyzed by the Commission. For example, the U.S. Environmental Protection Agency has found that climate change will impact "mortality and morbidity associated with increases in average temperatures, which increase the likelihood of heat waves,"⁹⁶ and that climate change will negatively affect water supplies and water quality, as well as adverse effects from extreme events such as droughts.⁹⁷ Other studies show that that climate change could "severely exacerbate the combined impacts of" other sources of ocean pollution.⁹⁸

Studies also show that climate change is already causing changes in distribution, phenology, physiology, genetics, species interactions, ecosystem services, demographic rates, and population viability: many animals and plants are moving poleward and upward in elevation, shifting their timing of breeding and migration, and experiencing population declines and

⁹⁴ California State Assembly Select Committee. 2014. California State Assembly 32 Select Committee Sea Level Rise and the California Economy. Sea-Level Rise: a 33 Slow-Moving Emergency. August 2014

⁹⁵ See e.g., EPA Final Endangerment Finding, 74 Fed. Reg. 66,496, 66,497-98 (Dec. 15, 2009).

⁹⁶ *Id.* at 66,497-98.

⁹⁷ *Id.* at 66,498.

⁹⁸ C. Nellemann, S. Hain & J. Alder, In Dead Water: Merging of Climate Change with Pollution, Over-Harvest, and Infestations in the World's Fishing Grounds at 57 (2008).

extirpations.⁹⁹ Because climate change is occurring at an unprecedented pace with multiple synergistic impacts, climate change is predicted to result in catastrophic species losses during this century. For example, the IPCC concluded that 20 percent to 30 percent of plant and animal species will face an increased risk of extinction if global average temperature rise exceeds 1.5°C to 2.5°C relative to 1980-1999, with an increased risk of extinction for up to 70 percent of species worldwide if global average temperature exceeds 3.5°C relative to 1980-1999.¹⁰⁰ The Commission's superficial analysis fails to adequately account for such impacts.

C. The Commission's Draft EIR Fails to Adequately Analyze or Mitigate the Significant Impacts of Oil Spills

As explained above, an oil spill would have several significant, detrimental impacts on California's coastal environment. But the Commission's Draft EIR fails to adequately analyze or mitigate these impacts. While the Commission's Draft EIR acknowledges several potential impacts from oil spills, it also minimizes potential impacts to marine life in the event of an oil spill. For example, the Draft EIR relies on one study from 1987 to suggest that the ingestion of oil by whales and dolphins would not be toxic and another from 1985 to suggest that adult fish may be able to avoid oil. Draft EIR at 4.7-23. But several recent studies following the Exxon Valdez and Deepwater Horizon oil spill disasters demonstrate just the opposite.

As detailed above, one study found that the Deepwater Horizon oil spill caused adrenal and lung lesions in bottlenose dolphins which led to their deaths. In fact, scientists suspect the spill may be responsible for the unusual mortality event of dolphins in the Gulf that's killed over 1,300 animals and for ongoing reproductive problems. And exposure to crude oil has also been linked to long-term population effects in fish. A recent study based on 25 years of research following Exxon Valdez demonstrated that embryonic salmon and herring exposed to very low levels of crude oil can develop heart defects that impede their later survival.

Yet the Commission's Draft EIR illogically ignores these studies, and recent information from the Plains All American Pipeline spill that killed hundreds of birds and marine mammals and an untold number of fish and invertebrates. The Commission's Draft EIR therefore wholly fails to comply with CEQA's requirement that an EIR reflect a good faith effort at full

⁹⁹ See Parmesan, C. and G. Yohe, A globally coherent fingerprint of climate change impacts across natural systems, 421 *Nature* 37-42 (2003); Root, T. *et al.*, Fingerprints of global warming on wild animals and plants, 421 *Nature* 57-60 (2003); Chen, I. *et al.*, Rapid range shifts of species associated with high levels of climate warming, 333 *Science* 1024-1026 (2011); Brett R. Scheffers, The broad footprint of climate change from genes to biomes to people *Science* VOL 354 ISSUE 6313 (2016).

¹⁰⁰ IPCC, 2007: Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change 48 [Core Writing Team, Pachauri, R.K and Reisinger, A.(eds.)]. Other studies have predicted similarly severe losses: 15%-37% of the world's plants and animals committed to extinction by 2050 under a mid-level emissions scenario, see Thomas *et al.*, Extinction risk from climate change, 427 *Nature* 145-8 (2004); the potential extinction of 10% to 14% of species by 2100 if climate change continues unabated, see Maclean, I. M. D. and R. J. Wilson, Recent ecological responses to climate change support predictions of high extinction risk, 108 *Proceedings of the National Academy of Sciences of the United States of America* 12337-12342 (2011); and the loss of more than half of the present climatic range for 58% of plants and 35% of animals by the 2080s under the current emissions pathway, in a sample of 48,786 species, see Warren, R. J. *et al.*, Increasing Impacts of Climate Change Upon Ecosystems with Increasing Global Mean Temperature Rise, 106 *Climatic Change* 141-77 (2011).

disclosure, including “detail sufficient to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project.” *Laurel Heights*, 47 Cal.3d at 405, and that an EIR be prepared “with a sufficient degree of analysis to provide decisionmakers with information which enables them to make a decision which intelligently takes account of environmental consequences.” CEQA Guidelines § 15151.

Moreover, the Draft EIR improperly attempts to downplay the impacts of an oil spill from the Proposed Project. Specifically, the Commission suggests that an oil spill is less likely under the Proposed Project because under the No Project Alternative, Venoco would need to conduct regular redrills, which could exceed drilling under the Proposed Project. Draft EIR at 4.1-33. However, as explained above, the amount of oil that Venoco could recover under the Proposed Project is estimated to be nearly 2.5 times more than that under the No Project Alternative. And the wells under the proposed project would be horizontally drilled from almost 3 miles long to 4.5 miles long, increasing the likelihood of accidents. The Commission’s Draft EIR also downplays the likelihood of an oil spill by claiming that the chances of an oil spill would not increase at any time during the 40-year drilling term of the Proposed Project, Draft EIR at 4.1-32, and any oil spill that did occur from a pipeline would last for only two minutes because of automatic shutoff valves. *Id.* at 4.1-16. However, these unsupported conclusions ignore the wealth of scientific information described above indicating that the risk of oil spills significantly increase as infrastructure ages, and information demonstrating that large oil spills can still occur even with shutoff valves due to human error or malfunction.¹⁰¹

Similarly, while the Commission’s Draft EIR admits that impacts to marine mammals and other marine life in the event of an oil spill would be significant and unavoidable, the Commission concludes that impacts to kelp beds would be less than significant with mitigation. Draft EIR at 4.7-28 – 4.7-29. In reaching such a conclusion, the Commission acknowledges that more studies are needed to understand the effects of oil spills on kelp forests and their broader implications, *id.*, and ignores the fact that several species rely on kelp forests and can become contaminated with oil that collects in kelp ponds, such as young fish and sea otters. The Commission’s conclusion thus arbitrarily downplays the potential impacts to kelp forests and inappropriately relies on the absence of information to find less than significant impacts.

In addition, the Draft EIR fails to include adequate mitigation measures in the event of an oil spill from Venoco’s Proposed Project. Pursuant to CEQA, an EIR must include “mitigation measures...to minimize the [project’s] significant effects on the environment.” Cal. Pub. Res. Code § 21100(b)(3). The mitigation of a project’s significant impacts has been described as one of the “most important” functions of CEQA. *Sierra Club v. Gilroy City Council*, 222 Cal. App. 3d 30, 41 (1990). The Draft EIR acknowledges that there are several significant impacts from potential oil spills resulting from the project. *See e.g.*, Draft 4.1-32. Nevertheless, the Draft EIR fails to properly mitigate such impacts.

¹⁰¹ *See e.g.*, KEYT, Automatic Shut Oil Pipeline Automatic Shut Off Valves Could Fail Because of Human Error, Aug. 30, 2015, <http://www.keyt.com/news/santa-barbara-county/oil-pipeline-automatic-shut-off-valves-could-fail-because-of-human-error/65430298> (describing 10-20,000 gallon spill that occurred from an offshore pipeline with an automatic shutoff valve).

For example, MM HAZ-3a requires Venoco to continue to conduct annual inspections of its pipeline. Draft EIR at 4.1-36. But Venoco is already legally required to conduct annual inspections. Compliance with pre-existing legal obligations cannot constitute a mitigation measure. *See e.g., Californians for Alternatives to Toxics v. Dept. of Food & Agric.*, 136 Cal. App. 4th 1, 17 (2005) (compliance with existing environmental laws or regulations is not sufficient to support a finding that a project will not have significant environmental impacts). In addition, MM HAZ-3b calls for Venoco to develop a plan by August of next year to conduct visual inspections and reporting for its surf zone pipelines, and MM HAZ-3d simply states that in the event an oil spill is detected, the system cannot come back online until the entire pipeline is inspected. Draft EIR at 4.1-37. The Commission also states that in the event a redrilled well produces more than the existing highest flowing well, Venoco would be required to update its Oil Spill Control Plan. *Id.* at 4.1-33.

But the plan to make a plan is not a valid mitigation measure. Moreover, requiring inspections following a spill does not prevent or reduce the changes of such a spill from occurring in the first place. As CEQA guidelines make perfectly clear, “mitigation measures should not be deferred until some future time.” CEQA Guidelines § 15126.4(a)(1)(B); *see also Sundstrom*, 202 Cal. App. 3d at 307 (a “requirement that the applicant adopt mitigation measures recommended in a future study is in direct conflict with the guidelines implementing CEQA”). In other words, a mitigation plan “formulated...later outside the EIR process, does not satisfy CEQA’s requirements.” *Communities for a Better Environment*, 184 Cal. App. 3d at 96. The mitigation measures for an oil spill from Venoco’s Proposed Project fail to comply with CEQA.

D. The Commission’s Draft EIR Fails to Adequately Analyze or Mitigate the Significant Impacts of Acidizing Used at Platform Holly

The Commission’s Draft EIR admits that Venoco uses acidizing at Platform Holly, but the Draft EIR does not analyze any of the impacts from this dangerous practice. It therefore does not even attempt to mitigate the potential harms from such practice. The Commission appears to dismiss its duty to analyze such impacts because it claims Venoco does not use matrix acidizing or acid fracturing, and only uses acidizing for well maintenance and wellbore cleanup. Draft EIR at 2-22. However, available information indicates that Venoco may be using acidizing for production.¹⁰² But regardless, even if Venoco is using acidizing only for purported well maintenance and clean up, the Commission must still analyze the impacts of such activities.

As explained above, a recent study demonstrates that oil companies use dozens of extremely hazardous chemicals to acidize wells in California. Specifically, one study found that almost 200 different chemicals have been used and that at least 28 of these substances are F-graded hazardous chemicals—carcinogens, mutagens, reproductive toxins, developmental toxins, endocrine disruptors or high acute toxicity chemicals.¹⁰³ Hydrofluoric acid, for example, is acutely toxic, and exposure to fumes or very short-term contact with its liquid form can cause severe burns. The study notes that these chemicals can make up as much as 18 percent of the

¹⁰² *See e.g.,* Matt Kettmann, Questions Remain Over Offshore Acidizing, *The Independent*, Feb. 20, 2014, <http://www.independent.com/news/2014/feb/20/questions-remain-over-offshore-acidizing/>.

¹⁰³ Khadeeja Abdullah, 2016.

fluid used in these procedures.¹⁰⁴ Further, as much as 90,000 kg of these chemicals are used per treatment for matrix acidizing, and 50,000 kg used for well maintenance.¹⁰⁵ The Commission must analyze and mitigate the potential impacts of these chemicals on the marine environment. Contamination could occur directly through an accidental release during transport of these materials to Platform Holly, or well casing leaks after these chemicals are injected as part of wastewater underground.

The Commission must also analyze the harmful air pollutants emitted during acidizing. Recent information indicates that acidizing releases toxic air pollutants. For example, one year after the South Coast Air Quality Management District began requiring the oil and gas industry to report the use of chemicals in certain well operations in the South Coast Air Basin, records show that oil companies used 44 different air toxic chemicals more than 5,000 times in Los Angeles and Orange counties in one year.¹⁰⁶ The known air toxics most frequently used by oil companies in the Los Angeles air basin include crystalline silica, hydrofluoric acid, and formaldehyde.¹⁰⁷ Formaldehyde harms the eyes and respiratory system and is classified as a cancer-causing substance by the International Agency for Research on Cancer and the California Air Resources Board.¹⁰⁸ Hydrofluoric acid is harmful to skin, eyes, and sensory organs, respiratory system, gastrointestinal system and liver, immune system, cardiovascular system and blood.¹⁰⁹ Similarly, crystalline silica, classified a hazardous substance under the Occupational Safety and Health Act and the Comprehensive Environmental Response, Cleanup, and Liability Act, causes eye and skin burns, is harmful if swallowed, causes respiratory tract irritation, and is a cancer hazard.¹¹⁰

The Commission must also analyze other types of well stimulation if not expressly prohibited, including steam injection and water flooding. Steam injection is a highly hazardous recovery technique that can cause “surface expressions” which has led to the death of at least one oil worker, and can also cause spills of hazardous chemicals.¹¹¹ And the use of water flooding has been linked to earthquakes.¹¹²

The failure to analyze or mitigate such practices violate CEQA. Potential measures to mitigate against the harm of acidizing and other well stimulation practices are an outright prohibition on the practices, a limit on the total number of times Venoco can use such practices per year, or a limit on the quantity of acids it can use in each treatment.

¹⁰⁴ *Id.*

¹⁰⁵ *Id.*

¹⁰⁶ An Analysis from the Center for Biological Diversity, Physicians for Social Responsibility – Los Angeles, Communities for a Better Environment, and the Center on Race, Poverty and the Environment et al. *Air Toxics One-Year Report: Oil Companies Used Millions of Pounds of Air-Polluting Chemicals in Los Angeles Basin Neighborhoods*, June 2014.

¹⁰⁷ *Id.*

¹⁰⁸ *Id.*

¹⁰⁹ *Id.*

¹¹⁰ 78 Fed. Reg. 56,274 (Sept. 12, 2013).

¹¹¹ California Department of Conservation Division of Oil, Gas and Geothermal Resources, Executive Summary of Report of Occurrences: The Chevron Fatality Accident June 21, 2011 and Area Surface Expression Activity, Pre and Post Accident, Sections 21 & 22 T.32S./R.23E., Midway-Sunset Oil Field, Kern County (May 2012).

¹¹² Justin L. Rubinstein, Myths and Facts on Wastewater Injection, Hydraulic Fracturing, Enhanced Oil Recovery, and Induced Seismicity, *Seismological Research Letters* Volume 86, Number 4 July/August 2015.

E. The Commission's Draft EIR Fails to Adequately Disclose, Analyze or Mitigate Impacts from Increased Produced Wastewater and Underground Injection

As explained above, the amount of wastewater generated under Venoco's Proposed Project would be nearly four times the amount Venoco produces and disposes of under baseline conditions. But the Draft EIR fails to disclose, analyze or mitigate the potential impacts from increased production of wastewater and increased underground injection. Such failures violate CEQA.

As explained above, produced water can contain a myriad of chemicals harmful to a wide variety of marine life. Underground disposal of produced wastewaters has been known to cause groundwater contamination and drinking water contamination, among other problems, and can result in leaks and contamination through the loss of well casing integrity. But the Draft EIR fails to analyze these risks.

The Draft EIR also fails to analyze the increased risk of earthquakes from underground injection described above. Recent studies have drawn a strong connection between the recent rise in wastewater injection and increased earthquake rates.¹¹³ The Draft EIR therefore fails to comply with CEQA's requirement that an EIR be "prepared with a sufficient degree of analysis to provide decisionmakers with information which enables them to make a decision which intelligently takes account of environmental consequences." CEQA Guidelines, § 15151.

F. The Commission's Draft EIR Fails to Adequately Analyze or Mitigate the Impacts of Noise Pollution on the Marine Environment

The Commission's Draft EIR fails to adequately analyze the direct, indirect and cumulative impacts of noise pollution on the marine environment, and marine mammals in particular. Venoco's Proposed Project would increase the amount of noise in the marine environment through construction activities and increased vessel traffic, threatening marine mammal populations. The Commission's Draft EIR completely dismisses the potential impacts from noise generated by ships by claiming that there is no indication that marine mammals are affected deleteriously by noise generated by ships. Draft EIR at 4.7-34. This is wrong and ignores a myriad of scientific information.

Anthropogenic noise pollution can mask marine mammal communications at almost all frequencies these mammals use.¹¹⁴ "Masking" is a "reduction in an animal's ability to detect relevant sounds in the presence of other sounds."¹¹⁵ Vessel noise can cover important frequencies these animals use for more complex communications. The National Marine Fisheries Service has recognized that this masking may affect marine mammal survival and reproduction by decreasing these animals' ability to "[a]ttract mates, [d]efend territories or resources, [e]stablish

¹¹³ See e.g., Van de Elst, Nicholas J. et al. 2013.

¹¹⁴ See, e.g., Hildebrand, J.A., *Impacts of Anthropogenic Sound, in MARINE MAMMAL RESEARCH: CONSERVATION BEYOND CRISIS* (Reynolds, J.E. III et al., eds. 2006); Weilgart, L., 2007, The Impacts of Anthropogenic Ocean Noise on Cetaceans and Implications for Management, 85 CANADIAN J. ZOOLOGY 1091-1116 (2007).

¹¹⁵ OCEAN NOISE AND MARINE MAMMALS, at 96.

social relationships, [c]oordinate feeding, [i]nteract with parents, or offspring, [and] [a]void predators or threats.”¹¹⁶ Studies have also found that chronic exposure to boat traffic and noise can cause whales to reduce their time spent feeding.¹¹⁷

In addition to masking effects, marine mammals have displayed a suite of stress-related responses from increased ambient and local noise levels. For example, recent research reveals that chronic stress in North Atlantic right whales is associated with exposure to low frequency noise from ship traffic.¹¹⁸ Specifically, “the adverse consequences of chronic stress often include long-term reductions in fertility and decreases in reproductive behavior; increased rates of miscarriages; increased vulnerability to diseases and parasites; muscle wasting; disruptions in carbohydrate metabolism; circulatory diseases; and permanent cognitive impairment.”¹¹⁹ These findings have lead researchers to conclude that “over the long term, chronic stress itself can reduce reproduction, negatively affect health, and even kill outright.”¹²⁰ Additionally, in a noise exposure study using a captive beluga, increased levels of stress hormones were documented.¹²¹ Similar impacts would be expected for baleen and toothed whales in the vicinity of the South Ellwood Field, including endangered blue whales, humpback whales, sperm whales, as well as dolphins, porpoises and other animals. Stress due to noise can lead to long-term health problems, and may pose increased health risks for populations by weakening the immune system and potentially affecting fertility, growth rates, and mortality.¹²² But the Draft EIR fails to disclose, analyze or mitigate such risks and impacts.

Indeed, despite acknowledging that vessel noise can displace toothed whales, Draft EIR at 4.7-35, the Commission’s Draft EIR designates all noise impacts to marine mammals as less than significant. This is perplexing considering that the Commission also acknowledges that an impact should be considered significant if it results in the “take” of a federally listed endangered or threatened species or a marine mammal. *Id.* at 4.7-16 -4.7-17. The Marine Mammal Protection Act defines “take” as “to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.” 16 U.S.C. § 1362(13). Harass, in turn, includes actions with have the potential to disturb a marine mammal in the wild. *Id.* § 1362(18). In other words, displacement of a marine mammal is by definition a taking and thus significant under CEQA. As such, the Commission’s designation of noise impacts as less than significant, and its attendant failure to even attempt to mitigate the impacts of noise pollution from vessels, such as requiring ships connected with Venoco’s offshore drilling activities at Platform Holly to travel no more than 10 knots, violate CEQA.

¹¹⁶ Jason Gadamke, *Ocean Sound & Ocean Noise: Increasing knowledge through research partnerships*, May 2014.

¹¹⁷ See Williams, R. D., et al., 2006, Estimating relative energetic costs of human disturbance to killer whales (*Orcinus orca*), *Biological Conservation*, 133: 301-311.

¹¹⁸ Rolland, R, S. Parks, K. Hunt, M. Castellote, P. Corkeron, D. Nowacek, S. Wasser, and S. Kraus. 2012. Evidence that ship noise increases stress in right whales. *Proceedings of the Royal Society B*. February 8, 2012.

¹¹⁹ *Id.*

¹²⁰ *Id.*

¹²¹ Romano, T.A. *et al.*, 2004, Anthropogenic sound and marine mammal health: measures of the nervous and immune systems before and after intense sound exposure, *Canadian Journal of Aquatic Science*, 61: 1124-1134.

¹²² *Id.*

G. The Commission's Draft EIR Fails to Properly Analyze or Mitigate the Risk of Ship Strikes to Marine Mammals and Sea Turtles

The Commission's Draft EIR admits that ship strikes of marine mammals and sea turtles may occur under the Proposed Project, but fails to adequately analyze or mitigate such impacts. Ship strike-related mortality is a documented threat to endangered Pacific coast populations of fin, humpback, blue, sperm and killer whales. Ship strikes are an increasing problem in California.¹²³ Between 2001 and 2010, nearly 50 large whales off the California coast were documented as having been struck by ships.¹²⁴ And a recent report cites collision with ships as a reason blue whales have not recovered.¹²⁵

Ship strikes are also a problem for ESA-listed sea turtles. Like cetaceans, sea turtles cannot breathe under water and must regularly ascent to the surface for air, which makes them "particularly vulnerable to boat and vessel strikes."¹²⁶ Commercial vessels are thus major hazards to sea turtles, particularly in shipping lanes and during peak tourism months when recreational boaters congregate in coastal areas. Injuries from propellers include amputated flippers, fractured shells, brain injuries and broken bones.¹²⁷ These injuries, if they do not result in immediate death, can increase stress, which ultimately affect a sea turtle's ability to forage, migrate, escape from predators and reproduce.

But the Commission's Draft EIR fails to adequately analyze the cumulative risk to marine mammals and sea turtles from increased vessel traffic. Moreover, the Commission's proposed mitigation measure is yet again nothing more than a plan to make a plan, an improper mitigation measure under CEQA. *See e.g.*, CEQA Guidelines § 15126.4(a)(1)(B); *Sundstrom*, 202 Cal. App. 3d at 307. The mitigation measure also fails to require ships to travel at 10 knots or less to avoid running over whales—a requirement that has been adopted for certain vessels on the East Coast to reduce the risk of ship strikes to North Atlantic right whales,¹²⁸ and one that National Marine Sanctuaries in California, including the Channel Islands Sanctuary, ask ships to comply with while traveling within the sanctuaries at certain times of year to reduce the risk of ship strikes of endangered blue whales, humpback whales and other animals.¹²⁹

H. The Commission's Draft EIR Fails to Adequately Consider or Mitigate Impacts to Cultural Resources

The Commission's Draft EIR fails to adequately consider the direct, indirect and

¹²³ Zito, Kelly (2010) Whale deaths blamed on busy ship traffic, krill. *San Francisco Chronicle*, Oct. 10.

¹²⁴ National Marine Fisheries Service. 2010. Large Whale Strandings Reported to California Marine Mammal Stranding Network (2001 - Present), NMFS Southwest Regional Office, California Marine Mammal Stranding Network Database.

¹²⁵ Virginia Morrell, Blue whales being struck by ships, *Science Magazine*, Jul. 23, 2014, <http://www.sciencemag.org/news/2014/07/blue-whales-being-struck-ships>.

¹²⁶ NOAA Fisheries, Threats to Sea Turtles, <http://www.nmfs.noaa.gov/pr/species/turtles/threats.htm>.

¹²⁷ Mote Marine Laboratory. 2008. Sea Turtle Hospital. <http://www.mote.org/index.php?src=gendocs&link=Sea+Turtle+Rehabilitation+Hospital&category=Animal+Care+Programs>.

¹²⁸ 73 Fed. Reg. 60,173 (Oct. 10, 2008); 78 Fed. Reg. 73,726 (Dec. 9, 2013); codified at 50 C.F.R. § 224.105.

¹²⁹ NOAA, Channel Islands National Marine Sanctuary, Management: Ship Strikes, Sept. 29, 2016, http://channelislands.noaa.gov/management/resource/ship_strikes.html.

cumulative impacts to cultural resources in and around the Santa Barbara Channel, and fails to adequately mitigate such impacts. Ocean waters in and around the Santa Barbara Channel protect ancient Chumash villages that lay under the ocean on the submerged lands of San Luis Obispo and Santa Barbara Counties. Indeed, the Channel Islands National Park was established “to protect nationally significant natural, scenic, wildlife, marine, ecological, archaeological, cultural, and scientific values of the Channel Islands,”¹³⁰ including “archaeological evidence of substantial populations of Native Americans.”¹³¹ And the Chumash Tribal Council recently petitioned the federal government to designate additional areas in the Santa Barbara Channel as a National Marine Sanctuary because to Chumash heritage and culture.¹³² The Channel is also home to resources of great cultural importance to the Chumash Peoples, including dolphins that are part of the creation story of the Chumash Peoples.¹³³

Impacts to such resources in the event of an oil spill or other accident could be severe. Indeed, earlier in the Draft EIR, the Commission admits that impacts to marine life, including dolphins, would be significant and unavoidable. But the Commission then finds impacts to cultural resources, which include dolphins, would be less than significant with mitigation. Draft EIR at 4.10-18. It is hard to see how impacts to the same resource from the same impacts could be both significant and less than significant.

Moreover, to attempt to mitigate impacts to cultural resources, the Commission imposes a measure that merely requires Venoco to come up with a Spill Response Plan for Archaeological and Paleontological Resources. But, as explained above, a mitigation plan “formulated...later outside the EIR process, does not satisfy CEQA’s requirements.” *Communities for a Better Environment*, 184 Cal. App. 3d at 96.

I. The Commission’s Draft EIR Fails to Analyze a Reasonable Range of Alternatives or Adequately Analyze the Alternatives it Did Consider

CEQA mandates that significant environmental damage be avoided or substantially lessened where feasible. Cal. Pub. Res. Code § 21002; CEQA Guidelines §§ 15002(a)(3), 15021(a)(2), 15126(d). A rigorous analysis of reasonable alternatives to the project must be provided to comply with this strict mandate. The Draft EIR fails to meet this requirement on two levels: the Draft EIR’s analysis of the alternatives proposed is inadequate and the Draft EIR fails to include a reasonable range of alternatives.

First, the Draft EIR relies on a skewed analysis of only three alternatives, none of which fully address all of the Project’s significant impacts or are fully analyzed. See Draft EIR at 5.0. The little analysis of the alternatives that is completed provides no quantitative analysis on the differences between the Proposed Project’s impacts and the alternatives’ impact, leaving the public and decisionmakers ill informed. For example, in describing the No Project Alternative,

¹³⁰ 16 U.S.C. § 410ff.

¹³¹ *Id.*

¹³² National Marine Sanctuary Nomination, http://www.nominate.noaa.gov/nominations/nomination_chumash_heritage.pdf

¹³³ Hadley Meares, A Maritime People: The Chumash Tribes of Santa Barbara Channel, KCET, July 16, 2015, <https://www.kcet.org/shows/california-coastal-trail/a-maritime-people-the-chumash-tribes-of-santa-barbara-channel>.

the Commission states that “[w]hile the proposed Project would increase greenhouse gas emissions over baseline, the same is likely true for the No Project Alternative” and a “similar situation occurs relative to virtually all impacts associated with the proposed Project.” Draft EIR at 5-23. However, this ignores the substantial increase in the oil and gas to be extracted under the Proposed Project, and the attendant increase in air pollution, greenhouse gas emissions, wastewater and increased risk of oil spills, earthquakes and harm to marine life above baseline conditions; and inappropriately skews the analysis in favor of granting the Proposed Project.

Second, the Draft EIR fails to consider a reasonable amount of feasible alternatives. As courts have made clear, “[a] potential alternative should not be excluded from consideration merely because it ‘would impede to some degree the attainment of the project objectives, or would be more costly.’” *Save Round Valley Alliance v. County of Inyo*, 157 Cal. App. 4th 1437, 1456-57 (2007) (quotations omitted). Although “an EIR need not consider every conceivable alternative to a project, ... it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation.” Guidelines § 15126.6(a). Here, the Commission failed to consider feasible several alternatives. For example, the Commission failed to consider an alternative that would speed the decommissioning of Platform Holly and its associated infrastructure. The consideration of such an alternative is necessary in order to adequately protect the environment and public health from the myriad detrimental impacts of oil and gas development, production, transportation and consumption, including dangerous oil spills that can kill and injure marine life and devastate coastal communities. The Commission failed to consider an alternative that would limit the amount of oil and gas to be extracted under the Proposed Project, or the number of wells to be drilled, and thus limit some of the environmental harms inherent in Venoco’s proposal.

Moreover, the Commission improperly rejected alternatives from further consideration. The Commission suggested that it had to reject the Reduced Project Alternative because Cal. Pub. Resources Code § 6872.5 states that the Commission can approve a boundary line adjustment to encompass “all of a field,” and approving an area less than the area proposed by Venoco would not comply with the statute. However, just because the Commission has the authority to approve a lease boundary to encompass “all” of an oil field, does not mean it must. The Commission can approve a boundary line adjustment that is less than the area proposed by Venoco if necessary to mitigate the significant harms from Venoco’s proposal. Thus, the Commission improperly rejected the Reduced Project Alternative.

The Commission also improperly rejected the Alternative Energy Sources/Energy Conservation Alternative. The Commission’s analysis ignores studies showing that reducing the expansion of offshore oil and gas drilling reduces consumption and greenhouse gas emissions. For example, a recent report found that for each unit of oil that is not extracted from federal lands, net global consumption of oil and substitute fuels falls by 0.22 units by 2030, with a proportionate decrease in greenhouse gas emissions.¹³⁴ Accordingly, the report estimates that ending new offshore and onshore oil leases would lead to a net reduction of global CO₂

¹³⁴ Erickson, Peter and Michael Lazarus, How would phasing out U.S. federal leases for fossil fuel extraction affect CO₂ emissions and 2°C goals? Stockholm Environment Institute, Working Paper, 2016-02 (2016) at 24.; *see also* Michael Lazarus, Peter Erickson and Kevin Tempest, Supply-side climate policy: the road less taken, Stockholm Environment Institute, Working Paper, 2015-13 (2015).

emissions from oil of 31 MtCO₂ in the year 2030.¹³⁵ The same analysis should be considered when analyzing the expansion of offshore oil drilling in state waters.

J. The Commission's Draft EIR Fails to Satisfy the Commission's Duties under the Public Trust Doctrine

The Commission's Draft EIR also fails to satisfy its duties under the public trust doctrine. The public trust doctrine establishes that the State of California holds title and ownership of submerged and tidal lands "as trustee of a public trust for the benefit of the people." *Nat'l Audubon Soc'y v. Superior Court*, 33 Cal.3d 419, 434 (1983). The Commission is charged with administering these trust resources. Cal. Pub. Res. Code § 6009.

The public trust doctrine was created to protect the public's right to access submerged and tidelands when that right was threatened by the increased privatization of public resources. Consequently, "courts should 'look with considerable skepticism upon any governmental conduct which is calculated either to reallocate [trust lands] to more restricted uses or to subject public uses to the self-interest of private parties.'" *Zack's, Inc. v. City of Sausalito* 165 Cal.App.4th 1163, 1177 (2008) (citations omitted).

To evaluate the Commission's compliance with the public trust doctrine, California courts apply the test articulated by the U.S. Supreme Court in *Illinois Central R. Co. v. Illinois* 146 U.S. 387, 455-56 (1892). See *Boone v. Kingsbury*, 206 Cal. 148, 187-89 (1928). Under the *Illinois Central* test, the Commission may permit the use of public trust resources in only two situations: (1) when the use is an accepted public trust use that will result "in the improvement of the [public] interest thus held;" or (2) when the permitted use will occur "without detriment to the public interest in the lands and water remaining." *Illinois Central*, 146 U.S. at 455-56. As the First District Court of Appeal has explained:

[T]he 'traditional triad' of public trust uses includes navigation, commerce, and fishing on navigable waters. Commercial uses consistent with the trust include wharves or docks and other structures in aid of commerce. . . . Recreation and environmental preservation are also permissible public trust uses.

Citizens for East Shore Parks v. State Lands Comm'n, 202 Cal.App.4th 549, 570 (2011); see also *National Audubon*, 33 Cal.3d at 434-35 (acknowledging "growing public recognition" that trust uses of trust lands also include "the preservation of those lands in their natural state, so that they may serve as ecological units for scientific study, as open space, and as environments which provide food and habitat for birds and marine life").

When the proposed activity constitutes a public trust use, the state may permit one public trust use to the detriment of another. *National Audubon*, 33 Cal.3d at 440. If, however, a proposed project does not constitute a recognized public trust use, an agency can only approve the project if it does not limit or interfere with a trust resource or a recognized trust use. See *National Audubon*, 33 Cal.3d at 435-37. Courts have uniformly found natural resource extraction to be a *non-trust* use that must be scrutinized for the potential to permanently alienate the public

¹³⁵ Erickson and Lazarus 2016, at 25.

interest in trust resources. *See Boone*, 206 Cal. at 183; *National Audubon*, *supra*, 33 Cal.3d at 438; *see also San Francisco Baykeeper, Inc. v. State Lands Com.*, 242 Cal. App. 4th 202, 236 (2015) (rejecting the Commission’s argument that *Boone* or state law established a rule that oil extraction is per se public use).

Venoco’s proposal would substantially increase the amount of oil and gas extracted on a daily basis. Moreover, Venoco’s Proposed Project would also conduct new drilling in currently protected waters—the California Coastal Sanctuary—which is protected specifically because of the potential harms oil and gas development poses to the marine environment, *see* Cal. Pub. Res. Code § 6241, including harms to and interference with navigation, swimming, fishing, and other forms public uses of the public trust resource.

The myriad detrimental environmental impacts from Venoco’s Proposed Project described above shows why its proposal is inconsistent with the public trust. At the very least, the Commission cannot approve Venoco’s Proposed Project unless and until it determines that the Proposed Project will not violate the public trust. The Commission’s Draft EIR fails to do so.

III. Conclusion

The Center urges the Commission to reject Venoco’s Proposed Project and thereby prevent dangerous new oil drilling along California’s coast in protected waters. Rather than allowing the expansion of drilling in our ocean, the Commission should instead be working toward decommissioning oil and gas development and transportation in our coastal zone.

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LIST OF REFERENCES AND ATTACHMENTS

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