



CENTER for BIOLOGICAL DIVERSITY

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Via Federal Express Overnight Mail

Adele Lagomarsino
Senior Environmental Planner
Division of Oil, Gas, and Geothermal Resources
801 K Street, MS18-05
Sacramento, CA 95814-3530

Re: Comments on the Initial Study and Mitigated Negative Declaration for the Bloemer and Kirschenman Oil Well Project

Dear Ms. Lagomarsino:

The Center for Biological Diversity (the "Center") submits the following comments concerning the Initial Study and Proposed Mitigated Negative Declaration ("MND") prepared by the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources ("DOGGR") for the Bloemer and Kirschenman Oil Well Project ("Project") proposed by applicant Naftex Operating Company ("Applicant"). The Center is a non-profit environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center also works to reduce greenhouse gas emissions to protect biological diversity, our environment, and public health. The Center has more than 625,000 members and online activists, including some who live in Kern County. Center members have recreational, scientific, and educational interests in the region at issue, and are particularly interested in protecting the native, imperiled, and sensitive species and their habitats that the Project may affect.

The Applicant proposes to drill six oil wells in the Edison Oil Field and indicates that it is targeting the Santa Margarita Formation.¹ If the Applicant finds economical quantities of oil in a well, then it will install production equipment and produce oil from that well. The Project's target formation is relatively shallow; the MND states that the wells will be drilled to a depth of about 940 to 990 feet.²

We ask that DOGGR deny the Project application and use permit at issue. However, if DOGGR wishes to move forward with approval, it should prepare a full Environmental Impact Report ("EIR") pursuant to the California Environmental Quality Act ("CEQA"), Public

¹ California Division of Oil, Gas, and Geothermal Resources, Initial Study/Mitigated Negative Declaration for the Bloemer and Kirschenman Oil Well Project at 1 (September 6, 2013) ("MND").

² *Id.*

Resources Code § 21000 et seq., and the CEQA Guidelines, title 14, California Code of Regulations, § 15000 et seq. The Project could result in numerous significant environmental impacts. In particular, the MND fails to disclose, analyze, or propose measures to avoid or mitigate impacts resulting from the enhanced recovery techniques the Project may employ or impacts to, among other things, water, the climate, air quality, threatened and endangered species, and seismicity. Because it is clear that the Project not only “may” have a significant impacts on the environment, but would certainly do so, DOGGR cannot lawfully approve the Project without preparing an Environmental Impact Report (“EIR”) addressing all of the Project’s potentially significant environmental impacts.

Discussion

I. Legal Background

The Legislature enacted CEQA to “[e]nsure that the long-term protection of the environment shall be the guiding criterion in public decisions.” *No Oil, Inc. v. City of Los Angeles*, 13 Cal. 3d 68, 74 (1974). The Supreme Court has repeatedly held that CEQA must be interpreted to “afford the fullest possible protection to the environment.” *Wildlife Alive v. Chickering*, 18 Cal. 3d 190, 206 (1976) (quotation omitted). CEQA also serves “to demonstrate to an apprehensive citizenry that the agency has, in fact, analyzed and considered the ecological implications of its action.” *Laurel Heights Improvement Ass’n v. Regents of Univ. of Cal.*, 47 Cal. 3d 376, 392 (1988) (“*Laurel Heights I*”). If CEQA is “scrupulously followed,” the public will know the basis for the agency’s action and “being duly informed, can respond accordingly to action with which it disagrees.” *Id.* Accordingly, CEQA “protects not only the environment but also informed self-government.” *Id.*

CEQA applies to all “discretionary projects proposed to be carried out or approved by public agencies.” Pub. Res. Code § 21080(a). Before taking any action, a public agency must conduct a “preliminary review” to determine whether the action is a “project” subject to CEQA. *See Muzzy Ranch Co. v. Solano County Airport Land Use Comm’n*, 41 Cal. 4th 372, 380 (2007). A “project” is “the whole of an action” directly undertaken, supported, or authorized by a public agency “which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment.” Pub. Res. Code § 21065; CEQA Guidelines § 15378(a). Under CEQA, “the term ‘project’ refers to the underlying activity and not the governmental approval process.” *California Unions for Reliable Energy v. Mojave Desert Air Quality Mgmt. Dist.*, 178 Cal. App. 4th 1225, 1241 (2009) (quoting *Orinda Ass’n v. Bd. of Supervisors*, 182 Cal. App. 3d 1145, 1171-72 (1986)). The definition of “project” is “given a broad interpretation in order to maximize protection of the environment.” *Lighthouse Field Beach Rescue v. City of Santa Cruz*, 131 Cal. App. 4th 1170, 1180 (2005) (internal quotation omitted).

Where, as here, there is substantial evidence in the record to support a fair argument that the proposed project may have a significant effect on the environment, preparation of an EIR is required. Pub. Res. Code §§ 21100, 21151; CEQA Guidelines § 15064(a)(1), (f)(1); *Communities for a Better Env’t v. South Coast Air Quality Mgmt. Dist.*, 48 Cal. 4th 310, 319 (2010); *No Oil, Inc.*, 13 Cal. 3d at 82. This “fair argument” test “establishes a low threshold for

initial preparation of an EIR, which reflects a preference for resolving doubts in favor of environmental review.” *Architectural Heritage Assn. v. County of Monterey*, 122 Cal. App. 4th 1095 (2004).

By contrast, a negative declaration is appropriate only when there is no substantial evidence in light of the whole record before the public agency that the project may have a significant effect on the environment. Pub. Res. Code §§ 21064.5, 21080(c); CEQA Guidelines §§ 15006(h), 15064(f)(2), 15070(b), 15369.5. If evidence demonstrating a significant impact exists, an EIR must be prepared, even if the lead agency also can point to substantial evidence in the record supporting its determination that no significant effect will occur. *Architectural Heritage*, 122 Cal. App. 4th at 1109-10. The lead agency may not dismiss evidence because it believes that there is contrary evidence that is more credible. *Pocket Protectors v. City of Sacramento*, 124 Cal. App. 4th 903, 935 (2005).

II. DOGGR Must Consider the Methods the Operator Will Use to Produce Oil

While, the MND indicates that the depths of the Project’s wells will range from 940 to 990 feet and that the Project will not involve hydraulic fracturing, it does not analyze what other enhanced oil recovery techniques the Applicant may employ.³ The use of enhanced oil recovery techniques is becoming increasingly common, and it is becoming increasingly clear that such operations employ highly hazardous substances and are major threats to public health and the environment.⁴ In the absence of specific provisions in the conditions of approval for the Project barring the use of enhanced oil recovery techniques, DOGGR must assume that the Project will employ such techniques and analyze the potential impacts associated with the different practices. Among other enhanced oil recovery techniques, DOGGR must analyze potential impacts associated with fracking, cyclic steam injection, steam flooding, fracture acidizing, matrix acidizing, gravel packing, frac packing, enzyme enhanced recovery, and gas lifting.

Acidizing involves the injection of large amounts of acid – commonly hydrochloric acid – into the well. This acid can spill or leak into the environment. In Pennsylvania, an oil and gas company spilled 4,700 gallons of hydrochloric acid, with some of the acid breaching containment, reaching a creek tributary and killing fish.⁵ Exposure to hydrochloric acid can be harmful. It is corrosive to the eyes, skin, and mucous membranes.⁶ It is also listed as a hazardous air pollutant under the Clean Air Act,⁷ and exposure to hydrochloric acid fumes can cause irritation of the respiratory system and pulmonary edema in humans.⁸ In addition, acid

³ MND at 1.

⁴ Center for Biological Diversity, *Dirty Dozen: The 12 Most Commonly Used Air Toxics in Unconventional Oil Development in the Los Angeles Basin* (2013) (“Dirty Dozen”).

⁵ Detrow, Scott, *4,700 Gallons Of Acid Spill At Bradford County Drilling Site* (July 5, 2012), available at <http://stateimpact.npr.org/pennsylvania/2012/07/05/4700-gallons-of-acid-spill-at-bradford-county-drilling-site/>; see also Schlumberger, *Glossary Search Results for Acidizing*, <http://www.glossary.oilfield.slb.com/en/Terms.aspx?LookIn=term%20name&filter=acidizing>

⁶ U.S. Environmental Protection Agency, *Hydrochloric Acid (Hydrogen Chloride)* (Jan. 2000) (“EPA Hydrochloric Acid”).

⁷ U.S. Environmental Protection Agency, *The Clean Air Act Amendments of 1990 List of Hazardous Air Pollutants, Technology Transfer Network Air Toxics Website*, <http://www.epa.gov/ttnatw01/orig189.html> (2013).

⁸ EPA Hydrochloric Acid.

treatments, just like hydraulic fracturing, can contain other hazardous additives, including *inter alia* corrosion inhibitors, surfactants, solvents, iron control agents, and non-emulsifiers,⁹ creating the risk that these substances could escape into the environment. Hydrofluoric acid is also used, and is also extremely dangerous.¹⁰

Another highly hazardous enhanced recovery technique is steam injection, which includes both cyclic steam injection and steam flooding. Steam injection is associated with the creation of “large temperature variations and formation movements,” putting extreme pressure on the ground and well, and sometimes resulting in well failure or the migration of fluids and steam.¹¹ In fact, the practice can deform the ground so much as to result in “surface expressions,” which is when the steam, oil, gas, and whatever else might be mixed in underground have come bubbling to, or even exploding out of the surface of the ground.¹² Such a surface expression killed a Chevron worker who went to investigate steam coming from a surface expression caused by cyclic steaming in Kern County’s Midway-Sunset oil field.¹³ When approaching the plume of steam, the worker fell into a sinkhole when the ground gave way.¹⁴ These same underground displacements and surface expressions can also cause spills of hazardous fluids, which can result in water contamination.

Thus, the MND’s environmental analysis is inadequate because it fails to consider the techniques the Project will or may employ to produce oil. The impacts from unconventional techniques such as steam injection or matrix acidizing clearly may have a significant impact on the environment and therefore an EIR is required. Also, in determining which techniques to include in the impacts analysis, DOGGR must clearly define what activities are prohibited. Importantly, while the MND states that the Project will not employ hydraulic fracturing, the term is not defined. Depending on how specific the MND’s definition of hydraulic fracturing is, other activities could be allowed that inject fluid above the formation fracture pressure, but that do not employ all of the elements of what is commonly understood to constitute fracking (for instance, the inclusion of a proppant).

⁹ Frenier, Wayne W. et al., Abstract: Effect of Acidizing Additives on Formation Permeability During Matrix Treatments, Society of Petroleum Engineers (Feb. 2002).

¹⁰ Collier, Robert, Part 1: The Most Dangerous Chemical You’ve Never Heard Of, August 8, 2013, available at <http://www.thenextgeneration.org/blog/post/monterey-shale-series-distracted-by-fracking>; Collier, Robert, Part 2: The Most Dangerous Chemical You’ve Never Heard Of, August 15, 2013, available at <http://thenextgeneration.org/blog/post/monterey-shale-series-the-most-dangerous-chemical>.

¹¹ Xie, Jueren, Analysis of Casing Deformations in Thermal Wells (2008).

¹² California Department of Conservation, Division of Oil, Gas, and Geothermal Resources, 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) (“Accident Report”); California Department of Conservation, Division of Oil, Gas, and Geothermal Resources, Reports of Occurrence: Surface Expressions in Bakersfield (2011) (“Spill Binder”).

¹³ 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). (“Accident Report ES”); Accident Report at 2.

¹⁴ Accident Report at 2.

Also, although the MND states that the Projection will not employ fracking, DOGGR does not indicate this will be a condition of approval.¹⁵ Unless the Project approval is expressly conditioned upon a permanent prohibition on fracking, DOGGR must disclose and analyze the impacts of this dangerous oil and gas extraction technique. According to the Bureau of Land Management, 90 percent of oil and gas wells drilled on public lands today are fracked.¹⁶ While complete information on California wells is not available since DOGGR does not currently track or monitor the practice, the voluntary reporting site FracFocus indicates that over 1000 wells have been fracked in California since January 2, 2011.¹⁷ This figure is by definition an underestimate since reporting is entirely voluntary. Thus, in the absence of an express prohibition, DOGGR must assume, despite the Applicant's statements to the contrary, that fracking will occur and must fully analyze the impacts of fracking including impacts to air quality,¹⁸ the climate,¹⁹ water quantity,²⁰ water quality,²¹ public health,²² wildlife, and seismicity.²³

III. There is Substantial Evidence that the Project Could Result in Significant Effects to Water Resources

The Project could result in significant impacts to water resources. DOGGR must analyze these effects in an EIR.

¹⁵ MND at 1.

¹⁶ U.S. Department of the Interior Bureau of Land Management, Proposed Rule - Oil and Gas; Well Stimulation, Including Hydraulic Fracturing, on Federal and Indian Lands, 77 Fed. Reg. 27691 (May 11, 2012).

¹⁷ FracFocus, Home Search Page, www.fracfocus.org (last visited September 6, 2013).

¹⁸ See, e.g., Colborn, Theo et al., Natural Gas Operations from a Public Health Perspective, 17 Human and Ecological Risk Assessment 1047 (2011); McKenzie, Lisa et al., Human Health Risk Assessment of Air Emissions from Development of Unconventional Natural Gas Resources, *Sci Total Environ* (2012) ("McKenzie 2012"), doi:10.1016/j.scitotenv.2012.02.018.

¹⁹ See, e.g., Howarth, Robert, et al., Methane and the greenhouse-gas footprint of natural gas from shale formations, *Climatic Change*, doi 10.1007/s10584-011-0061-5 (Mar. 31, 2011) ("Howarth 2011"); Howarth, Robert, et al., Venting and Leaking of Methane from Shale Gas Development: Response to Cathles et al. (2012); Wang, Jinsheng, et al., Reducing the Greenhouse Gas Footprint of Shale (2011).

²⁰ See, e.g., U.S. Government Accountability Office, Information on Shale Resources, Development, and Environmental and Public Health Risks GAO-12-732 (Sep. 2012); Entrekin, Sally, Rapid expansion of natural gas development poses a threat to surface waters, 9 *FRONT ECOL ENVIRON* 503-511 (2011); Freyman, Monika & Ryan Salmon, Hydraulic Fracturing & Water Stress: Growing Competitive Pressure for Water (2013); New York State Department of Environmental Conservation, Revised Draft Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program, Well Permit Issuance for Horizontal Drilling and High-Volume Hydraulic Fracturing to Develop the Marcellus Shale and Other Low-Permeability Gas Reservoirs at 5-93 (Sep. 7, 2011).

²¹ See, e.g., Fontenot, Brian E. et al., An evaluation of water quality in private drinking water wells near natural gas extraction sites in the Barnett Shale Formation, *ENVIRONMENTAL SCIENCE & TECHNOLOGY* at 4 (2013); Vidic, R.D. et al., Impact of Shale Gas Development on Regional Water Quality, *SCIENCE* 340 (2013); U.S. Environmental Protection Agency, Draft Investigation of Ground Water Contamination near Pavillion, Wyoming (2011); Myers, Tom, Assessment of Groundwater Sampling Results Completed by the U.S. Geological Survey (2012); Myers, Tom, Potential Contamination Pathways from Hydraulically Fractured Shale to Aquifers (2012).

²² See, e.g., McKenzie 2012; Colborn 2011; Bamberger, Michelle & Robert E. Oswald, Impacts of Gas Drilling on Human and Animal Health, *NEW SOLUTIONS*, Vol. 22(1) 51-77 (2012).

²³ See, e.g., BC Oil and Gas Commission, Investigation of Observed Seismicity in the Horn River Basin (Aug. 2012) ("BC Oil 2012"); Keranen, Katie, Potentially induced earthquakes in Oklahoma, USA: Links between wastewater injection and the 2011 MW 5.7 earthquake sequence (2013); van der Elst, Nicholas J. et al., Enhanced Remote Earthquake Triggering at Fluid-Injection Sites in the Midwestern United States, 341 *SCIENCE* 164 (2013).

a. Oil and Gas Operations are Significant Sources of Hazardous Waste

Oil and gas activities in general are significant threats to water in large part because the waste these operations produce are highly hazardous. The Project could cause spills or discharges in numerous ways and as a result there is a high likelihood such occurrences would result in the release of carcinogens, toxins, or otherwise harmful substances into the environment.

Solid and fluid oil exploration, development, and production wastes can generally be placed into three categories: produced water, drilling fluids and cuttings, and associated wastes.²⁴ Produced water can contain harmful substances like benzene, arsenic, lead, hexavalent chromium, barium, chloride, sulfate, and boron.²⁵ It is well known that produced water contains substances that are toxic to marine life. For instance, in 1987, EPA acknowledged that polycyclic aromatic hydrocarbons (“PAHs”) are a typical component of some produced waters, and that very low concentrations of PAHs are lethal to some forms of aquatic wildlife.²⁶ Additionally, produced water can be radioactive.²⁷ Produced water from the Marcellus Shale contains dangerous amounts of radium.²⁸ One study found levels of radium 226 as high as 267 times the limit safe for discharge into the environment and thousands of times the limit safe for people to drink.²⁹

Also, oil and gas operations generate a lot of produced water. Onshore oil and gas operations in the United States create about 56 million barrels of produced water *per day*,³⁰ and California operations produce a bit less than three billion barrels per year.³¹ In fact, California wells produce almost fifteen times as much water as oil.³²

²⁴ Nagy, Claudia Zagrean, California Dep’t of Toxic Substances Control, Oil Exploration and Production Wastes Initiative at 6 (2002); *see also*, Mall, Amy, Petition for Rulemaking Pursuant to Section 6974(a) of the Resource Conservation and Recovery Act Concerning the Regulation of Wastes Associated with the Exploration, Development, or Production of Crude Oil or Natural Gas or Geothermal Energy at 7 (Sep. 8, 2010).

²⁵ Letter from West Virginia Department of Environmental Protection to William Goodwin, Superintendent Clarksburg Sanitary Board (Jul. 23, 2009); U.S. EPA Region 8, An Assessment of the Environmental Implications of Oil and Gas Production: A Regional Case Study, Working Draft at 3-11 (2008).

²⁶ U.S. EPA, Report to Congress, Management of Wastes from the Exploration, Development, and Production of Crude oil, Natural Gas, and Geothermal Energy, Vols. 1–3 EPA530-SW-88-003 (1987).

²⁷ *See* E&ENews, *Proposed law would force drillers to test waste for radiation* (Feb. 14, 2013).

²⁸ White, Ivan E., Consideration of radiation in hazardous waste produced from horizontal hydrofracking, National Council on Radiation Protection (2012).

²⁹ Davies, Peter J., Radioactivity: A Description of its Nature, Dangers, Presence in the Marcellus Shale and Recommendations by The Town Of Dryden to The New York State Department of Environmental Conservation for Handling and Disposal of such Radioactive Materials at 3 (2009), available at <http://www.tcgasmap.org/media/Radioactivity%20from%20Gas%20Drilling%20SGEIS%20Comments%20by%20Peter%20Davies.pdf>; Lustgarten, Abraham, Natural Gas Drilling Produces Radioactive Wastewater, ProPublica (Nov. 9, 2009).

³⁰ U.S. Government Accountability Office, Energy-Water Nexus: Information on the Quantity, Quality, and Management of Water Produced during Oil and Gas Production, Report to the Ranking Member, Committee on Science, Space and Technology, House of Representatives at 13, January 2012.

³¹ California Division of Oil, Gas and Geothermal Resources, 2012 Preliminary Report of California Oil and Gas Production Statistics at 3 (Apr. 2013).

³² *Id.*

Drilling fluids and drill cuttings account for about two to four percent of oil and gas waste.³³ They include rock removed during drilling (cuttings) and water- or oil-based drilling fluids, also called drilling muds, which often contain additives.³⁴ Drilling fluids in reserve pits have been found to contain chromium, lead, and pentachlorophenol at hazardous levels, and oil-based drilling fluids can also contain benzene.³⁵ Further, drilling muds can contain a wide range of other carcinogenic, toxic, or otherwise harmful substances, including: cadmium, arsenic, mercury, copper, diesel oil, grease, and various other hydrocarbons and organic compounds, such as methanol, chlorinated phenols, formaldehyde, benzene, toluene, ethyl benzene, xylene, and acrylamide.³⁶ Drilling fluid reserve pits can also contain additives and other chemicals used in the drilling process, such as acids and caustics, corrosion inhibitors, bactericides and biocides, surfactants, defoamers, emulsifiers, filtrate reducers, shale control inhibitors, thinners and dispersants, weighing materials, bentonite clay, and acrylamide.³⁷

Associated wastes include, among other things, oily sludges, workover wastes, and well completion and abandonment wastes.³⁸ These wastes are generally the lowest in volume, but are nevertheless of great concern because they can contain a range of chemicals and naturally occurring materials that are threats to health and safety.³⁹

Many of the substances identified in oil exploration waste are known carcinogens. The most prevalent contaminants found in exploration and production wastes are the BTEX chemicals: benzene, toluene, ethylbenzene, and xylene.⁴⁰ Exposure to benzene has been associated with increased incidence of leukemia and other serious health conditions; exposure to toluene can damage the nervous system; and xylenes can cause dizziness, headaches, and loss of balance.⁴¹ Human exposure to radiation is also extremely dangerous. For instance, exposure to radium can result in an increase risk of bone, liver, and breast cancer.⁴²

These hazardous wastes from oil operations regularly contaminate the environment and can reach aquifers and surface waters. Surface pits in particular are a major hazard. For instance, New Mexico data shows 743 instances of groundwater contamination due to surface pits, almost entirely over the last three decades.⁴³ Pits have resulted in numerous instances of contamination

³³ U.S. Congress, Office of Technology Assessment, *Managing Industrial Solid Wastes from Manufacturing, Mining, Oil and Gas Production, and Utility Coal Combustion – Background Paper at 67* (1992).

³⁴ *Id.*

³⁵ *Id.* at 5.

³⁶ Sumi, Lisa, *Oil & Gas Accountability Project, Pit Pollution – Backgrounder on the Issues, with a New Mexico Case Study at 6* (2004).

³⁷ *Id.*

³⁸ Nagy 2002 at 6.

³⁹ O'Rourke, Dara & Sarah Connolly, *Just Oil? The Distribution of Environmental and Social Impacts of Oil Production and Consumption*, 28 ANNUAL REV. ENVTL. RESOURCES 587, 595 (2003).

⁴⁰ Corcoran, Kelly *et al.*, U.C. Hastings College of Law's Public Law Research Institute, *Selected Topics in State and Local Regulation of Oil and Gas Exploration and Production at 21* (2009).

⁴¹ *Id.*

⁴² U.S. Dept. of Health & Human Services, Agency for Toxic Substances and Disease Registry, *ToxFAQs for Radium* (1999).

⁴³ New Mexico Oil and Conservation Division, *OGAP Analysis of data provided in New Mexico Energy, Minerals and Natural Resources Dep't, Oil and Conservation Div., Cases Where Pit Substances Contaminated New Mexico's Ground Water* (2008).

in Colorado as well. In one instance, an individual became sick after drinking tap water drawn from a spring that had been contaminated when the liner of a surface pit leaked, leading to the release of waste.⁴⁴ The state investigated the contamination and found benzene in the groundwater that exceeded standards by 32 times and benzene in faucet water that exceeded standards by 13 times, as well as elevated levels of toluene and xylenes.⁴⁵

The injection of waste into disposal wells also can cause contamination of the environment. In the late 1980s, the U.S. Government Accountability Office reported that although it was likely that more incidents had occurred, the U.S. Environmental Protection Agency was aware of at least 23 cases across the country where Class II injection wells had contaminated drinking water supplies.⁴⁶ The risk of contamination of drinking water is of particular concern today because U.S. EPA has found DOGGR's Class II underground injection well program to be insufficiently protective of groundwater resources.⁴⁷ In particular, EPA's report noted a number of instances where UIC well operations or construction practices result in the contamination of underground sources of drinking water in California.⁴⁸ The MND fails to analyze the environmental risks that accompany the storage and disposal of the produced water that the Project will generate.

Also, many other extremely harmful spills and releases occur before wastes can reach storage or disposal sites, including spills from equipment failures, accidents, negligence, or dumping.⁴⁹ There are numerous instances of such spills occurring across the country.⁵⁰

Finally, well failure can allow fluids to escape into the environment and contaminate water. Although it is unclear how often wells in California fail because DOGGR asserts it does not track this data, industry reports elsewhere indicate that the failure rate could be high. For instance, statistics from the U.S. Minerals Management Service – now the Bureau of Ocean Energy Management, Regulation and Enforcement – indicate that after thirty years, up to sixty percent of offshore wells in the Gulf of Mexico experience sustained casing pressure, which is a significant problem indicating that there is communication to the annulus from a sustained pressure source due to inadequate zonal isolation.⁵¹ This rate is so high that even if California

⁴⁴ Colorado Oil and Gas Conservation Commission, Cause No. 1V, Docket No. 1008-OV-06, available at http://cogcc.state.co.us/Hearings/Notices/2010/10_August/1008-OV-06.AOC.Notice.pdf.

⁴⁵ Colorado Oil and Gas Conservation Commission, Cause No. 1V, Order No. 1V-350, available at <http://cogcc.state.co.us/orders/orders/1v/350.html>.

⁴⁶ U.S. General Accounting Office, *Drinking Water: Safeguards are not Preventing Contamination from Injected Oil and Gas Wastes* (Jul. 1989), available at <http://www.gao.gov/assets/150/147952.pdf>; Mall at 25.

⁴⁷ Walker, James, *California Class II UIC Program Review* at 119 (Jun. 2011) ("Walker 2011"); *see also* U.S. Environmental Protection Agency, *Letter to California Division of Oil, Gas, and Geothermal Resources* (Jul. 18, 2011); Miller, Elena, *Letter from Elena Miller, State Oil and Gas Supervisor, to Fran Pavley, California State Senator* (Feb 16, 2011).

⁴⁸ Walker at 51, 155, 190

⁴⁹ California Dept. of Fish and Game, *Environmental Incident Report: Vintage Production California LLC Tar Creek Crude Oil and Produced Water Spills*, January 30, 2007 and February 6, 2007.

⁵⁰ *See, e.g.*, Ohio Department of Natural Resources, *Ohio Pursues Action Against Companies for Illegal Brine Dumping* (Jun. 4, 2013); Pa. Dep't Env'tl. Prot., *Press Release, DEP Fines Atlas \$85,000 for Violations at 13 Well Sites* (Jan. 7, 2010); Colorado Oil & Gas Conservation Commission, *Inspection/Incident Inquiry, Spill Report*, Doc. No. 1630697.

⁵¹ Brufatto, Claudio et al., *From Mud to Cement – Building Gas Wells* (2003).

wells are significantly less likely to experience well integrity problems, a serious threat would still exist.

See Response to
CBD Comment IIIb

b. There is a Significant Chance that Hazardous Wastes from the Project Will Contaminate Water Resources

The Project constitutes a threat to water resources. The Project site falls within the Kern Bluffs Watershed.⁵² Groundwater at the Project site is roughly only 320 to 325 feet below surface level.⁵³ The MND does not detail the quality of this groundwater or how the groundwater is or might be used. Also, the Project will likely store drilling muds, cuttings, and perhaps other liquids in an unlined sump, and each well is expected to generate 90 barrels of produced water per day, which will be transported by flowlines with the purpose of ultimately disposing of it in injection wells.⁵⁴

Thus, especially due to the presence of shallow groundwater at the Project site, there is a significant chance that the operations could contaminate water resources in one of the ways described above. Unfortunately, the MND ignores this, instead determining that state and federal standards somehow make the hazardous nature of the waste streams irrelevant.⁵⁵ In addition to failing to comply with CEQA, this is unwise. Recently, the Central Valley Regional Water Quality Control Board (“CVRWQCB”) began an investigation into Vintage Production California’s apparently unpermitted discharge of fracking related fluid into an unlined pit near the City of Shafter lying a short distance above an aquifer.⁵⁶ In a letter to Vintage, the CVRWQCB stated that “[t]he discharge of wastewater to an unlined sump could have water quality impacts, or may threaten waters of the State.”⁵⁷ The use of an unlined pit as part of the Project here could raise similar risks, which CEQA does not allow DOGGR to ignore. DOGGR must consider fully the types of waste that may be produced, and the characteristics and potential environmental impacts of those waste streams. Also, it must analyze the potential for the produced water to spill as it is transported from oil well to the disposal well, which DOGGR has not done.

Also, DOGGR’s statement that the Project will comply with the requirements of the CVRWQCB and the CVRWQCB’s Resolution No. R5-2008-0182 (“Resolution”) does not excuse the agency from analyzing the potential impacts to water. DOGGR states that the Resolution “waives the requirement to file a Report of Waste Discharge and/or issue Waste Discharge Requirements for the temporary discharge of drilling mud to a sump (pit)” and includes several conditions regarding the use of a sump.⁵⁸ However, the Project would not qualify for a waiver under the resolution, since, as DOGGR acknowledges, several factors can

⁵² MND at 68.

⁵³ *Id.*

⁵⁴ MND at 63, 68-69.

⁵⁵ *Id.* at 67-70.

⁵⁶ Letter from Pamela C. Creedon, Executive Officer, Central Valley Regional Water Control District to Alan E. White, President and General Manager, Vintage Production California LLC, Re CALIFORNIA WATER CODE DIRECTIVE PURSUANT TO SECTION 13267.

⁵⁷ *Id.*

⁵⁸ MND at 68.

prevent a project from qualifying, including if operations are conducted in contaminated soil.⁵⁹ Here, there is a significant probability that the earth drilled into will be contaminated because the target is an oil-bearing formation. Moreover, because the Resolution covers only “those instances which represent the lowest threat to water quality,” it appears inapplicable to this Project on its face.⁶⁰

Further, even if the Resolution does apply it does not excuse DOGGR from analyzing the potential impacts of the Project under CEQA. First, the Resolution does not declare that drilling muds and boring waste are safe. Instead, the Resolution indicates that these wastes can pose a threat to water quality, but that CVRWQCB review is not necessary because DOGGR and local agencies will provide the necessary oversight of operations generating such waste.⁶¹ It is therefore circular reasoning for DOGGR to rely on the Resolution to eliminate its own duty to consider the potential environmental impacts of the Project under CEQA. Second, the Resolution covers drilling muds and boring waste, but does not cover other wastes that the Project potentially will generate, including produced water and fracking fluid. Thus, the Resolution cannot ensure an absence of significant impacts from these other wastes. The potential impact to water quality and to the environment from the Project’s drilling cuttings, mud, and produced water is clearly significant. Mere reference to the CVRWQCB’s Resolution No. R5-2008-0182 cannot cure the MND’s utter failure to disclose, analyze, and mitigate these impacts.

c. DOGGR Failed to Consider the Effects of Water Withdrawals

The MND states that the drilling and site construction stages for each well will require about 147,000 gallons of water.⁶² However, the MND does not indicate how much water other stages of the Project will consume, even though other stages of the Project could consume large amounts of water; for instance, if steam injection is employed to enhance production, the Project will need much more water to make the steam. In addition, while the MND states that water would be taken from the Racetrack Water Plant, which has existing water entitlements, the MND fails to detail where the water plant would withdraw the water from and what the effects of such withdrawals would be.⁶³ Simply noting that the plant has existing water entitlements is not an analysis of environmental effects. Thus, DOGGR’s failure to consider these issues sufficient violates CEQA.

IV. There is Substantial Evidence that the Project Could Generate a Significant Amount of Greenhouse Gases

Oil and gas operations are a major cause of climate change. Emissions result from oil and gas exploration, development, and production operations and the combustion of oil or gas for energy. Of great concern are methane emissions. Natural gas emissions are generally about 84

⁵⁹ California Central Valley Regional Water Quality Control Board, Resolution No. R5-2008-0182, Approving Waiver of Reports of Waste Discharge and Waste Discharge Requirements for Specific Types of Discharge within the Central Valley Region at 4-5 (2008) (“CVRWQCB Resolution”).

⁶⁰ CVRWQCB Resolution at 2.

⁶¹ CVRWQCB Resolution at 9.

⁶² MND at 68.

⁶³ *Id.*

percent methane.⁶⁴ Methane is a potent greenhouse gas that contributes substantially to global climate change. Its global warming potential is approximately 33 times that of carbon dioxide over a 100 year time frame and 105 times that of carbon dioxide over a 20 year time frame.⁶⁵

Oil and gas operations release large amounts of methane.⁶⁶ While the exact amount is not clear, EPA has estimated that “oil and gas systems are the largest human-made source of methane emissions and account for 37 percent of methane emissions in the United States or 3.8 percent of the total greenhouse gas emissions in the United States.”⁶⁷ In some fields, methane emissions rates are startlingly high. One recent of a field in Uintah County, Utah, found huge amounts of produced natural gas – perhaps as much as 11.7 percent – leaking into the atmosphere.⁶⁸ Another study found methane emissions in an area of northeastern Colorado “corresponding to between 2.3% and 7.7% of the annual production being lost to the atmosphere through venting”⁶⁹ Moreover, a study of methane emissions in Los Angeles County found a striking 17 percent of total produced methane for the year had been leaked to the atmosphere.⁷⁰ For the oil industry, emissions result “primarily from field production operations . . . , oil storage tanks, and production-related equipment”⁷¹ Emissions are released as planned, during normal operations and unexpectedly due to leaks and system upsets.⁷² Significant sources of emissions include well venting and flaring.⁷³

Other pollutants that will be emitted by the Project also warm the climate. In particular, oil and gas operations result in the emission of large amounts of nitrogen oxides (“NO_x”) and volatile organic compounds (“VOCs”). Both of these pollutants are precursors of tropospheric ozone,⁷⁴ which is an important contributor to climate change.⁷⁵ Further, oil operations result in significant carbon dioxide emissions from the combustion of fossil fuels through the operation of engines or through flaring.⁷⁶

⁶⁴ Brown, Heather, Memorandum to Bruce Moore, USEPA/OAQPS/SPPD re Composition of Natural Gas for Use in the Oil and Natural Gas Sector Rulemaking at 3 (Jul. 28, 2011); Power, Thomas, *The Local Impacts of Natural Gas Development in Valle Vidal, New Mexico*, University of Montana (2005).

⁶⁵ Howarth 2011; Shindell, Drew, *Improved Attribution of Climate Forcing to Emissions*, 326 *Science* 716 (2009) (“Shindell 2009”).

⁶⁶ Natural Resources Defense Council, *Leaking Profits* (2012) (“NRDC, *Leaking Profits*”).

⁶⁷ U.S. Environmental Protection Agency, *Natural Gas STAR Program, Basic Information, Major Methane Emission Sources and Opportunities to Reduce Methane Emissions* (2012) (“USEPA, *Basic Information*”); *see also* Petron, Gabrielle, et al., *Hydrocarbon emissions characterization in the Colorado Front Range: A pilot study*, 117 *Journal of Geophysical Research* (2012).

⁶⁸ *See, e.g.*, Karion, Anna *et al.*, *Methane emissions estimate from airborne measurements over a western United States natural gas field*, doi: 10.1002/grl.50811 (2013).

⁶⁹ Petron 2012.

⁷⁰ Peischl, J. *et al.*, *Quantifying sources of methane using light alkanes in the Los Angeles basin, California* (2013).

⁷¹ Megan Williams & Cindy Copeland, *Earthjustice, Methane Controls for the Oil and Gas Production Sector* (2010) at 6 (“Williams & Copeland”).

⁷² *Id.*

⁷³ USEPA, *Basic Information*.

⁷⁴ Earthworks, *Oil and Gas Air Pollution Factsheet* (2006), available at http://www.earthworksaction.org/library/detail/oil_and_gas_pollution_fact_sheet/.

⁷⁵ Shindell 2009

⁷⁶ Zahniser, Angela, *Characterization of Greenhouse Gas Emissions Involved in Oil and Gas Exploration and Production Operations* (2007).

See Response to
CBD Comment IVb

Also, the refining and burning of any oil that the Project produces will generate greenhouse gas emissions. For instance, the MND estimates that each well will produce 10 barrels of oil per day, or 3,650 barrels per year.⁷⁷ According to the U.S. Environmental Protection Agency, combusting a barrel of oil results in the emission of 0.43 metric tons of carbon dioxide equivalent. Thus, the combustion of the Project's produced oil from all six wells could result in the emission of about 9,417 metric tons of carbon dioxide equivalent per year, and the refining of the oil would generate even more greenhouse gas pollution.

See Response to
CBD Comment IVc

DOGGR's brief review of the impacts of the Project's greenhouse gas emissions falls far short of the requirements of CEQA. The agency appears to restrict its analysis to combustion emissions and ignores fugitive emissions, such as natural gas leakage.⁷⁸ However, as described above, it is undeniable that oil and gas operations result in substantial fugitive emissions of methane and other greenhouse gases. Further, the MND ignores the Project's overall potential impact on the climate by refusing to consider the refining or the combustion of the oil the Project might produce.⁷⁹ Additionally, DOGGR appears to argue that because the Project will comply with California's cap and trade program, the Project's greenhouse gas emissions cannot be significant.⁸⁰ DOGGR's reliance on the California cap and trade program violates CEQA. Compliance with a regulation or rule does not automatically mean an impact is less than significant. *Californians for Alternatives to Toxics v. Department of Food & Agriculture*, 136 Cal. App. 4th 1 (Cal. App. 1st Dist. 2005). CEQA requires that DOGGR actually consider the Project's emissions and their effects on the environment. DOGGR's reliance on the cap and trade program is also unlawful because it is unclear that all of the emissions from the Project will be subject to the cap and trade program.

See Response to
CBD Comment IVd

This analysis is clearly insufficient. DOGGR must consider all foreseeable greenhouse gas emissions that could result from the Project. CEQA requires that DOGGR consider all potential greenhouse gas emissions, including methane emissions due to leakage or venting, emission due to electricity used by the Project, emissions from the refining and combustion of the oil potentially produced, and emissions from flaring.

See Response to
CBD Comment IVe

Taken as a whole, the Project's emissions are clearly significant and require the preparation of an EIR. Further, one of the fundamental elements of CEQA review is a consideration of alternatives, including a no action alternative, and mitigation measures. Pub. Res. Code § 21002 ("The Legislature finds and declares that it is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects . . ."). Especially where, as is the case here, the Project conflicts with the state's greenhouse gas reduction goals, DOGGR should consider alternatives to additional oil development, and if it nevertheless decides to move forward with the Project, must consider additional mitigation measures to limit greenhouse gas emissions.

⁷⁷ MND at 63.

⁷⁸ MND at 58-60.

⁷⁹ *Id.*

⁸⁰ *Id.* at 60.

V. DOGGR Fails to Consider Significant Impacts to Air Quality

Oil and gas operations emit numerous air pollutants, including VOCs, NO_x, particulate matter, hydrogen sulfide, and methane. This is of concern here because the Project site is within an area that is listed as non-attainment for particulate matter and ozone standards.⁸¹ However, while DOGGR provides some mitigation measures for particulate matter emissions, the MND fails to analyze sufficiently potential impacts to air quality. In particular, DOGGR fails to consider potential impacts to ozone levels, and completely ignores potential VOC emissions.

Oil and gas operations emit large amounts of VOCs, NO_x, and non-methane hydrocarbons (“NMHCs”). Both VOCs and NO_x are ozone precursors, and thus, due to emissions of these pollutants, many regions around the country with substantial oil and gas operations are now suffering from extreme ozone levels.⁸² NMHCs are also known ozone precursors.⁸³ The primary sources of NO_x are engines used in drilling and flaring.⁸⁴

VOC emissions, which make up about 3.5 percent of the gases emitted by oil or gas operations,⁸⁵ are particularly hazardous.⁸⁶ VOCs emissions include the BTEX compounds – benzene, toluene, ethyl benzene, and xylene – which are Hazardous Air Pollutants.⁸⁷ Health effects associated with benzene include “acute and chronic nonlymphocytic leukemia, acute myeloid leukemia, chronic lymphocytic leukemia, anemia, and other blood disorders and immunological effects.”⁸⁸ Further, maternal exposure to benzene has been associated with an increase in birth prevalence of neural tube defects; and xylene exposure can cause eye, nose, and throat irritation, difficulty in breathing, impaired lung function, and nervous system impairment.⁸⁹ In fact, many of the volatile chemicals associated with drilling and oil and gas waste are associated with serious effects to the respiratory, nervous, or circulatory systems.⁹⁰ Also, a recent study sampling air quality near Colorado gas wells found additional cause for concern regarding VOC emissions: among other things, it found methylene chloride in high concentrations.⁹¹ The study states that for the wells tested “[m]ethylene chloride, a toxic solvent not reported in products used in drilling or hydraulic fracturing, was detected 73% of the time;

⁸¹ MND at 20.

⁸² Armendariz, Al, Emissions for Natural Gas Production in the Barnett Shale Area and Opportunities for Cost-Effective Improvements (2009) (“Armendariz”) at 1, 3, 25-26; Wendy Koch, *Wyoming’s Smog Exceeds Los Angeles’ Due to Gas Drilling*, USA Today (May 9, 2011); Craft, Elena, Environmental Defense Fund, *Do Shale Gas Activities Play a Role in Rising Ozone Levels?* (2012); Streater, Scott, *Air Quality Concerns May Dictate Uintah Basin’s Natural Gas Drilling Future*, N.Y. Times, (Oct. 1, 2010); Colorado Dept. of Public Health and Environment, Conservation Commission, *Colorado Weekly and Monthly Oil and Gas Statistics* (July 6, 2012) at 12; Four Corners Air Quality Group, *Four Corners Air Quality Task Force Report – Report of Mitigation Options* (2007) at vii.

⁸³ Colborn, Theo, *et al.*, *An Exploratory Study of Air Quality near Natural Gas Operations* (2012) (“Colborn 2012”).

⁸⁴ *See, e.g.*, U.S. Environmental Protection Agency, *Oil and Natural Gas Sector: Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution, Background Technical Support Document for the Proposed Rules*, 76 Fed Reg 52738 (2011); Armendariz at 24.

⁸⁵ Brown Memo at 3.

⁸⁶ McKenzie 2012; Food & Water Watch, *The Case for a Ban on Fracking* (2012).

⁸⁷ 42 U.S.C. § 7412(b).

⁸⁸ McKenzie 2012 at 2.

⁸⁹ *Id.*

⁹⁰ Colborn 2011.

⁹¹ Colborn 2012.

several times in high concentrations,” including one reading of 1730 ppbv.⁹² While the source of the methylene chloride was not entirely clear, the study reported that it is stored on well pads for cleaning purposes.

See Response to
CBD Comment Vd

In addition, the study of Colorado gas wells also found high levels of multiple NMHCs, which can be associated with multiple health effects, including potentially effects to the endocrine system at very low concentrations.⁹³ NMHCs generally make up almost 18 percent of produced natural gas, and operations ultimately emit large amounts of these pollutants. Moreover, like VOCs and NO_x, NMHCs are ozone precursors.

See Response to
CBD Comment Ve

Particulate matter is another pollutant the oil and gas industry emits in significant quantities. The heavy equipment regularly used burns diesel fuel, generating fine particulate matter.⁹⁴ The particulate matter emitted by diesel engines is a particularly harmful.⁹⁵ Vehicles also kick up fugitive dust, which is particulate matter, by traveling on unpaved roads.⁹⁶ Further, both NO_x and VOCs, which are heavily emitted by the oil and gas industry, are particulate matter precursors.⁹⁷ Some of the effects associated with particulate matter exposure are “premature mortality, increased hospital admissions and emergency department visits, and development of chronic respiratory disease.”⁹⁸

See Response to
CBD Comment Vf

Oil and gas operations can also emit hydrogen sulfide. The hydrogen sulfide is contained in the natural gas and makes that gas “sour.”⁹⁹ Hydrogen sulfide may be emitted during all stages of operation, including exploration, extraction, treatment and storage, transportation, and refining. EPA has identified large parts of California as areas where natural gas tends to contain hydrogen sulfide.¹⁰⁰ Long-term exposure to hydrogen sulfide is linked to respiratory infections, eye, nose, and throat irritation, breathlessness, nausea, dizziness, confusion, and headaches.¹⁰¹

Further, oil and gas operations emit significant amounts of methane. In addition to its role as a greenhouse gas, methane contributes to increased concentrations of ground-level ozone, the primary component of smog, because it is an ozone precursor.¹⁰² This effect can be substantial.

⁹² *Id.*

⁹³ Colborn 2012.

⁹⁴ Earthworks, Sources of Oil and Gas Pollution (2011).

http://www.earthworksaction.org/issues/detail/sources_of_oil_and_gas_air_pollution (last visited Feb 19, 2013).

⁹⁵ Bay Area Air Quality Management District, Particulate Matter Overview, Particulate Matter and Human Health (2012).

⁹⁶ U.S. Environmental Protection Agency, Regulatory Impact Analysis for the Proposed Revisions to the National Ambient Air Quality Standards for Particulate Matter (June 2012).

http://www.epa.gov/ttnecas1/regdata/RIAs/PMRIACombinedFile_Bookmarked.pdf at 2-2, (“EPA RIA”)

⁹⁷ EPA RIA at 2-2.

⁹⁸ U.S. Environmental Protection Agency, National Ambient Air Quality Standards for Particulate Matter Proposed Rule, 77 Fed. Reg. 38,890, 38,893 (June 29, 2012).

⁹⁹ Sierra Club Comments.

¹⁰⁰ U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Report to Congress on Hydrogen Sulfide Air Emissions Associated with the Extraction of Oil and Natural Gas (EPA - 453/R - 93 - 045), at III-68 (Oct. 1993) (“USEPA 1993”).

¹⁰¹ *Id.* at i.

¹⁰² U.S. Environmental Protection Agency, Oil and Natural Gas Sector: NSPS and NESHAP for Air Pollutants Reviews, 76 Fed. Reg. 52738 (2011). (“76 Fed Reg 52738”).

One paper found that “[r]educing anthropogenic CH₄ emissions by 50% nearly halves the incidence of U.S. high-O₃ events”¹⁰³

DOGGR fails to consider most of these issues. The agency refuses to consider the actual *impacts* of the Project’s potential emissions on air quality and provides no analysis of potential impacts on ozone concentrations. Instead, DOGGR estimates how much pollution the operations will emit;¹⁰⁴ however, even these calculations are arbitrary and inadequate because the agency fails to consider all sources of emissions and relies on assumptions that understate the impacts to air quality. For instance, DOGGR essentially ignores potential emissions of toxic air pollutants.¹⁰⁵ The agency relies on out of date information to conclude that fugitive emissions will be minimal,¹⁰⁶ but as described above, fugitive emissions from oil operations, including operations in California, are substantial. By ignoring the full potential for the Project to result in fugitive emissions, DOGGR, among other things, completely ignores VOC emissions from the considerable amount of natural gas that the Project could emit. Furthermore, the analysis ignores potential emissions of methylene chloride, even though as noted above high concentrations of the pollutant have been found in air samples near wells. If DOGGR does not prohibit the use of methylene chloride as part of the Project, it must analyze the potential impacts of methylene chloride emissions. It should perform a similar analysis for other chemicals that may be used at the Project site for cleaning purposes. Also, DOGGR states that there will be no on-site sources of toxic air contaminants, but this is totally inconsistent with the fact that the operation will use pollution generating equipment at the drill site, including diesel drill rigs.¹⁰⁷ Indeed, in past analyses, DOGGR has stated that diesel particulate matter from on-site equipment is a source of air toxics.¹⁰⁸ And even if the on-site equipment did not emit toxics, DOGGR must still consider the effects of off-site air toxics emissions, which it acknowledges will result from the Project.¹⁰⁹ Lastly, DOGGR’s analysis relies on relatively limited usage of equipment, even though the permits will not restrict use to these levels.¹¹⁰ This analysis does not satisfy CEQA’s requirements. DOGGR must, at minimum, consider all sources of emissions and the Project’s potential impact on air quality.¹¹¹

¹⁰³ Fiore, Arlene et al., Linking ozone pollution and climate change: The case for controlling methane, 29 *Geophys. Res Letters* 19 (2002); *see also* Martin, Randal et al., Final Report: Uinta Basin Winter Ozone and Air Quality Study Dec 2010 - March 2011 (2011) at 7.

¹⁰⁴ MND at 23-28.

¹⁰⁵ MND at 29.

¹⁰⁶ *Id.*

¹⁰⁷ *Id.* at 22.

¹⁰⁸ *See, e.g.*, California Division of Oil, Gas, and Geothermal Resources, Initial Study/Mitigated Negative Declaration for the Rancho Grande Project at 32 (May 28, 2013)

¹⁰⁹ MND at 29.

¹¹⁰ *Compare* MND at 23-28 *with* Silva, Lisa & Rose Waldman, Oil & Gas - Related Vehicle Traffic and Emissions Inventories at 9 (Oct. 31, 2011), available at <http://www.epa.gov/region8/air/rmcdc/pdf/OilandGasVehicleEmissionInventories.pdf>.

¹¹¹ Additionally, DOGGR’s analysis of air pollution emissions from the Project appears to be inconsistent with its analysis of air pollution emissions for the Patricia McKellar et al No. 2 Exploratory Oil and Gas Well Project. For example, for the McKellar project, DOGGR estimates the drilling phase for a single well will result in 5.5 metric tons per year of NO_x emissions, but for the McDonald Anticline Oil Project it estimates only 0.4 metric tons per year of NO_x emissions. *Compare* MND at 31 *with* California Division of Oil, Gas, and Geothermal Resources, Patricia McKellar et al No. 2 Exploratory Oil and Gas Well Project Initial Study/Mitigated Negative Declaration at 25 (Feb. 20, 2013). At minimum, DOGGR must explain this substantial difference in emissions.

See Response to
CBD Comment Vh

Further, even though the area is not in compliance with state ozone standards, DOGGR never considers ways to mitigate impacts on ozone concentrations. There are numerous ways that oil exploration operations can mitigate emissions of ozone precursors, such as by limiting VOC and methane emissions.¹¹² Mitigation measures for VOCs and methane include green completions, TEG dehydrator emission controls, dry seal systems, no-bleed pneumatic controls, tank vapor recovery units, and leak monitoring and repair.¹¹³ DOGGR must consider such mitigation measures.

See Response to
CBD Comment Vi

Also, the mitigation measures DOGGR provides for particulate matter are not fully enforceable through permit conditions and improperly defer mitigation to a later time. CEQA Guidelines § 15126.4(a)(1), (a)(2). For instance, the MND states that dust from various sources must be “effectively stabilized,” but there appear to be no permit provisions establishing what this means or who will judge and enforce compliance.¹¹⁴

See Response to
CBD Comment Vj

In addition, although the MND states that fracking would not be used in the Project, nothing in the MND indicates the fracking technology would not eventually be deployed if the exploratory wells indicate the resource is viable. Failing any express prohibition, it is likely fracking would in fact be utilized, so air pollution from this process and the chemicals it involves must be disclosed and analyzed. Air pollution from fracking is highly hazardous.¹¹⁵ The South Coast Air Quality Management District (“SCAQMD”) has identified several areas of dangerous and unregulated air emissions from fracking: the use of the silica as a proppant, which causes the deadly disease silicosis, and the storage of fracking fluid once it comes back to the surface.¹¹⁶ Preparation of the fluids used for well completion often involves onsite mixing of gravel or proppants with fluid, a process which potentially results in major amounts of particulate matter emissions.¹¹⁷ These proppants often include silica sand, which increases the risk of lung disease and silicosis when inhaled.¹¹⁸ Also, as flowback returns to the surface and is deposited in pits or tanks that are open to the atmosphere, there is the potential for organic compounds and toxic air pollutants to be emitted, which are harmful to human health as described above.¹¹⁹ Moreover, the SCAQMD has released data from enhanced recovery operations in the Los Angeles Basin that confirms that such operations involve highly hazardous materials that become airborne, including, but not limited to, crystalline silica, methanol, 2-butoxy ethanol, and ethyl glycol.¹²⁰ These and all other air quality impacts must be addressed. Because of their significance, and EIR is the proper tool for this analysis.

¹¹² See Williams & Copeland; NRDC, Leaking Profits.

¹¹³ Leaking Profits at 5-7.

¹¹⁴ MND at 30.

¹¹⁵ Colborn 2011.

¹¹⁶ South Coast Air Quality Management District, Revised Draft Staff Report PR1148-2 (2013) at 15.

¹¹⁷ *Id.*

¹¹⁸ South Coast Air Quality Management District, Submission to Joint Senate Hearing (2013) at 3.

¹¹⁹ SCAQMD Revised Draft Staff Report PR1148-2 at 15.

¹²⁰ Dirty Dozen.

VI. DOGGR Fails to Consider Significant Impacts to Threatened and Endangered Species

The MND does not provide a sufficient analysis of potential impacts to threatened and endangered species. The failure to include an analysis of impacts violates CEQA.

The MND totally ignores the Project's potential impacts on the California condor, even though the species has been present near the Project site.¹²¹ Because it is clear that the Project could result in significant impacts to the California condor, DOGGR must prepare an EIR. Today, there are only about 430 California condors alive, either in captivity or in the wild.¹²² However, due to the persistence of human-induced threats, the condor's increased population is almost entirely due to intensive conservation efforts, and scientists do not consider the species to be self-sustaining.¹²³ Threats to the California condor's survival can be generally placed into two categories: activities causing habitat destruction or degradation, and activities that can directly harm or kill condors. Oil exploration results in both categories of harm, and can put the future success of condor conservation efforts in jeopardy.¹²⁴

Oil and gas activities destroy or degrade condor habitat in numerous ways. Not only will the actual exploration or production facilities eliminate habitat acreage, but so will road and powerline construction. The existence of such infrastructure will cause problems by eliminating food sources.¹²⁵ This habitat loss will also fragment the remaining habitat, which is a significant concern for California condors because of the species's limited genetic variability in the remaining population.¹²⁶ In addition to infrastructure destroying habitat, the activity associated with oil and gas extraction can discourage condor use of habitat that may otherwise be suitable for nesting, perching, roosting, or foraging.¹²⁷ For example, project-related noise can cause adult birds to repeatedly flush from, or eventually abandon, active nests, or prevent them from choosing otherwise suitable habitat as a nest site.¹²⁸

In addition to destroying habitat, oil operations can directly harm or kill condors. Condors have been documented landing on oil pads and other production equipment, presenting

¹²¹ Center for Biological Diversity, Exhibit A – Map of Naftex Project Location with Condor GPS Locations and San Joaquin Kit Fox Habitat Model (2013); Center for Biological Diversity, Exhibit B – Map of Naftex Project Location with California Natural Diversity Database Observations (2013)

¹²² U.S. Fish and Wildlife Service, California Condor Recovery Program Overview Page (May 31, 2013).

¹²³ Meretsky, Vicky J. et al., Demography of the California Condor: Implication for Reestablishment, *Conservation Biology* 14(4): 957-967 (2000).

¹²⁴ California Department of Justice, Comments on Oil and Gas Leasing Proposal for the Los Padres National Forest, (April 19, 2002).

¹²⁵ U.S. General Accounting Office, National Wildlife Refuges: Opportunities to Improve the Management and Oversight of Oil and Gas Activities on Federal Lands (GAO-03-517) at 22 (2003).

¹²⁶ Cohn, J. P., The Flight of the California Condor, *BioScience*. 43 (4): 206-209 (1993).

¹²⁷ U.S. Fish and Wildlife Service & U.S. Department of the Interior, Biological Opinion on the Proposal to Lease Oil and Gas Resources within the Boundaries of the Los Padres National Forest, California (February 23, 2005).

¹²⁸ Mee, Allan, Comments from Dr. Allan Mee on Environmental Assessment for two APDs near Sespe Condor Sanctuary and Hopper Mountain National Wildlife Refuge (June 5, 2007) (“Mee Two APDs”); *see also* Mee Conservation Problems at 269 (“one pair [of condors] that nested within 1 km of an active oil pad in 2004 may have been directly disturbed at the nest by extremely loud and constant noise from drilling over a period of 1-2 weeks”).

a threat to their health and safety and reducing their fear of humans.¹²⁹ Once near oil activities, there are numerous ways a condor can be harmed. One serious risk is that of a bird becoming oiled, which can result in death.¹³⁰ Further, ingesting toxic fluid mistaken for water from oil operations can cause great harm to condors.¹³¹ An additional major threat from oil operations is the creation of microtrash, meaning small pieces of trash that condors will consume or feed to their young. This practice can result in the death of condor chicks.¹³² DOGGR never analyzed potential impacts to the California condor, and because the potential impacts to the condor are significant, it must prepare an EIR.

See Response to
CBD Comment VIc

The Project could have a significant impact on the kit fox. Despite years of conservation efforts, kit fox populations and habitat continue to decline.¹³³ The loss of kit fox habitat due to oil and gas development remains a threat to the species.¹³⁴ U.S. Fish and Wildlife Service's recent 5-year review highlighted this, stating that the most significant effect of oil-field development appears to be lowered carrying capacity for populations of both kit fox and their prey species due to loss or fragmentation of habitat.¹³⁵ Further, records show that kit foxes have lived or are living near the Project site.¹³⁶ However, DOGGR provides only an insufficient analysis of impacts. DOGGR should have discussed issues such as the potential for vehicle strikes, exposure to toxic substances, and the elimination and fragmentation of habitat. Moreover, because the potential impacts to the kit fox are significant, DOGGR must prepare an EIR.

See Response to
CBD Comment VIc

The Project could also result in significant impacts to the blunt-nosed leopard lizard, which could be present on the Project site.¹³⁷ This endangered species has been under state and federal endangered species act protections for over 40 years; it is a fully protected species under California law and cannot be taken. U.S. Fish and Wildlife Service's recent five-year review for the species recognizes the need for affirmative steps to be taken for the recovery of the blunt-nosed leopard lizard.¹³⁸ Oil and gas activities threaten the recovery of the species, and affirmative steps must be taken to prevent these activities from causing further harm. As FWS has noted: "Construction of facilities related to oil and natural gas production, such as well pads, wells, storage tanks, sumps, pipelines, and their associated service roads degrade habitat and cause direct mortality to leopard lizards, as do leakage of oil from pumps and transport pipes and storage facilities . . . [d]umping of waste oil and highly saline wastewater into natural drainage

¹²⁹ Meretsky 1992.

¹³⁰ Los Padres Forest Watch, Comments on Environmental Assessment for Two APDs Near Sespe Condor Sanctuary and Hopper Mountain National Wildlife Refuge at 5 (2007)

¹³¹ Kirkpatrick, Lisa, Letter from Lisa Kirkpatrick, Conservation Services Division Dept of Fish and Game, to New Mexico Oil and Conservation Division, Environmental Bureau re OCD Rule "Pits and Below-Grade Tanks" NMAC 19.15.2.40; NMGF Project No. 11251 (Feb 2, 2007).

¹³² *Id.*

¹³³ McDonald-Madden, Eve, et al., Subpopulation triage: How to allocate conservation effort among populations. *Conservation Biology* 22(3): 656-665 (2008).

¹³⁴ U.S. Fish and Wildlife Service, Recovery Plan for the Upland Species of the San Joaquin Valley, California.130 (1998) ("USFWS Recovery Plan").

¹³⁵ U.S. Fish and Wildlife Service, San Joaquin Kit Fox – 5 year review (2010).

¹³⁶ MND at 32-33.

¹³⁷ MND at 39.

¹³⁸ U. S. Fish and Wildlife Service, Blunt-nosed leopard lizard – 5 year review (2010), available at http://www.fws.gov/ecos/ajax/docs/five_year_review/doc3209.pdf

systems also degrades habitat and causes direct mortality.”¹³⁹ DOGGR has violated CEQA by failing to analyze such potential impacts to the blunt-nosed leopard lizard and by failing to prepare an EIR analyzing such impacts.

See Response to
CBD Comment VIe

The Project could also have significant effects on the Tipton kangaroo rat. The species’s population densities are low and are known to fluctuate greatly.¹⁴⁰ Its range has been reduced to scattered, isolated areas in Kings, Tulare, and Kern counties that are often separated by roads or canals that prevent¹⁴¹ There is very little habitat remaining for the species, and re-introduction is becoming more and more difficult as suitable habitat is lost by being converted to other uses.¹⁴² The MND states that surveys observed potential burrows for the species and found that Project site contains “appropriate vegetative communities.”¹⁴³ Thus, the planned conversion of 4.3 acres of potential habitat to roads and well sites has the potential to destroy more of the Tipton kangaroo rat’s habitat.¹⁴⁴ Considering how little habitat remains, this is undoubtedly a significant impact. Further, oil and gas operations could affect the species in numerous other ways, including through vehicle strike, spills, or disturbances. The MND fails to acknowledge or analyze these potential impacts, and violates CEQA as a result.

See Response to
CBD Comment VIg

Finally, DOGGR has failed to analyze the potentially significant impacts the Project could have on plants, including the round-leave filaree, California jewel flower, Vasek’s clarkia, striped adobe-lily, pale-yellow Layia, Comanche Point layia, San Joaquin woollythreads, Piute Mountains navaretia, Bakersfield cactus, and San Joaquin adobe sunburst.

See Response to
CBD Comment VIg

Additionally, DOGGR’s mitigation measures are not fully enforceable through permit conditions and improperly defer mitigation to a later time. CEQA Guidelines § 15126.4(a)(1), (a)(2). For instance, the mitigation measures do not designate an individual as responsible for enforcement of the mitigation measures.

See Response to
CBD Comment VII

VII. DOGGR Fails to Consider Significant Impacts to Seismicity

Scientists have long known that oil and gas activities are capable of triggering earthquakes, with records of the connection going back to the 1920s.¹⁴⁵ In California, oil and gas extraction has in the past likely induced strong earthquakes, including two over 6.0 in magnitude.¹⁴⁶

Here, if approved, the Project could induce seismic events. In particular, the Project will generate wastewater that will be disposed of Nafex’s Racetrack 76-27, 77-27, or 86-27 wastewater injection wells,¹⁴⁷ which are close to the Project site.¹⁴⁸ Such wastewater injection is

¹³⁹ USFWS Recovery Plan.

¹⁴⁰ U.S. Fish and Wildlife Service, Tipton Kangaroo Rat 5-Year Review at 2-3, 30 (2010), available at https://ecos.fws.gov/docs/five_year_review/doc3228.pdf.

¹⁴¹ *Id.* at 2-3, 30.

¹⁴² *Id.* at 30.

¹⁴³ MND at 33.

¹⁴⁴ *See* MND at 2.

¹⁴⁵ National Research Council, Induced Seismicity Potential in Energy Technologies (2012) (“NRC 2012”) at 3.

¹⁴⁶ NRC 2012 at 28.

¹⁴⁷ MND at 56.

associated with earthquakes.¹⁴⁹ Recently, wastewater injection has increased around the country, and this increase has been accompanied by a startling rise in earthquake activity.¹⁵⁰ For instance, wastewater injection is likely to have caused seismic events in Ohio,¹⁵¹ Oklahoma,¹⁵² and Texas.¹⁵³ This raises serious concerns here because California is so seismically active and because the Project site and injection wells are within an “Earthquake Fault Zone.”¹⁵⁴ Indeed the injection wells are very close to a number of faults, including one that generated an earthquake in 1952. *See* Exhibits C and D.¹⁵⁵

The MND completely ignores this risk. Due to the potential for the Project to trigger earthquakes and the devastation that could result from an earthquake, DOGGR must analyze the potential for induced seismicity in an EIR.

Conclusion

For the reasons stated above, DOGGR should not issue the MND, but should deny the permit. If DOGGR insists upon moving forward with the permit, it must prepare an EIR. If you have any questions, please contact David Hobstetter, (415) 632-5321, dhobstetter@biologicaldiversity.org.

Respectfully submitted,

/s/ David R. Hobstetter
David R. Hobstetter
Staff Attorney
Center for Biological Diversity

¹⁴⁸ California Department of Conservation, Map 434 showing Oil Fields in Kern County: Edison (North Portions), Mountain View, Northeast Edison, available at <ftp://ftp.consrv.ca.gov/pub/oil/maps/dist4/434/Map434.pdf>.

¹⁴⁹ van der Elst, Nicholas J. *et al.*, Enhanced Remote Earthquake Triggering at Fluid-Injection Sites in the Midwestern United States, 341 SCIENCE 164 (2013).

¹⁵⁰ NRC 2012 at 3, 5; Ellsworth, William *et al.*, Abstract: Are Seismicity Rate Changes in the Mid-continent Natural or Man-made? Seismological Society of America (2012) (“Ellsworth”); Arthur, Daniel *et al.*, Hydraulic Fracturing Considerations for Natural Gas Wells of the Marcellus Shale (2008); Horwitt, Dusty & Alex Formuzis, Environmental Working Group, USGS: Recent Earthquakes “Almost Certainly Manmade” (April 2012) (“Horwitt & Formuzis”); *see also* Olson-Sawyer, Kai, Fracking Operations Can Cause Earthquakes? “Almost Certainly,” Says U.S. Geological Survey, EcoCentric (2012); Henry, Terrence, More on the Science Linking Fracking Disposal Wells to Earthquakes, State Impact (2012).

¹⁵¹ Ohio Department of Natural Resources, Executive Summary: Preliminary Report on the Northstar I Class II Injection Well and the Seismic Events in the Youngstown, Ohio, Area (2012) (“Ohio DNR Northstar”); Fountain, Henry, *Disposal Halted at Well After New Quake in Ohio*, New York Times (January 1, 2012).

¹⁵² Keranen 2013; 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) (“Holland”).

¹⁵³ Frohlich, Cliff, Two-year survey comparing earthquake activity and injection-well locations in the Barnett Shale, Texas, Proceedings of the National Academy of Sciences (2012).

¹⁵⁴ *See* Mulkern, Anne C., Calif. drilling will trigger temblors -- industry expert, E&E News (Dec. 10, 2012); MND at 52.

¹⁵⁵ California Department of Conservation, 2010 Fault Activity Map of California, Geologic Data Map No. 6 (2010) (Exhibit C), Center for Biological Diversity, Map of location of Naftex’s Racetrack 76-27, 77-27, or 86-27 wastewater injection wells with earthquake fault overlay (2013) (Exhibit D).

351 California St., Ste. 600
San Francisco, CA 94104

Encl:

List of References Cited

Exhibit A – Map of Naftex Project Location with Condor GPS Locations and San Joaquin Kit Fox Habitat Model.

Exhibit B – Map of Naftex Project Location with California Natural Diversity Database Observations

Exhibit C - 2010 Fault Activity Map of California, Geologic Data Map No. 6 (2010)

Exhibit D - Map of location of Naftex's Racetrack 76-27, 77-27, or 86-27 wastewater injection wells with earthquake fault overlay (2013)

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EXHIBIT A

Map of Naftex Project Location with Condor GPS Locations and San Joaquin Kit Fox Habitat Model

Legend

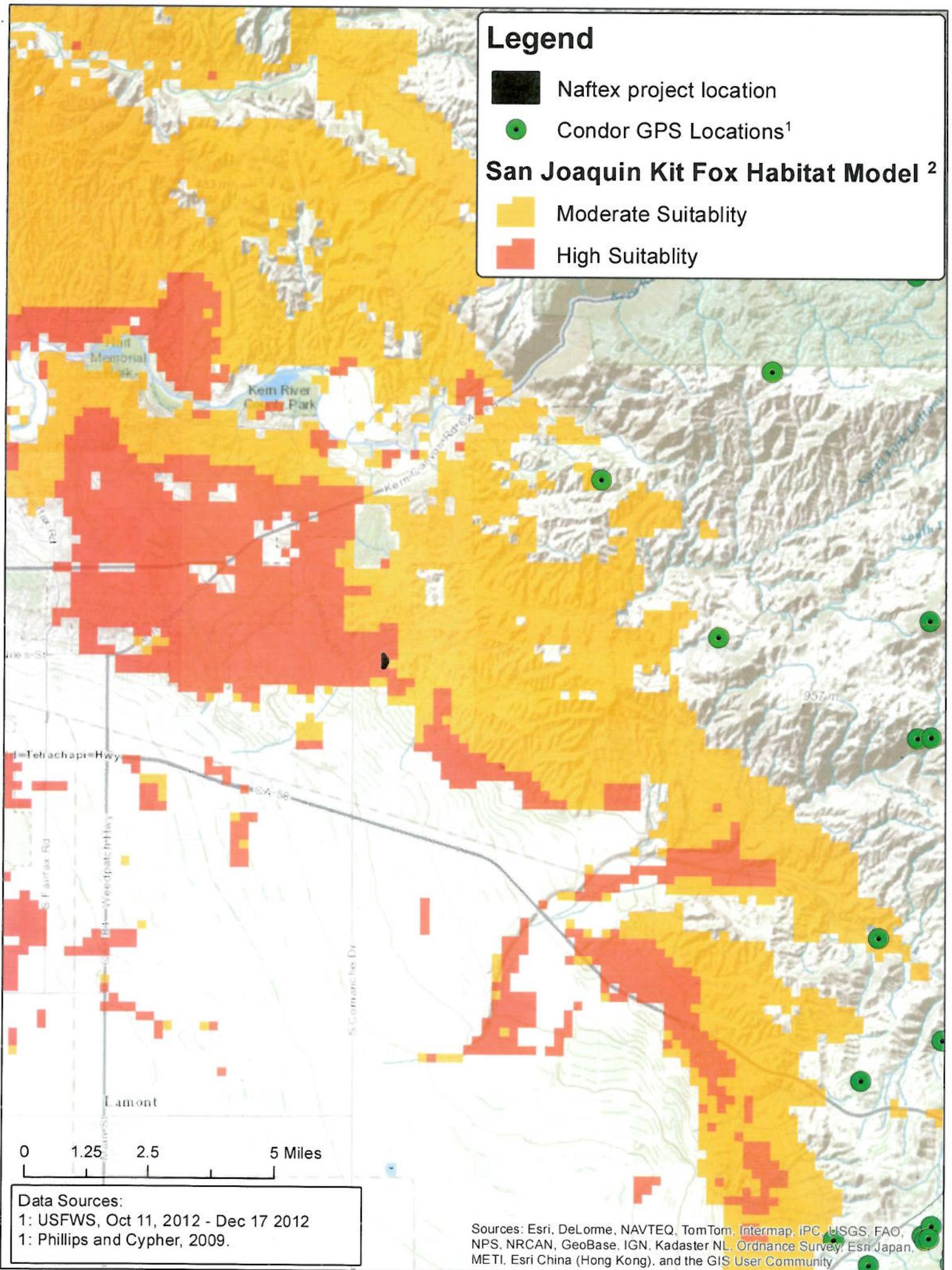
■ Naftex project location

● Condor GPS Locations¹

San Joaquin Kit Fox Habitat Model²

■ Moderate Suitability

■ High Suitability



Data Sources:

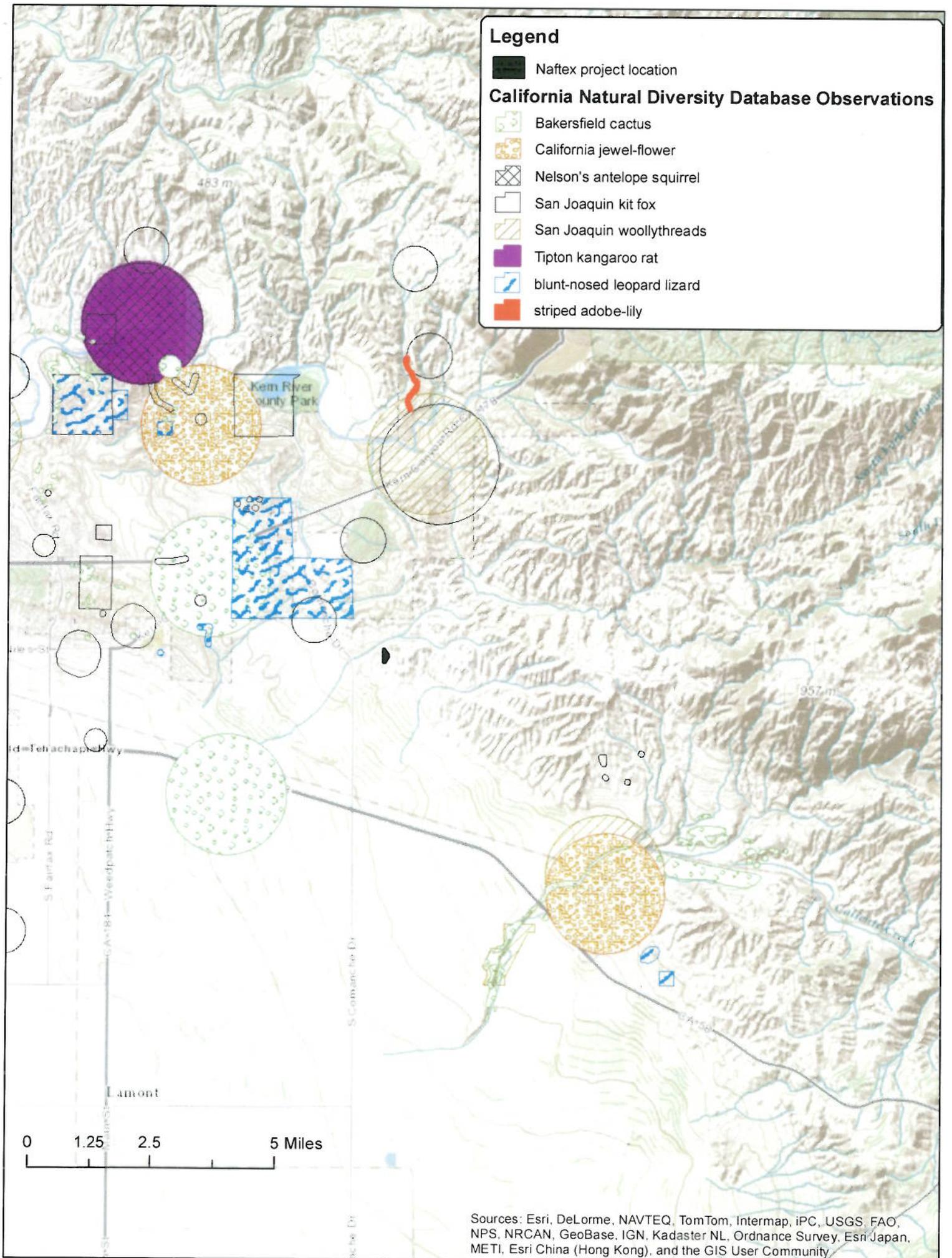
1: USFWS, Oct 11, 2012 - Dec 17 2012

1: Phillips and Cypher, 2009.

Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, iPC, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), and the GIS User Community

EXHIBIT B

Map of Naftex Project Location with California Natural Diversity Database Observations



Legend

- Naftex project location
- California Natural Diversity Database Observations**
- Bakersfield cactus
- California jewel-flower
- Nelson's antelope squirrel
- San Joaquin kit fox
- San Joaquin woollythreads
- Tipton kangaroo rat
- blunt-nosed leopard lizard
- striped adobe-lily

Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, iPC, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), and the GIS User Community

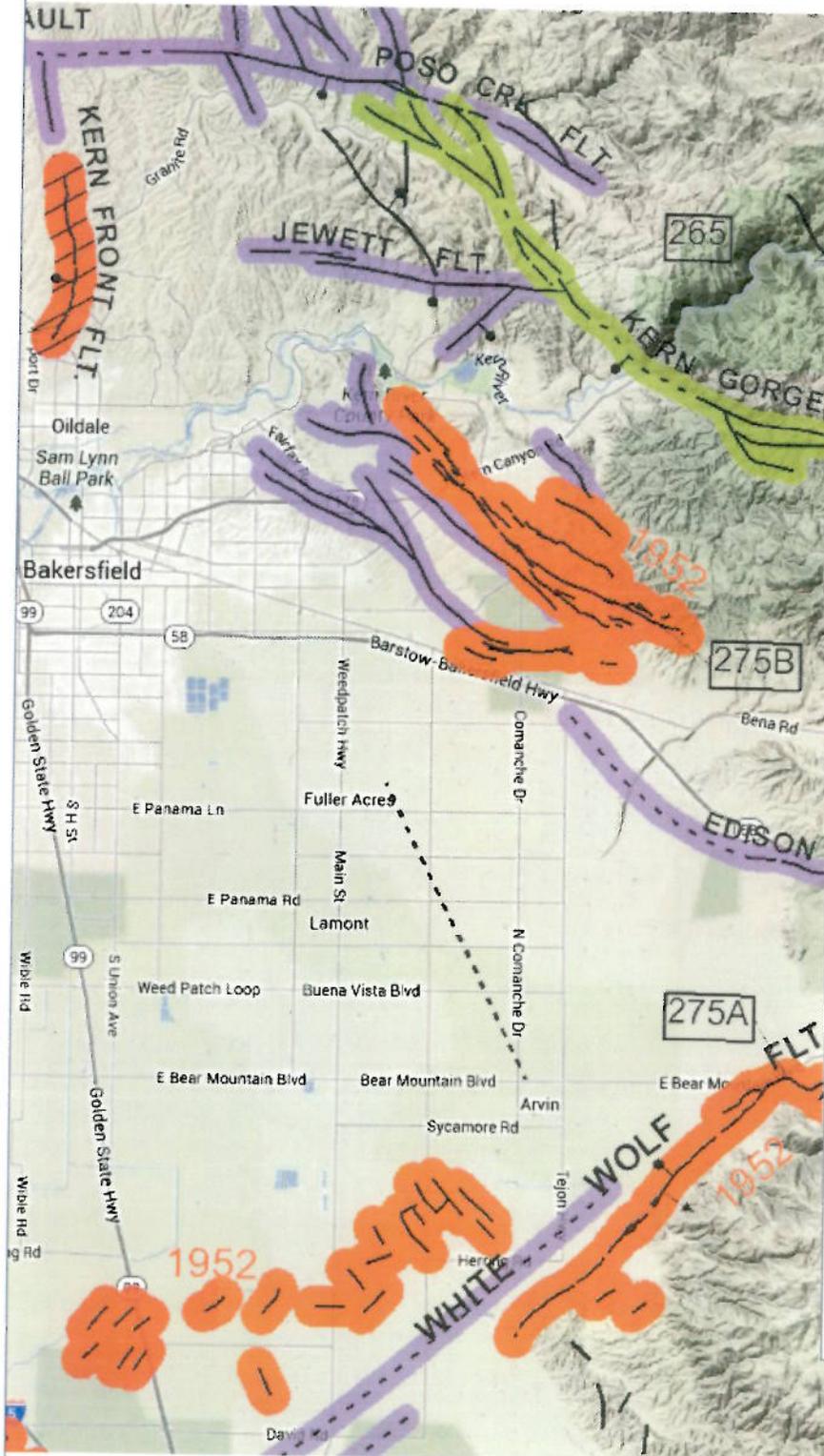
EXHIBIT C

California Department of Conservation
2010 Fault Activity Map of California, Geologic Data Map No. 6 (2010)

State of California Department of Conservation

2010 FAULT ACTIVITY MAP OF CALIFORNIA

Hide/Show Legend



2010 FAULT ACTIVITY MAP OF CALIFORNIA

California Geological Survey,
Geologic Data Map No. 6

Compilation and Interpretation by:
Charles W. Jennings and William A. Bryant

Graphics by: Milind Patel, Ellen Sander, Jim Thompson, Barbara Wanish and Milton Fonseca

Explanation

Fault traces on land are indicated by solid lines where well located, by dashed lines where approximately located or inferred, and by dotted lines where concealed by younger rocks or by lakes or bays. Fault traces are queried where continuation or existence is uncertain.

FAULT CLASSIFICATION COLOR CODE (Indicating Recency of Movement)

- Fault along which historic (last 200 years) displacement has occurred
- Holocene fault displacement (during past 11,700 years) without historic record
- Late Quaternary fault displacement (during past 700,000 years)
- Quaternary fault (age undifferentiated)
- Pre-Quaternary fault (older than 1.6 million years) or fault without recognized Quaternary displacement

ADDITIONAL FAULT SYMBOLS

- Bar and ball on downthrown side (relative or apparent)
- Arrows along fault indicate relative or apparent direction of lateral movement
- Arrow on fault indicates direction of dip
- Low angle fault (bars on upper plate)

Map data ©2013 Google

EXHIBIT D

Map of location of Naftex's Racetrack 76-27, 77-27, or 86-27 wastewater injection wells
with earthquake fault overlay

Approximate location of injection wells

- Injection wells
- Quaternary Faults



Data sources:
Quaternary Faults from USGS at
<http://earthquake.usgs.gov/hazards/qfaults/>

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OIL-CAS-GEOTH RES
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**Naftex Operating Company
Bloemer and Kirschenman Project
Response to the Center for Biological Diversity
Comment Letter dated September 11, 2013**

Response to Comment CBD II

No enhanced oil recovery techniques including hydraulic fracturing are proposed nor are reasonably foreseeable at this time. Accordingly, the Division did not consider impacts associated with enhanced oil recovery techniques. Enhanced oil recovery requires a separate authorization. The Division is not required to consider potential impacts of activities that are not included in the present project merely because they are included in other projects.

Response to Comment CBD IIIa

The Division has adequately addressed both hazardous and non-hazardous wastes that would be generated as a result of the proposed project.

As stated in the ISMND, Naftex has an existing Spill Contingency Plan which will be amended to include the proposed project site. The purpose of the plan is to ensure that adequate containment, response equipment and absorbents are readily available to control accidental spills, and that personnel are properly trained to control and clean up any spills.

As stated in the ISMND, Naftex anticipates 10 barrels of oil and 90 barrels of production water will be produced daily from each well. More importantly—and to the point of the present discussion, and as stated in the ISMND, all produced water in whatever amounts will be transported to Naftex's Section 26 Tank Farm and will be disposed of in the Naftex Racetrack 76-27, 77-27 or 86-27, Division permitted Class II disposal wells.

As stated in the ISMND, unless shallow ground water is encountered, a reserve pit may be excavated during site preparation for storage and handling of drilling mud and cuttings during the drilling process within the boundaries of a proposed project site. The use of reserve pits is regulated by the Central Valley Regional Water Quality Control Board (CVRWQCB) in accordance with section 20090(g) of Title 27, CCR, section 2205 et. seq. and CVRWQCB Waiver Resolution No. R5-2008-0182. The waiver expires 4 December 2013. Prior to drilling, Naftex will contact the CVRWQCB to inquire on the status of the waiver and any new and/or additional requirements.

The ISMND addressed potential hazardous wastes that could be generated as a result of the project. Hazardous wastes would be handled and stored according to applicable federal state and local regulations designed to protect people and the environment. Additionally hazardous wastes are to be disposed of at facilities permitted to dispose of such wastes.

With respect to concerns regarding well failure, the Division's well construction standards have the fundamental purpose to ensure zonal isolation. Zonal isolation means

that oil and gas coming up a well from the productive, underground geologic zone will not escape the well and migrate into other geologic zones, including zones that might contain fresh water. Zonal isolation also means that the fluids that are put down a well for any purpose will stay in that zone and not migrate to another zone. To achieve zonal isolation, Division regulations require that a cement barrier be placed between the well and surrounding geologic strata or stratum. The cement bonds to the surrounding rock and well casing and forms a barrier against fluid migration. Cement barriers must meet certain standards for strength and integrity. If these cement barriers do not meet the standards, the Division requires the oil or gas operator to remediate the cement barrier. Metal casings, which can be several layers depending on the depth of a well, also separate the fluids going up and down a well bore from the surrounding geology. If the integrity of a well is compromised by ground movement or other mechanisms, the well operator must remediate the well to ensure zonal isolation. Well casing standards are prescribed in CCR sections 1722.2 – 1722.4.

Response to Comment CBD IIIb

The base of fresh water within the project area ranges from 800 to 1050 feet. Total dissolved solids in the Santa Margarita formation, the intended zone of completion for the project wells, have been evaluated at 675 mg/L.

As stated in the ISMND, a reserve pit (sump) may be constructed to store and handle drilling mud and cuttings. If constructed, the reserve pit will be 75 feet long by 25 feet wide by six (6) feet deep. It will be constructed by mechanical compaction. Compaction of the surface, combined with the deposition of bentonite drilling mud during drilling operations, would give the pit a bentonite seal with a maximum permeability of approximately 10^{-6} cm/sec. The applicant acknowledges that CVRWQCB Waiver Resolution No. R5-2008-0182 expires December 4, 2013. Prior to drilling Naftex will contact the CVRWQCB to inquire on the status of the waiver and any new and/or additional requirements.

CBD takes issue with the ISMND statements that “The project will comply with all requirements established by the CVRWQCB” and “CVRWQCB Waiver Resolution No. R5-2008-0182 waives the requirement to file a Report of Waste Discharge and/or issue Waste Discharge Requirements for the temporary discharge of drilling mud to a sump (pit). Resolution No. R5-2008-0182.” CBD claims there is a “significant probability” that the earth drilled into will be contaminated because “the target is an oil bearing formation.” For CEQA purposes, the fact that drill cuttings may, under certain circumstances, contain contaminated soil, does not necessarily translate to a “significant probability” that this will be the case under the present circumstances. More importantly, the ISMND acknowledges that materials contained in the sump could be hazardous. However, the ISMND states that “If any waste tests positive as a hazardous waste it would be disposed of at the Clean Harbors Buttonwillow, LLC, located at 2500 West Lokern Road, Buttonwillow, CA, 93206. The Clean Harbors Buttonwillow, LLC is a licensed Class 1, 2, and 3 disposal site. This facility is permitted to receive up to 10,482 tons/day.

As stated in the ISMND, produced water will be transported by flowlines to Naftex's Section 26 Tank Farm and will be disposed in permitted Class II water disposal wells. Naftex is required to amend its existing Spill Contingency Plan to include the proposed project.

Response to Comment CBD IIIc

The ISMND addresses all water requirements associated with the project. No water will be required during the production phase. As stated in the ISMND "it is anticipated that approximately 3,500 barrels (147,000 gallons) of treated production water from the Naftex Racetrack Water Plant would be needed for the drilling and site construction operations of each well. All water required during implementation of drilling would be imported to the proposed project sites from Naftex's Racetrack Water Plant which has existing water entitlements." As water used for the proposed project is from existing entitlements, there is no need to analyze effects of water withdrawal. If water used was to be secured from a new entitlement, the analysis would be applicable. In addition see Response to Comment CBD II

Response to Comment CBD IVa

CBD's reference to emissions from "oil and gas operations" extends far beyond this project to include the oil exploration, refining, distribution and final usage of the finished products. The scope of this project is limited to drilling six (6) wells to assess if there are sufficient quantities of oil in order for these wells to become oil producing wells. If it is determined that there are sufficient reserves of oil, then the wells will go into sustained production.

Drilling fluids used during the drilling process exert a greater hydrostatic pressure than the reservoir pressure. As stated in the ISMND, sufficient weighted drilling fluid would be used to prevent any uncontrolled flow, including natural gas, from each well and additional quantities of drilling fluid would be available at each site (Title 14, CCR section 1722.6).

Once drilling is complete, a given well is fully evaluated to determine the amount of oil that is present and if there are sufficient quantities of oil to support a producing well. The project would not release "large amounts" of methane gas as stated in the comment.

The combustion of natural gas will release greenhouse gases and the amount of such gases (NOx and VOCs) has been quantified in the ISMND Section VII Greenhouse Gas Emissions. The analysis included in the ISMND includes emissions of methane and nitrous oxides and their contribution to the overall GHG emissions. The amount of methane and nitrous oxides associated with the combustion of gases was calculated at less than 1% of total GHG emissions. (Emission Factors from Appendix A, Subchapter 10 (Climate Change), Article 2, Sections 951000 to 95133, California Code of Regulations (CCR) Title 17).

Response to Comment CBD IVb

As previously addressed in response IVa, the proposed project is limited to drilling six wells that may be converted to production wells. The ultimate use of the potentially produced oil is beyond the scope of this analysis and would be, as recognized by the commenter, a highly speculative endeavor.

Response to Comment CBD IVc

Fugitive emissions would be negligible in comparison with combustion emissions. Fugitive emissions are primarily associated with the production phase from pumps, valves, connectors, etc. The current project must comply with stringent inspection and maintenance requirements under SJVAPCD Rule 4409 Prohibitions for Components at Light Crude Oil Production Facilities, Natural Gas Production Facilities, and Natural Gas Processing Facilities. This rule limits VOC emissions from leaking components at the listed facilities. As a result, the emission rates for equipment subject to Rule 4409, the emission rates are of the order of 0.000024 kg/hr or 0.0000528 lbs/hr. For a typical well with one pump and four (4) connectors, this results in annual emission rates of only 1 pound/year.

	<i>How Many?</i>	<i>VOCs EF (kg/hr/source)</i>	<i>VOCs lbs/yr</i>
<i>Pumps</i>	<i>1</i>	<i>2.40E-05</i>	<i>4.63E-01</i>
<i>Flanges/Connectors</i>	<i>4</i>	<i>7.50E-06</i>	<i>5.78E-01</i>
		<i>TOTAL VOCs</i>	<i>1.041</i>
<i>Reference: VOC Fugitive Emission Factor (EF) for crude oil based on EPA Document # EPA-453/R-95-017, Nov. 1995, Table C-3.</i>			

Response to Comment CBD IVd

The Division considered Project emissions in the ISMND by quantifying short- and long-term emissions of criteria, toxic, and GHG emissions. The ISMND relies on CEQA to assess the significance of GHG emissions.

Specifically, the determination whether or not GHG emissions are significant is based on the Authority granted to the Division under Section 15064. Section 15064.4(b) requires the Division to consider: (1) the extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting, (2) whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and (3) if a project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction of GHG emissions.

Cap and trade is but one regulation aimed at mitigating GHG emissions. Use of best performance standards is another regulation aimed at reducing GHG emissions. Both of these regulations were enacted under the umbrella of AB-32. All of these regulations

have been adopted through a public review process as required under Section 15064.4(b)(3).

The Division's consideration of the proposed projects emissions and the projects effects on the environment was conducted in accordance with CEQA.

Response to Comment CBD IVe

See response CBD IVa, IVb and IVc regarding greenhouse gas emission considerations. As no flare is proposed, no flare related emissions will be emitted. The electricity that will be used during the production phase can come from a variety of sources, including, hydroelectric power, solar, wind, nuclear, and natural gas power plants.

Response to Comment CBD Va

Potential air quality impacts were evaluated using a two-step procedure. First, the annual emission rates of NOx, VOCs (ROG) and PM-10 were calculated for each phase of the project. Next, the annual emission rates were compared with thresholds of significance established by SJVAPCD. Reliance on thresholds of significance to determine the significance of impacts is consistent with Section 21082 of CEQA providing such thresholds have been adopted through ordinance, rule, resolution, or regulation. The thresholds used to determine significance were adopted by the governing Board of the SJVAPCD and issued on August 20, 1998 and subsequently revised in June 1, 1999.

Response to Comment CBD Vb

The analysis presented in the ISMND confirms that higher NOx and VOC emissions are associated with drilling as compared to site preparation, testing, or other phases. As demonstrated in Table 11 of the ISMND project NOx and VOC emissions are below the threshold of significance set by the SJVAPCD.

Response to Comment CBD Vc

The composition of VOCs was determined based on specification data for oil field fugitive emissions. This data was prepared by Prof. Albert C. Censullo, PhD at California Polytechnic State University, San Luis Obispo, CA in 1991. This data is available at the SJVAPCD web site and includes division of the VOCs into individual compounds such as ethyl benzene, benzene, xylene, toluene and n-hexane.

The emissions of these specific VOCs were quantified and their emission rates were used to calculate potential risks to the public. The analysis demonstrated that emissions of VOCs would not pose a significant health risks to the public.

It should also be noted, the project as proposed would not use methylene chloride.

Response to Comment CBD Vd

The main NMHC emissions considered as toxic were identified and discussed in response to comment Vc.

Response to Comment CBD Ve

Emission rates of particulate from diesel combustion and fugitive emissions from site work were quantified (using the ROADWAY model) and these emission rates were compared with SJVAPCD thresholds of significance. In addition, the diesel particulate emissions were used to calculate risk scores using AB-2588 Air Toxics “Hot Spots” Information and Assessment Act of 1987 procedures. On the basis of this calculation and comparison with the thresholds, it was demonstrated that emissions of diesel particulate and fugitive VOC emissions would not lead to significant risks to public health.

Response to Comment CBD Vf

See response to comment CBD Vc.

Also, as stated in the response to comment CBD IVa “Drilling fluids used during the drilling process exert a greater hydrostatic pressure than the reservoir pressure. Accordingly there is no release of natural gas during the drilling process. As stated in the ISMND, sufficient weighted drilling fluid would be used to prevent any uncontrolled flow from each well and additional quantities of drilling fluid would be available at each site (Title 14, CCR section 1722.6).”

Methane does not contribute to ozone formation. Only volatile organic compounds or reactive organic gases are considered precursors of ozone. For this reason, methane is excluded from the definition of VOC and ROG by the EPA, ARB and all the Air Districts in California.

As VOCs, hydrogen sulfide, and methane would be components of natural gas, the Division has addressed potential releases of VOC’s, hydrogen sulfide, and methane. The project as proposed would not use methylene chloride.

The main toxic air pollutant released on-site would be diesel particulate matter (DPM). The emission rates of DPM were quantified in the ISMND. In addition, public health risks associated with exposure to DPM were calculated and it was shown that such health risks would not be significant. Solvents, such as methylene chloride will not be used for cleaning or degreasing purposes.

Response to Comment CBD Vg

The ISMND includes detailed equipment tables which explicitly list the type, number, and duration of equipment to be used during project related activities. As such, the Division’s analysis included all sources of emissions.

Response to Comment CBD Vh

See response to Comment CBD Vb above. Oil drilling/testing is not a significant source of VOC emissions. The mitigation measures suggested in the comment are typical for what is used at oil storage areas and at oil refineries and are not appropriate for use for this project.

The main source of VOC emissions at the proposed project are fugitive emissions from leaking pumps, valves, and flanges. The emission rate of fugitive emissions is extremely low and therefore, is not a significant contributor to GHG impacts. Typically, the emission rates of VOCs are 0.00000005 kg/hour as noted in the EPA guidance leak detection and repair. Available at: <http://www.epa.gov/ttnchie1/efdocs/equiplks.pdf>

We note that methane does not contribute to ozone formation. Only volatile organic compounds or reactive organic gases are considered precursors of ozone. For this reason, methane is excluded from the definition of VOC and ROG by the EPA, ARB and all the Air Districts in California.

Response to Comment CBD Vi

The project is subject to SJVAPCD Regulation VIII – Fugitive PM10 Prohibitions, Table 6-1: Mitigation Measures by Project Type (Page 57), Table 6-2: Regulation VIII Control Measures for Construction Emissions of PM-10 and Table 6-3: Enhanced and Additional Control Measures for Construction Emissions of PM-10 (website: <http://www.valleyair.org/transportation/CEQA%20Rules/GAMAQI%20Jan%202002%20Rev.pdf>.) These requirements are enforced by the SJVAPCD.

Response to Comment CBD Vj

Hydraulic fracturing is not part of the proposed project nor is it reasonably foreseeable at this time.

Response to Comment CBD VIa

The Division considered the potential project related impacts to threatened and endangered species. As stated in the ISMND, a biological assessment was prepared for the project. Field surveys (including protocol-level surveys for blunt-nosed leopard lizards (BNLL) were conducted to determine if special-status plant or animal species or suitable habitats occurred within the proposed project sites, proposed access roads, existing access roads, and buffer areas. Surveys were conducted in accordance with standard survey protocol established by regulatory agencies such as the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS). No sensitive plant or animal species were observed within the boundaries of the proposed project sites during the field surveys. The biological assessment and ISMND included mitigation measures intended to ensure potential impacts to special-status species and sensitive habitats are reduced to a less-than-significant level.

Response to Comment CBD VIb

The following sources were consulted prior to conducting biological surveys at the project site and during the preparation of the biological assessment and ISMND to determine a target list of special-status wildlife species that could potentially occur within the proposed project sites:

- *Records from the California Natural Diversity Database (CNDDDB) (CDFW 2012) for the USGS Edison and Rio Bravo Ranch 7.5-minute quadrangle maps;*

- *Records from the USFWS online electronic database of threatened and endangered species (USFWS 2012) for the USGS Edison and Rio Bravo Ranch 7.5-minute quadrangle maps;*
- *Sighting records from the ebird.com avian observance online database, a database maintained by Audubon and the Cornell University Lab of Ornithology;*
- *Range maps for the California condor (please see attached following the Responses to Comments document).*

RAB Consulting reviewed the above noted files and no records for the California condor were found within the Edison and Rio Bravo USGS quads. Sightings have been documented approximately 5.5 miles to the NE of the project sites, as noted on the figure on page 33 of the CBD comment letter. RAB Consulting reviewed sighting records from the ebird.com avian observance online database, a database maintained by Audubon and the Cornell University Lab of Ornithology. This database revealed the closest condor sighting was 17.2 miles to the southeast of the project sites. Both of these sightings were documented in areas of much higher topographic relief, and in areas that are more remote than the project sites, indicating that this species prefers areas that are more remote and have less humans and human development present.

RAB Consulting's review of range maps for the species show that the proposed project sites are located outside of the accepted range for this species. The range maps reviewed were prepared by the Audubon Society and the USFWS. Much of the accepted range for this species lies in higher elevation areas that are more remote than the proposed project sites.

RAB Consulting also conducted a review of critical habitat areas established by the USFWS to protect key habitat for this species. The review determined that the project sites do not lie in key habitat. In fact, the closest critical habitat area is approximately 20 miles to the northeast of the proposed project sites.

After reviewing the above data, RAB Consulting determined that California condor should not be included in the target list of special-status wildlife species for the proposed project, and as such, this species was not discussed in the biological assessment or ISMND for the proposed project.

Response to Comment CBD VIc

RAB Consulting conducted biological surveys of the proposed well site locations, proposed flow line routes, proposed access roads to the well site locations, and the buffer area of around the proposed well sites, proposed flow line routes, and proposed access roads for sensitive wildlife and special-status plant species, their habitats, and other sensitive habitats. An area of approximately 20 acres was surveyed as exact well sites were not determined at the time of our surveys. As a result, a buffer area significantly larger than 250 feet was surveyed. These site visits included surveys to detect San Joaquin kit fox and sign (e.g., potential dens, scat, tracks, prey remains, etc.) of their

activity. An adequate amount of time was spent at the proposed project sites to determine the presence or absence of special-status species within the areas at the time of our surveys, and these surveys were conducted in accordance with standard survey protocol established by regulatory agencies such as the CDFW and the USFWS.

*RAB Consulting conducted diurnal surveys for San Joaquin kit fox dens and their “sign.” Surveys were conducted along transects spaced 30 to 50 feet apart following CDFW Approved Survey Methodologies for Sensitive Species (CDFG 1990) and by USFWS guidelines (USFWS 1989, 1995, 1999, and 2011). Scats measuring 15 to 20 millimeter in diameter of appropriate canid shape are attributed to kit fox. No other vulpid is known to inhabit the project sites, and scats larger than 20 millimeter in diameter probably belong to coyote (*Canis latrans*) or domestic dog (*Canis familiaris*). Canid tracks up to 45 by 38 millimeter in size are attributed to it fox. Tracks larger than this are probably attributable to coyote or domestic dog (Murie 1974).*

The findings of the biological surveys and potential impacts to this species were discussed in the Biological Assessment report (pages 17-23) and in the ISMND. Mitigation measures were included in the biological assessment report and the ISMND.

The mitigation measures are contained in the USFWS “Standardized recommendations for protection of the San Joaquin kit fox prior to or during ground disturbance” (USFWS 2011) protects this species from potential impacts. These mitigation measures have been required and are successfully used throughout California.

Response to Comment CBD VIId

Biological surveys of the proposed well site locations, proposed flow line routes, proposed access roads to the well site locations, and the buffer area of around the proposed well sites, proposed flow line routes, and proposed access roads for sensitive wildlife and special-status plant species, their habitats, and other sensitive. An area of approximately 20 acres was surveyed as exact well sites were not determined at the time of the surveys. As a result, a buffer area significantly larger than 250 feet was surveyed. These site visits included protocol-level surveys for the blunt-nosed leopard lizards and signs of their activity. Emphasis was placed on the identification of small mammal burrows that may serve as potential for this species. An adequate amount of time was spent at the proposed project sites during the surveys to assess the suitability of the habitat present to potentially support blunt-nosed leopard lizards. These surveys were conducted in accordance with standard survey guidance established by regulatory agencies such as the CDFW and the USFWS.

The findings of biological surveys and potential impacts to this species were discussed in the Biological Assessment report (pages 17-23) and in the ISMND. No BNLLs were observed during protocol level surveys conducted within the proposed project sites and buffer areas. The project sites and buffer areas were evaluated as being suitable habitat in its current state for BNLL because suitable burrows that provide refuge cover for this species occur within the proposed project sites and buffer areas. Based on the results of BNLL Protocol-level surveys (no BNLL were detected), BNLL are not expected to be

impacted by the proposed project. The recommended avoidance and mitigation measures included in the Biological Assessment report and the ISMND are feasible and appropriate to reduce impacts under CEQA.

Response to Comment CBD VIe

Biological surveys were conducted of the proposed well site locations, proposed flow line routes, proposed access roads to the well site locations, and the buffer area of around the proposed well sites, proposed flow line routes, and proposed access roads for sensitive wildlife and special-status plant species, their habitats, and other sensitive habitats. An area of approximately 20 acres was surveyed as exact well sites were not determined at the time of our surveys. As a result, a buffer area significantly larger than 250 feet was surveyed. These site visits included surveys for the Tipton kangaroo rat and signs of their activity. These surveys were conducted in accordance with standard survey protocol established by regulatory agencies such as the CDFW. Emphasis was placed on the identification of small mammal burrows that may serve as potential for this species.

The findings of biological surveys and potential impacts to this species were discussed in the Biological Assessment report (pages 17-23) and in the ISMND. The Biological Assessment report states that no evidence (i.e., pit cache holes, scats, tracks, tail drags, etc.) of Tipton kangaroo rats was found within the proposed project sites or their buffer areas during biological surveys. Potential burrows (California ground squirrel burrows) were observed within the proposed project sites or buffer areas. Appropriate vegetative communities were found for this species (annual grassland habitat) within all areas surveyed during biological surveys. No individual Tipton kangaroo rats were observed during surveys. The recommended avoidance and mitigation measures included in the Biological Assessment report and the ISMND are feasible and appropriate to reduce impacts under CEQA.

Response to Comment CBD VI f

Biological surveys were conducted of the proposed well site locations, proposed flow line routes, proposed access roads to the well site locations, and the buffer area of around the proposed well sites, proposed flow line routes, and proposed access roads for sensitive wildlife and special-status plant species, their habitats, and other sensitive habitats. An area of approximately 20 acres was surveyed as exact well sites were not determined at the time of our surveys. As a result, a buffer area significantly larger than 250 feet was surveyed. These surveys were timed during the appropriate blooming period to detect presence of special-status plant species potentially occurring within the proposed project. An adequate amount of time was spent at the proposed project sites during our surveys to detect the presence of these species. These surveys were conducted in accordance with the USFWS Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants (USFWS 2000) and the CDFW Protocols for Surveying and evaluating impacts to special-status native plant populations and natural communities (CDFG 2009). Rare plant surveys were also performed using demographic survey techniques derived from the CNPS rare plant monitoring guidelines (CNPS 2011). These guidelines include conducting floristically

based surveys, identifying all plants encountered to the species level, or identifying to the level necessary to detect rare plants if present.

The findings of biological surveys were discussed in the Biological Assessment report (page 17-23) and in the ISMND. Potential habitat for this species was observed within annual grassland habitat in the proposed project sites and buffer areas during biological surveys. No special-status plant species were observed in the proposed project sites or buffer areas during biological surveys.

Response to Comment CBD VIg

The mitigation measures presented in the discussion of biological resources are also included in the Mitigation Monitoring and Reporting Plan. As stated in the Mitigation Monitoring and Reporting Plan, the Division is responsible for compliance. Compliance with the mitigation measures specified in this ISMND will be a condition on the well permits issued for the wells specified in this ISMND. Accordingly, the mitigation measures are enforceable.

Response to Comment CBD VII

The Division acknowledges that certain oil and gas activities are capable of triggering seismic activity. The Division also acknowledges that specific induced seismic events have been attributed to water disposal wells. However induced seismicity is associated with activities that are not included in this specific project.

As stated in the ISMND, all produced water will be transported to Naftex's Section 26 Tank Farm and will be disposed of in the Naftex Racetrack 76-27, 77-27 or 86-27 Division permitted Class II disposal wells. The use of a permitted facility to dispose of produced water is an accepted disposal method for oil and gas operations. Concerns regarding the environmental impact of such a facility are best addressed during the facility's permitting process.