COUNTY OF SANTA BARBARA

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Draft Mitigated Negative Declaration
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California Lease Soil Remediation
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1.0 REQUEST/PROJECT DESCRIPTION

The project is for a Land Use Permit to implement remedial actions described in the Remedial Action Work Plan dated July 2021 prepared by Langan Engineering and Environmental Services, Inc. for parts of the CAL Lease in the North Cat Canyon Oil Field. The site contains inactive and abandoned oil wells and associated infrastructure but is currently used for cattle grazing and cultivation of hay and vineyards. Site investigations between 2000 and 2020 identified elevated concentrations of total petroleum hydrocarbons (TPH) and associated volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs) in approximately 4,926 cubic yards soil and perched water surrounding former diluent pipelines in three areas: A5-01, B5-02/B5-03, and B6-03. The project proposes excavation and disposal of approximately 4,306 cubic yards of impacted soil at these three locations, soil sampling to confirm achievement of the site-specific cleanup goals, backfilling of the excavation areas with approximately 4,306 cubic yards (cy) of imported clean fill, and restoration of the disturbed areas. Excavated soil will be stockpiled on plastic sheeting in the staging areas until disposal offsite. Three tree exclusion zones (TEZ-1, TEZ-2, and TEZ-3) and two depth exclusion zones (DEZ-1 and DEZ-2) are proposed to protect the riparian and oak tree habitat and reduce excavation instability. The impacted soil to be left in the exclusion zones will be managed beneath a cover of clean fill and native vegetation. Temporary erosion and sediment controls will be installed and maintained during earth disturbance activities. The following table provides the quantities of impacted soil to be removed at each site:

Area	**Contaminated Volume**	**Depth of Contamination**	**Remove Volume**	**Depth Removal**
A5-01	2,572 cy	34’	2,195 cy	25’
B5-02/B5-03	2,351 cy	28’	2,108 cy	25’
B6-03	3 cy	1’	3 cy	1’
TOTAL	4,926 CY	34’	4,306 CY (87.4%)	25’

Once the excavations are backfilled with clean earth material, well pads associated with previously abandoned wells 40, 50, and 89 and all disturbed areas will be recontoured to resemble the natural topography and erosion and sediment controls will be applied to the ground surface, including hydromulch and dispersal of native seeds. Dewatering activities may also be conducted if perched groundwater is encountered in the excavations. Additionally, if perched groundwater is encountered, at least one groundwater monitoring well will be installed at each of the three remediation areas between 7.5 and 33 feet deep to monitor constituents to determine if they are stable or decreasing. Once groundwater monitoring is complete, the wells will be abandoned.

Existing oil field roads and historical well pads within the CAL Lease and adjacent United California Lease (UCAL Lease) will be used as access to the work areas and for temporary staging and stockpiling of equipment and materials. Approximately 2.59 acres of previously developed areas will be used for equipment storage and soil stockpile at locations 1, 2, 3, 4, 5, 6, and 7. Approximately 300 truck trips are expected to be made for export soil and 300 truck trips for import soil. There would be an average of about 10 truck trips per day, with a peak of about 50 truck trips per day. Grading includes approximately 9,598 cy of cut and fill material. The export material will be disposed of as Non-Hazardous Hydrocarbon Impacted Soil at a California Licensed waste disposal facility. The property is a 537.84-acre parcel zoned AG-II-100 and shown as Assessor's Parcel Numbers 129-180-018 & 129-180-038, Santa Maria Valley Area, Fourth Supervisorial District.

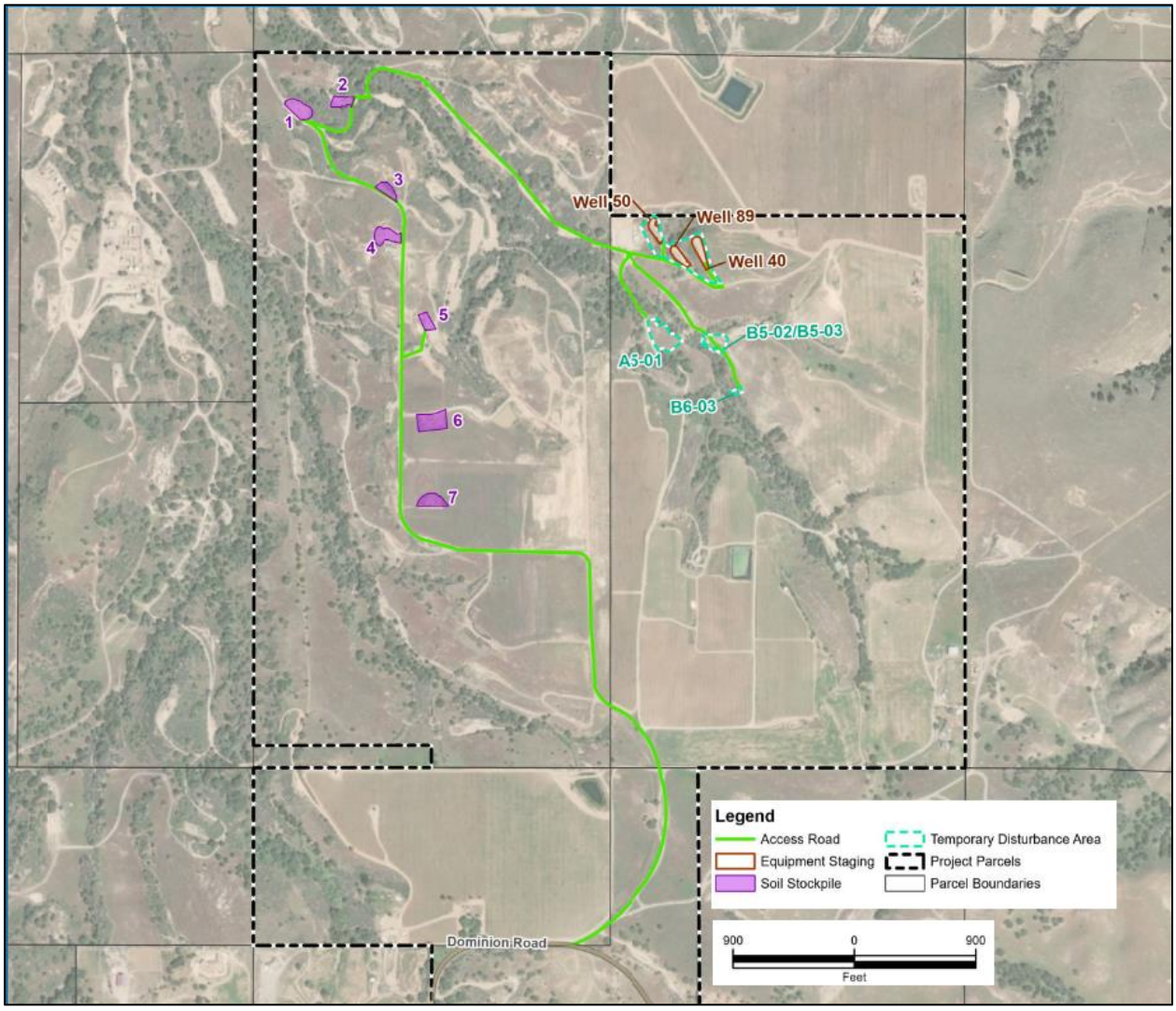


FIGURE 1. SITE PLAN SHOWING THE ACCESS ROAD IN GREEN, STOCKPILE AREAS IN MAGENTA, REMEDIATION SITES IN BLUE, AND WELL PAD RECOUNTOURING SITES IN BROWN.

2.0 PROJECT LOCATION

The site includes two parcels (234.24 acres and 303.63 acres) zoned AG-II-100 and shown as Assessor's Parcel Numbers 129-180-038 and 129-180-018, located at 6525 Dominion Road in Santa Maria within the 4th supervisorial district, approximately seven miles southeast of the City of Santa Maria. The work areas are within the northern section of the property, known as the California Lease, within the State-designated Cat Canyon Oil Field. The Site is bounded on the west by the United California Lease and on the south by the Bradley Lease. The project site is accessed by Dominion Road and associated agricultural roads over APNs 101-040-026, 101-030-008, -009, and -011. APN 101-030-011 is currently used as a staging area for equipment for other projects within the vicinity.

The extent of the project site is shown in Figure 1. The project site includes three remediation sites, A5-01, B5-02/B5-03, and B6-03, requiring excavation and disposal of impacted soil. Additionally, surface restoration activities will be completed at well pads associated with abandoned Well Pads 40, 50, and 89.

2.1 Site Information	
Comprehensive Plan Designation	Rural, Agriculture, A-II-100, (one dwelling unit per 100 acres)
Zoning District, Ordinance	County Land Use and Development Code, AG-II-100, minimum lot size 100 acres
Site Size	129-180-038: 234.24 acres 129-180-018: 303.63 acres
Present Use & Development	129-180-038: Vineyards, oil wells, grazing, residential 129-180-018: Oil wells, grazing, residential
Surrounding Uses/Zoning	North: AG-II-100; Oil wells and grazing South: AG-II-100; Vineyards and grazing East: AG-II-100; Oil wells and grazing West: AG-II-100; Oil wells and grazing
Access	Dominion Road, ag roads
Public Services	Water Supply: Private onsite well Sewage: Septic system Fire: Santa Barbara County Fire District, Station 23 (Sisquoc) Other: Cat Canyon Oil Field

3.0 ENVIRONMENTAL SETTING

3.1 PHYSICAL SETTING

The site is broken up between the three remedial sites (A5-01, B5-02/B5-03, and B6-03), and three abandoned well sites (40, 50, and 89) all accessed via existing agricultural dirt roads. The parcels are characterized by rolling hills surrounded by grasses, row crops and vineyards. The parcels adjacent to the Project Site are designated agricultural use and are currently managed for cattle grazing, oil production, and vineyard operations. The site is not visible from public viewpoints.

Historically, the site has been used as an oil processing area. There are abandoned oil production facilities, oil field roads and well pads adjacent to the western and southern property boundaries. The Project Site is located approximately 1.6 miles northwest of the Cat Canyon Resources production site. Cat Canyon Oil Field has been used for oil production since the early 1900s. All of the oil wells attributed to the UCAL and CAL Leases are currently listed as plugged and abandoned or idle. There are inactive water wells that have not been abandoned but are located outside of the project limit of disturbance. Currently, the Site is vacant and the future use of the Site will likely be limited to agricultural or continued oil production.

A small ephemeral stream (a tributary to Bradley Canyon Creek) runs the length of the canyon. The CAL Lease includes work areas and the surrounding habitat totaling approximately 37.11 acres. The ephemeral drainage includes a riparian corridor which is dominated by arroyo willow, mulefat, and coast live oak. The adjacent upland habitat is a mixture of grasslands and coast live oak woodland habitat. The project is located within the potential range of the California Tiger Salamander (CTS) (Ambystoma californiense), a federally-listed endangered species, and within the critical habitat of the American Badger (Taxidea taxus), a California species of special concern. There are no known archaeological or historical sites in the vicinity of the project. No prehistoric resources of any kind were observed within the Project improvement areas.

3.2 ENVIRONMENTAL BASELINE

The environmental baseline from which the project's impacts are measured consists of the current physical environmental conditions in the vicinity of the project, as described above.

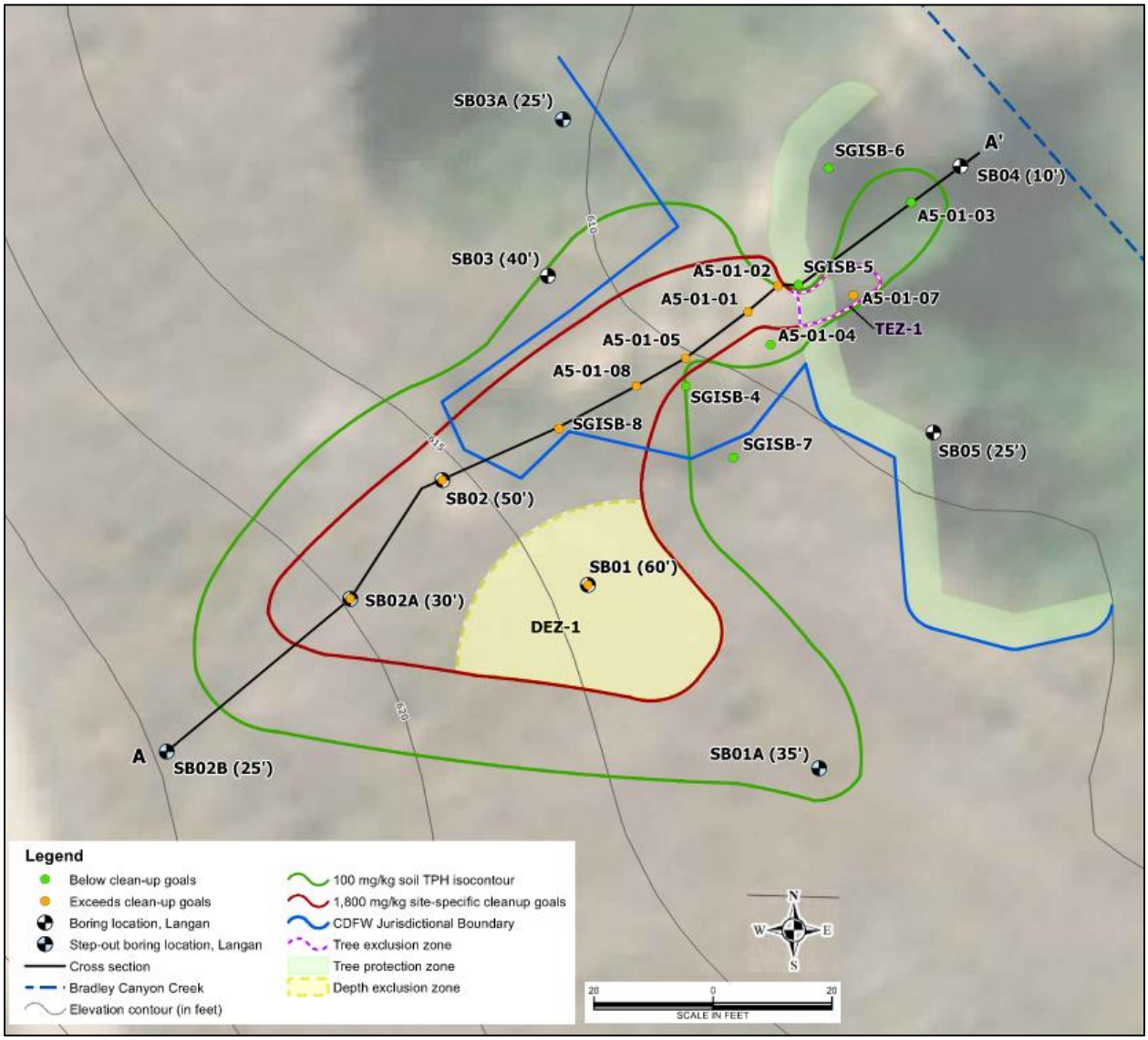


FIGURE 2. REMEDIAL EXCAVATION PLAN FOR AREA A5-01 INCLUDING TREE EXCLUSION AND DEPTH EXCLUSION ZONES.

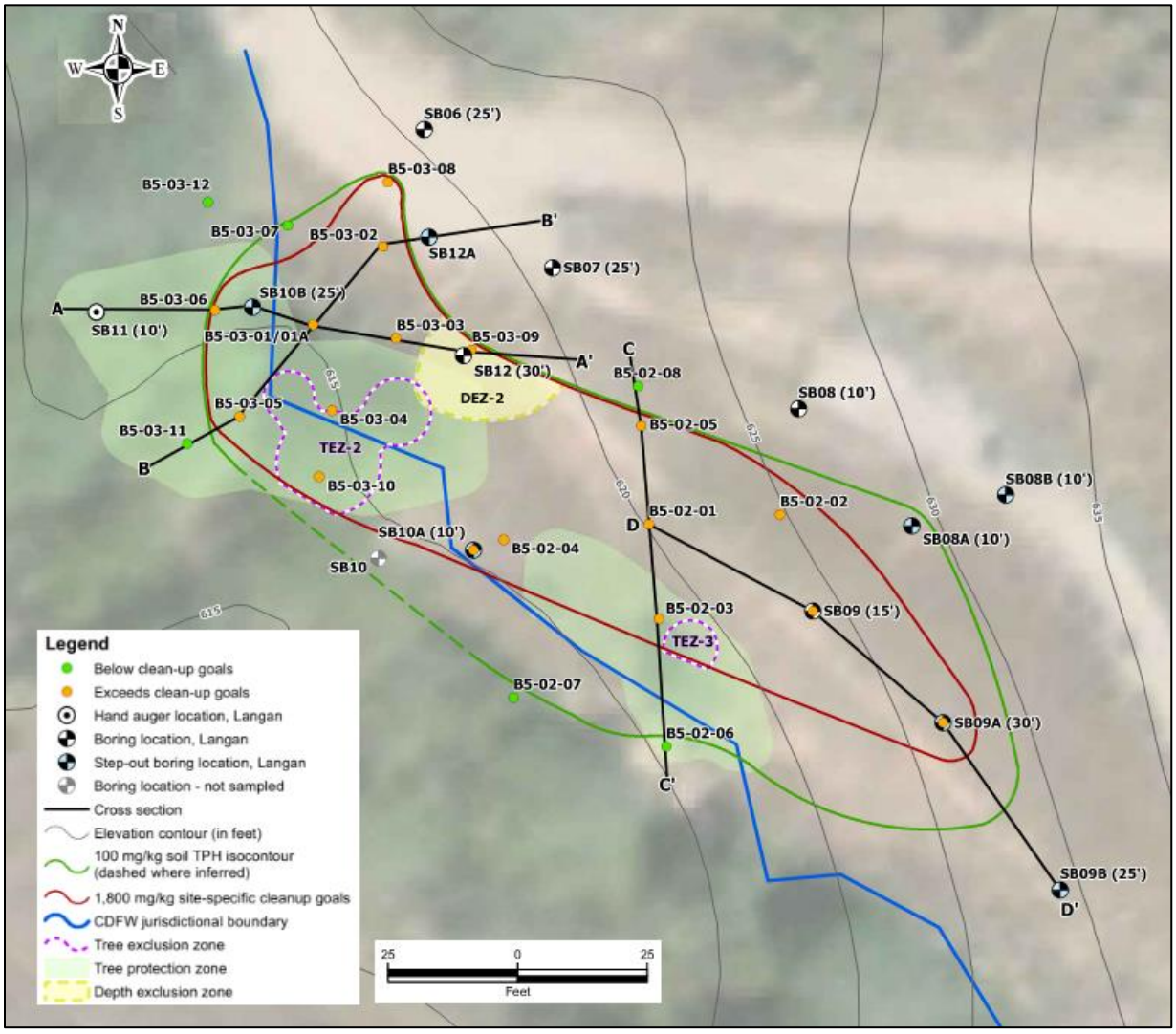


FIGURE 3. REMEDIAL EXCAVATION PLAN FOR AREA B5-02 AND B5-03 INCLUDING TREE EXCLUSION AND DEPTH EXCLUSION ZONES.

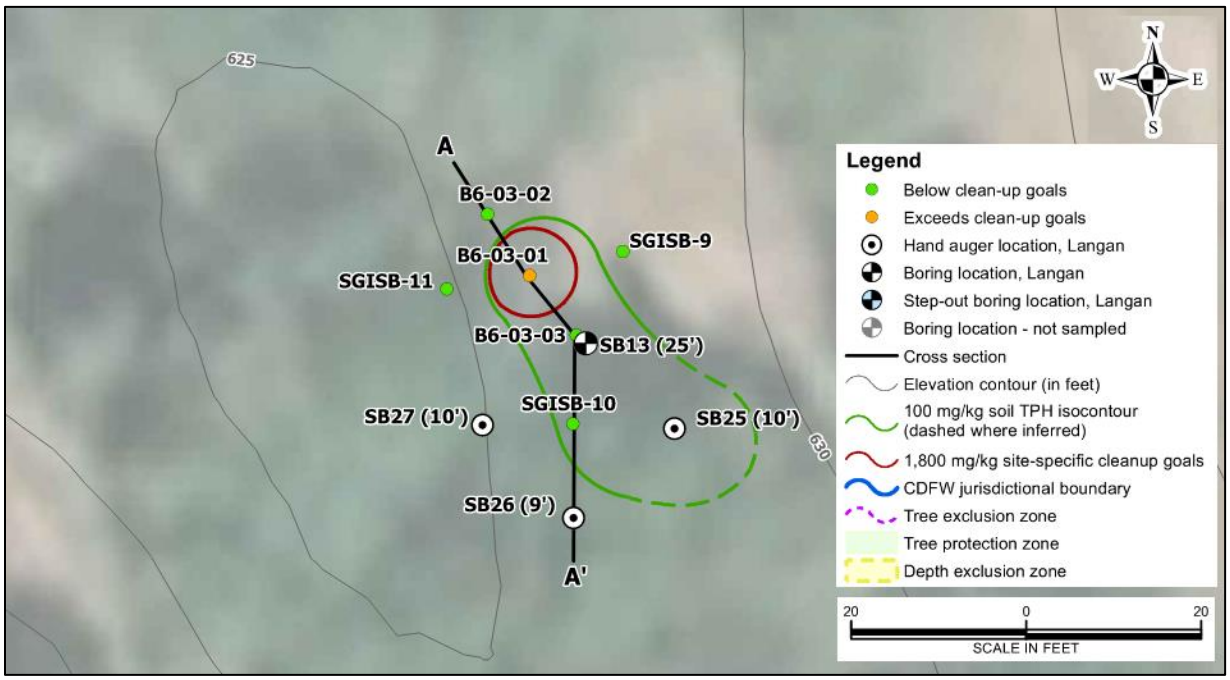


FIGURE 4. REMEDIAL EXCAVATION PLAN FOR AREA B6-03 INCLUDING TREE EXCLUSION AND DEPTH EXCLUSION ZONES.

4.0 POTENTIALLY SIGNIFICANT EFFECTS CHECKLIST

The following checklist indicates the potential level of impact and is defined as follows:

Potentially Significant and Unavoidable Impact: A fair argument can be made, based on the substantial evidence in the file, that an effect may be significant.

Significant but Mitigable: Incorporation of mitigation measures has reduced an effect from a Potentially Significant Impact to an Insignificant Impact.

Insignificant Impact: An impact is considered adverse but does not trigger a significance threshold.

No Impact: There is adequate support that the referenced information sources show that the impact simply does not apply to the subject project.

Beneficial Impact: There is a beneficial effect on the environment resulting from the project.

Reviewed Under Previous Document: The analysis contained in a previously adopted/certified environmental document addresses this issue adequately for use in the current case and is summarized in the discussion below. The discussion should include reference to the previous documents, a citation of the page(s) where the information is found, and identification of mitigation measures incorporated from the previous documents.

4.1 AESTHETICS/VISUAL RESOURCES

Will the proposal result in:	Potent. Signif. and Unavoid.	Significant but Mitigable	Insignif.	No Impact / Beneficial Impact	Reviewed Under Previous Document
a. The obstruction of any scenic vista or view open to the public or the creation of an aesthetically offensive site open to public view?				X	
b. Change to the visual character of an area?			X		
c. Glare or night lighting which may affect adjoining areas?				X	
d. Visually incompatible structures?			X		

Existing Setting. The Cat Canyon Oil Field is located approximately seven miles southeast of the City of Santa Maria. The work area is access at 6525 Dominion Road through 2.4 miles of agricultural roads. The Site elevation ranges from approximately 600 feet above mean sea level (amsl) near the seasonal stream to 800 feet amsl along the eastern edge of the CAL Lease. The rural site is characterized by rolling hills, with sporadic dense vegetation, Arroyo willows, Muelfat, and Coast Live Oaks, agricultural, and oil/gas development. Public views within the vicinity area are dominated by cultivated agriculture, rolling hills, grazing land, and low intensity residential development, however, none of the work areas are visible from public viewpoints. The work areas are generally in low points within the parcels.

Environmental Thresholds. The County's Visual Aesthetics Impact Guidelines classify coastal and mountainous areas, the urban fringe, and travel corridors as "especially important" visual resources. A project may have the potential to create a significantly adverse aesthetic impact if (among other potential effects) it would impact important visual resources, obstruct public views, remove significant amounts of vegetation, substantially alter the natural character of the landscape, or involve extensive grading visible from public areas. The guidelines address public, not private views.



FIGURE 5. REMEDIATION SITE A5-01. VIEW LOOKING NORTH SHOWING ROLLING HILLS AND DENSE VEGETATION ALONG THE BRADLEY CREEK DRAINAGE AREA.

Impact Discussion:

(a-d). The proposed project includes excavating approximately 4,306 cy of hydrocarbon impacted soil and water surrounding former diluent pipelines in the oilfield lease area, replacing with clean fill and restoring the project site to previous topographic conditions. Additionally, surface restoration activities will include restoring well pads 40, 50, and 89 and surrounding areas to resemble natural topography and seeding native vegetation in areas of disturbance. After remedial excavations are backfilled, up to one groundwater monitoring well will be installed at each of the three remediation areas and monitored semiannually for up to two years to confirm that constituents in perched water are stable or decreasing; or that natural attenuation is occurring. The viability and final location of the monitoring wells will be determined at the end of the excavation activities and be placed in the location of perched groundwater zones. If groundwater is not encountered during excavation or in the borings advanced for monitoring well installation, no well will be installed in a given area. Upon cessation of groundwater monitoring and with concurrence from Central Coast Regional Water Quality Control Board (CC-RWQCB) and Santa Barbara County Environmental Health Services (SBCEHS), the groundwater monitoring wells will subsequently be abandoned. These wells will not impact the visual nature of the site since they will neither be visible from public viewpoints, create a lighting or glare issue, or change the visual character of the area.

No project components, including structures, equipment, land alterations or lighting, would be visible from any public highways, railroads, public and other open spaces, trails, beaches or other recreation

areas. Construction activities would not be visible from any public viewpoints due to the existing topography and rural nature of the site. The project would not result in any permanent structures or long term changes to the aesthetics of the project site. Remediation activities would occur over a period of six months and would be followed by restoration activities. The post-construction visual contrast would diminish quickly as the affected areas would be backfilled and re-sloped to existing conditions.

The proposed project does not include the installation of any lighting fixtures. Construction activities would be limited to daytime hours between 8:00 a.m. and 5:00 p.m. (see Noise-01 Construction Hours in section 4.11) and the Project would not adversely alter the character of the landscape or topography. The project would not affect neighboring areas with glare or night lighting. Trucking of equipment and excavated/clean soil on and off of the property would be temporarily visible to neighboring properties, as discussed more in Section 4.14. Once grading activities are complete, the project site would look comparable as existing conditions. The project would not affect neighboring areas with glare or night lighting. The project would have *no impacts* to aesthetics.

Cumulative Impacts. The implementation of the project is not anticipated to result in any substantial change in the aesthetic character of the area since no change to the aesthetics of the environment is proposed. Thus, the project would not cause a cumulatively considerable effect on aesthetics.

Mitigation and Residual Impact. No impacts are identified. No mitigations are necessary.

4.2 AGRICULTURAL RESOURCES

Will the proposal result in:	Poten. Signif. and Unavoid.	Significant but Mitigable	Insignif.	No Impact / Beneficial Impact	Reviewed Under Previous Document
a. Convert prime agricultural land to non-agricultural use, impair agricultural land productivity (whether prime or non-prime) or conflict with agricultural preserve programs?				X	
b. An effect upon any unique or other farmland of State or Local Importance?				X	

Existing Setting.

Background

Agricultural lands play a critical economic and environmental role in Santa Barbara County. Agriculture continues to be Santa Barbara County's major producing industry with a gross production value of over $1.6 billion (Santa Barbara County Agricultural Production Report, 2019). In addition to the creation of food, jobs, and economic value, farmland provides valuable open space and maintains the County's rural character.

Physical

The site also has historically been used for oil development, vineyards, and grazing activities. The property adjoins agricultural parcels ranging from approximately 70 to 650 acres; these neighboring properties to the north and south are used to grow grapes, while the rest is used for grazing. None of the soils onsite are prime agricultural soils. The project site is covered by soil designations of Corducci and Typic Xerofluvents 0-5%, Garey sandy loam, 2-9%, Positas fine sandy loam 9-15%, Marina sand 9-30%, and gullied land, none of which are classified as prime agricultural soils. The Soil Survey Geographic Database for Northern Santa Barbara Area indicates that these three soil types are not hydric soils within the region.

Regulatory

County Thresholds Manual

The County's Agricultural Resources Guidelines (approved by the Board of Supervisors, August 1993) provide a methodology for evaluating agricultural resources. These guidelines utilize a weighted point system to serve as a preliminary screening tool for determining significance. The tool assists planners in identifying whether a previously viable agricultural parcel could potentially be subdivided into parcels that are not considered viable after division. A project which would result in the loss or impairment of agricultural resources would create a potentially significant impact. The Point System is intended to measure the productive ability of an existing parcel as compared to proposed parcels. The tool compares availability of resources and prevalent uses that benefit agricultural potential but does not quantifiably measure a parcel's actual agricultural production.

Initial Studies are to use this Point System in conjunction with any additional information regarding agricultural resources. The Initial Study assigns values to nine particular characteristics of agricultural productivity of a site. These factors include parcel size, soil classification, water availability, agricultural suitability, existing and historic land use, comprehensive plan designation, adjacent land uses, agricultural preserve potential, and combined farming operations. If the tabulated points total 60 or more, that parcel is considered viable for the purposes of analysis. The project would be considered to have a potentially significant impact if the division of land of a viable parcel would result in parcels that did not either score over 60 in themselves or resulted in a score with a significantly lower score than the existing parcel. Any loss or impairment of agricultural resources identified using the Point System could constitute a potentially significant impact and warrants additional site specific analysis.

Impact Discussion:

(a, b). The property currently contains elevated concentrations of TPH and associated VOCs and PAHs in soil and perched water surrounding former diluent pipelines in the three remediation areas (A5-01, B5-02/B5-03, and B6-03). These sites are all within 100 feet of a small ephemeral stream (a tributary to Bradley Canyon Creek) and not viable for agricultural activity. Excavated soil will be stockpiled on plastic sheeting in the staging areas until taken offsite for disposal. The stockpile areas identified in Figure 1 are located over previously capped well pad sites. These sites are flat, small, and compacted areas, directly adjacent to the access road and surrounded by dense vegetation. The stockpile areas are not suitable for agricultural use. The well pads associated with previously abandoned wells 40, 50, and 89 and all disturbed areas will be recontoured to resemble the natural topography. The regrading of these areas will allow for use of this area for row crops, matching the parcel immediately north, as seen in Figure 6 below.

The proposed project would not remove any acreage from permanent agricultural production or impact any neighboring agricultural operations. The project would not result in the conversion of agricultural land to non-agricultural use, nor would it impair agricultural land productivity or conflict with the Agricultural Preserve Program since the individual work area is small in size and the activities are temporary in nature. The project would result in temporary disturbance of unused areas within the lease area, but would also increase the agricultural viability of the site by recontouring the well pad sites, bringing them back into agricultural production capability. The project would result in removal of petroleum hydrocarbon-containing soil that could be an ongoing impediment to agricultural land productivity and environmental sustainability. The proposed remediation would not substantially interfere with existing Ag and residential actives. The project would have *no impact* on any neighboring agricultural operations.



FIGURE 6. VIEW OF EXISTING VINEYARDS TO THE NORTH OF WELL PAD 50. PHOTO TAKE FROM WELL PAD 89. PROPOSED RECONTOURING TO MATCH VINEYARD TOPOGRAPHY AND SLOPE.

Cumulative Impacts. The County's Environmental Thresholds were developed, in part, to define the point at which a project's contribution to a regionally significant issue constitutes a significant effect at the project level. In this instance, the project has been found not to exceed the threshold of significance for agricultural resources. Therefore, the project's contribution to the regionally significant loss of agricultural resources is not considerable, and its cumulative effect on regional agriculture is insignificant.

Mitigation and Residual Impact. No impacts are identified. No mitigations are necessary.

4.3a AIR QUALITY

Will the proposal result in:	**Poten. Signif. and Unavoid.**	**Signif. But Mitigable**	**Insignif.**	**No Impact / Beneficial Impact**	**Reviewed Under Previous Document**
a. The violation of any ambient air quality standard, a substantial contribution to an existing or projected air quality violation, or exposure of sensitive receptors to substantial pollutant concentrations (emissions from direct, indirect, mobile and stationary sources)?		X			

Will the proposal result in:	Poten. Signif. and Unavoid.	Signif. But Mitigable	Insignif.	No Impact / Beneficial Impact	Reviewed Under Previous Document
b. The creation of objectionable smoke, ash or odors?			X		
c. Extensive dust generation?		X			

Existing Setting. The project site is located within the South Central Coast air basin, a federal and state nonattainment area for ozone (O_3) and a state non-attainment area for particulate matter (PM_{10}). Reactive organic compounds (ROC) and nitrogen oxides (NO_x), which are precursors to ozone, are considered to be non-attainment pollutants. The major sources of ozone precursor emissions in the County are motor vehicles, the petroleum industry and solvent use. Sources of PM10 include grading, road dust and vehicle exhaust.

Environmental Threshold. Chapter 5 of the Santa Barbara County Environmental Thresholds and Guidelines Manual (as revised in January 2021) addresses the subject of air quality. The thresholds provide that a proposed project will not have a significant impact on air quality if operation of the project will:

- Emit (from all project sources, mobile and stationary), less than the daily trigger for offsets for any pollutant (currently 55 pounds per day for NOx and ROC, and 80 pounds per day for PM10);
- Emit less than 25 pounds per day of oxides of nitrogen (NOx) or reactive organic compounds (ROC) from motor vehicle trips only;
- Not cause or contribute to a violation of any California or National Ambient Air Quality Standard (except ozone);
- Not exceed the APCD health risk public notification thresholds adopted by the APCD Board; and
- Be consistent with the adopted federal and state Air Quality Plans.

No thresholds have been established for short-term impacts associated with construction activities. However, the County's Grading Ordinance requires standard dust control conditions for all projects involving grading activities. Long-term/operational emissions thresholds have been established to address mobile emissions (i.e., motor vehicle emissions) and stationary source emissions (i.e., stationary boilers, engines, and chemical or industrial processing operations that release pollutants). Long-term air quality impacts occur during project operation and include emissions from any equipment or process used in the project.

Impact Discussion:

(a-c). The scope of the project includes excavation of 4,306 cy of hydrocarbon-impacted material; disposal of the impacted soil, confirmation of achievement of the SSCGs, backfill excavations with clean fill obtained from an approved source(s), restore topography, and seed or replant native vegetation in areas of disturbance.

Project-related grading activities would have the potential to cause short-term fugitive dust that could have the potential to impact nearby residential uses. Project related grading would also contribute to regional emissions of PM10 and PM2.5. Dust emissions resulting from project-related construction would be reduced to the extent feasible through the implementation of County Grading Ordinance and the Air Pollution Control District requirements, which require the implementation of standard dust control measures. In addition, County APCD reviewed the project description and provided recommended additional standard dust mitigation measures, in a letter dated March 17, 2023. These standards are included as Attachment 4. With the incorporation of these dust measures, short-term dust emissions from project related grading would be less than significant. The project would not be a substantial long-term source of dust emissions.

Short-term emissions of ozone precursors (NOx and ROC) during project construction would result primarily from the use of earthmoving equipment used to excavate approximately 9,598 cy of cut and refilling/regrading the site with approximately 9,598 cy of fill throughout the contamination sites and Well Pads. Contaminated soil would be stockpiled onsite then sent offsite for disposal at a California Licensed waste disposal facility.

Short-term thresholds for NOx and ROC emissions from construction equipment have not been established in the County. Per the Santa Barbara County Environmental Thresholds and Guidelines Manual Published January 2021, emissions of NOx from construction equipment in the County are estimated at 1,000 tons per year of NOx. When compared to the total NOx emission inventory for the County of approximately 17,000 tons per year, construction emissions from all projects Countywide comprise approximately six percent of the 1990 county-wide emission inventory for NOx (Santa Barbara County 1993 Rate-of Progress Plan). In general, this amount is not considered significant. However, due to the non-attainment status of the air basin for ozone, contractors would be required to adhere to diesel particulate and NOx emission reduction measures as required by County Planning and County APCD, and outlined in Attachment 4, to reduce construction-related emissions of ozone precursors to the extent feasible. Compliance with these measures is routinely required for all new development in the County.

Access to the work areas will be provided by the existing oilfield and Ag roads. Approximately 300 truck trips are expected to be made for export soil and 300 truck trips for import soil. There would be an average of about 10 truck trips per day, with a peak of about 50 truck trips per day (Section 4.13, Transportation/Circulation). The project would not involve new stationary sources (i.e., equipment, machinery, hazardous materials storage, industrial or chemical processing, etc.) that would increase the amount of pollutants released into the atmosphere. The project would also not generate additional smoke, ash, odors, or long term dust after construction. The project's contribution to global warming from the generation of greenhouse gases would be negligible. With implementation of standard County Air Quality conditions specified in Air-01 and the additional standard dust mitigation measures, included as Attachment 4, the project's air emissions would not be substantial. Therefore, the project would have a *less than significant impact with mitigation* on air emission.

Cumulative Impacts. The County's Environmental Thresholds were developed, in part, to define the point at which a project's contribution to a regionally significant impact constitutes a significant effect at the project level. In this instance, the project has been found not to exceed the significance criteria for air quality. Therefore, the project's contribution to regionally significant air pollutant emissions is not cumulatively considerable, and its cumulative effect is insignificant.

Mitigation and Residual Impact. The following mitigation measures would reduce the project's air quality impacts to a less than significant level:

Air-01 Dust Control. The Owner/Applicant shall comply with the following dust control components at all times when work activities are being conducted including weekends and holidays:

a. Dust generated by the development activities shall be kept to a minimum with a goal of retaining dust on the site.
b. During clearing, grading, earth moving, excavation, or transportation of cut or fill materials, use water trucks or sprinkler systems to prevent dust from leaving the site and to create a crust after each day's activities cease.
c. During construction, use water trucks or sprinkler systems to keep all areas of vehicle movement damp enough to prevent dust from leaving the site.
d. Wet down the construction area after work is completed for the day and whenever wind exceeds 15 mph.
e. When wind exceeds 15 mph, have site watered at least once each day when work activities are being conducted including weekends and/or holidays.

f. Order increased watering as necessary to prevent transport of dust off-site.
g. Cover soil stockpiled for more than two days or treat with soil binders to prevent dust generation. Reapply as needed.
h. If the site is graded and left undeveloped for over four weeks, the Owner/Applicant shall immediately: (i) Seed and water to re-vegetate graded areas; and/or (ii) Spread soil binders; and/or; (iii) Employ any other method(s) deemed appropriate by P&D or APCD.

PLAN REQUIREMENTS: These dust control requirements shall be noted on all grading and building plans. **PRE-CONSTRUCTION REQUIREMENTS**: The contractor or builder shall provide P&D monitoring staff and APCD with the name and contact information for an assigned onsite dust control monitor(s) who has the responsibility to:

a. Assure all dust control requirements are complied with including those covering weekends and holidays.
b. Order increased watering as necessary to prevent transport of dust offsite.
c. Attend the pre-construction meeting.

TIMING: The dust monitor shall be designated prior to grading permit. The dust control components apply from the beginning of any grading or construction throughout all development activities until Final Building Inspection Clearance is issued. **MONITORING**: P&D processing planner shall ensure measures are on plans. P&D grading and building inspectors shall spot check; Grading and Building shall ensure compliance onsite. APCD inspectors shall respond to nuisance complaints.

Implementation of standard conditions placed on the grading plan as implemented through Chapter 14 (Grading Ordinance) of the County Code, along with standard APCD conditions listed in Attachment 4 would reduce potential short-term air quality impacts to a less than significant level. The project would not result in significant project-specific long-term air quality impacts. No further mitigation measures are required.

4.3b AIR QUALITY - GREENHOUSE GAS EMISSIONS

Greenhouse Gas Emissions - Will the project:	**Poten. Signif. and Unavoid.**	**Signif. But Mitigable**	**Insignif.**	**No Impact / Beneficial Impact**	**Reviewed Under Previous Document**
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X		
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?				X	

Existing Setting. Greenhouse gases (GHG) include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3) (California Health and Safety Code, § 38505(g)). These gases create a blanket around the earth that allows light to pass through but traps heat at the surface, preventing its escape into space. While this is a naturally occurring process known as "the greenhouse effect," human activities have accelerated the generation of GHG emissions above pre-industrial levels (U.S. Global Change Research Program 2018). The global mean surface temperature increased by approximately 1.8°F (1°C) in the past 80 years, and is likely to reach a 2.7°F (1.5°C) increase between 2030 and 2050 at current global emission rates (IPCC 2018).

The County of Santa Barbara's Final Environmental Impact Report (EIR) for the Energy and Climate Action Plan (ECAP) (PMC, 2015) and the *2016 Greenhouse Gas Emissions Inventory Update and Forecast* (County

of Santa Barbara Long Range Planning Division, 2018) contain a detailed description of the proposed project's existing regional setting as it pertains to GHG emissions. Regarding non-stationary sources of GHG emissions within Santa Barbara County specifically, the transportation sector produces 38% of the total emissions, followed by the building energy (28%), agriculture (14%), off-road equipment (11%), and solid waste (9%) sectors (County of Santa Barbara Long Range Planning Division 2018).

The overabundance of GHG in the atmosphere has led to a warming of the earth and has the potential to substantially change the earth's climate system. More frequent and intense weather and climate-related events are expected to damage infrastructure, ecosystems, and social systems across the United States (U.S. Global Change Research Program 2018). California's Central Coast, including Santa Barbara County, will be affected by changes in precipitation patterns, reduced foggy days, increased extreme heat days, exacerbated drought and wildfire conditions, and acceleration of sea level rise leading to increased coastal flooding and erosion (Langridge, Ruth 2018).

Global mean surface warming results from GHG emissions generated from many sources over time, rather than emissions generated by any one project (IPCC 2014). As defined in CEQA Guidelines Section 15355, and discussed in Section 15130, "'Cumulative impacts' refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." Therefore, by definition, climate change under CEQA is a cumulative impact.

CEQA Guidelines Section 15064.4(b) states that a lead agency "should focus its analysis on the reasonably foreseeable incremental contribution of the project's [GHG] emissions to the effects of climate change." A project's individual contribution may appear small but may still be cumulatively considerable. Therefore, it is not appropriate to determine the significance of an individual project's GHG emissions by comparing against state, local, or global emission rates. Instead, the Governor's Office of Planning and Research recommends using an established or recommended threshold as one method of determining significance during CEQA analysis (OPR 2008, 2018). A lead agency may determine that a project's incremental contribution to an existing cumulatively significant issue, such as climate change, is not significant based on supporting facts and analysis [CEQA Guidelines Section 15130(a)(2)].

Greenhouse gases include carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF6), and nitrogen trifluoride (NF3). The largest source of greenhouse gas emissions from human activities in the United States is from fossil fuel combustion for electricity, heat, and transportation. Specifically, the *Inventory of U.S. Greenhouse Gasses and Sinks* (U.S. Environmental Protection Agency, 2013) states that the primary sources of greenhouse gas emissions in 2013 included electricity production (31%), transportation (27%), industry (21%), commercial and residential (12%), and agriculture (9%). This release of gases creates a blanket around the earth that allows light to pass through but traps heat at the surface, preventing its escape into space. While this is a naturally occurring process known as "the greenhouse effect," there is strong evidence to support that human activities have accelerated the generation of greenhouse gases beyond natural levels. The overabundance of greenhouse gases in the atmosphere has led to a warming of the earth and has the potential to severely impact the earth's climate system. For instance, Santa Barbara County is projected to experience an increase in the number of wildfires, land vulnerable to 100-year flood events, and temperature increases, even under a low-emissions scenario (California Energy Commission, 2015).

Climate change results from greenhouse gas emissions "…*generated globally over many decades by a vast number of different sources*" rather than from greenhouse gas emissions generated by any one project (County of Santa Barbara Planning and Development, 2008). As defined in CEQA Guidelines Section 15355 and discussed in Section 15130, "…a cumulative impact consists of an impact which is created as a result of the combination of the [proposed] project…evaluated…together with other projects causing related impacts." Therefore, by definition, climate change under CEQA is a cumulative impact.

Environmental Threshold. Per CEQA Guidelines Section 15064.4, County staff should consider the following factors, among others, when determining the significance of impacts from GHG emissions on

the environment: (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 applies to the project; and (3) the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. The CEQA Guidelines also clarify that the County has the discretion to select a model or methodology that it considers most appropriate for estimating GHG emissions, but that it must "support its selection of a model or methodology with substantial evidence" and "explain the limitations of the particular model or methodology selected for use."

In July 2020, the Board affirmed its target to reduce GHG emissions in unincorporated County areas by 50 percent below 2007 levels by 2030. This target is in line with the State's goal of reducing statewide emissions by 40 percent below 1990 levels by 2030.

The County developed the interim thresholds based on the County's 2030 GHG target, which are in line with the State's GHG emission reduction goals. The County developed the interim project-level threshold by determining the portion of the County's 2030 GHG target emissions level that may be attributed to new development.

The Board adopted a numeric Screening Threshold of 300 MTCO2e/year for non-industrial stationary source projects and plans. The recommended Screening Threshold results in approximately 15 percent of all applicable future projects, and 87 percent of all applicable future land use emissions, being subject to the Significance Threshold. Approximately 85 percent of future projects would fall below the Screening Threshold and, therefore, would not require further analysis.

Impact Discussion:

(a). Generate GHG Emissions. The limited nature and duration of construction activities would not generate considerable greenhouse gas emissions. Once completed, the project would not require vehicular trips that would generate emissions GHG emissions. Therefore, the project would not exceed the County's Screening Threshold of 300 MTCO2e/year for non-industrial stationary source projects, and the impact would be *less than significant*.

(b). Conflict with an applicable regulations. The project would *not conflict* with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Cumulative Impacts. The proposed project's total GHG emissions would be less than the applicable threshold. Therefore, the project's incremental contribution to a cumulative effect is not cumulatively considerable and the project's greenhouse gas emissions would not have a significant impact on the environment.

Mitigation and Residual Impact. Since the proposed project would not have a significant impact on the environment, no additional mitigation is necessary. Therefore, residual impacts would be less than significant.

4.4 BIOLOGICAL RESOURCES

Will the proposal result in:	Poten. Signif. and Unavoid.	Signif. But Mitigable	Insignif.	No Impact / Beneficial Impact	Reviewed Under Previous Document
Flora					
a. A loss or disturbance to a unique, rare or threatened plant community?			X		

Will the proposal result in:	Poten. Signif. and Unavoid.	Signif. But Mitigable	Insignif.	No Impact / Beneficial Impact	Reviewed Under Previous Document
b. A reduction in the numbers or restriction in the range of any unique, rare or threatened species of plants?			X		
c. A reduction in the extent, diversity, or quality of native vegetation (including brush removal for fire prevention and flood control improvements)?		X			
d. An impact on non-native vegetation whether naturalized or horticultural if of habitat value?		X			
e. The loss of healthy native specimen trees?		X			
f. Introduction of herbicides, pesticides, animal life, human habitation, non-native plants or other factors that would change or hamper the existing habitat?		X			
Fauna					
g. A reduction in the numbers, a restriction in the range, or an impact to the critical habitat of any unique, rare, threatened or endangered species of animals?		X			
h. A reduction in the diversity or numbers of animals onsite (including mammals, birds, reptiles, amphibians, fish or invertebrates)?		X			
i. A deterioration of existing fish or wildlife habitat (for foraging, breeding, roosting, nesting, etc.)?		X			
j. Introduction of barriers to movement of any resident or migratory fish or wildlife species?			X		
k. Introduction of any factors (light, fencing, noise, human presence and/or domestic animals) which could hinder the normal activities of wildlife?			X		

Existing Plant and Animal Communities/Conditions.

Background and Methods:

Santa Barbara County has a wide diversity of habitat types, including chaparral, oak woodlands, wetlands and beach dunes. These are complex ecosystems and many factors are involved in assessing the value of the resources and the significance of project impacts. For this project, Langan Engineering and Environmental Services, Inc. (Langan) prepared a Biological Resources Assessment dated October 20, 2022, summarizing the methods and results of the biological assessment, wetland delineation, and jurisdictional assessment at the Project Site identified through office research and biological surveys conducted on February 8, 2020, October 15, 2021, and July 7, 2022.

The Study Area included work areas and the surrounding habitat totaling approximately 37.11 acres on the CAL lease, which is located between the UCAL Lease to the west, and the Bradley Lease to the South. A small ephemeral stream (a tributary to Bradley Canyon Creek) bisects the Study Area and runs the length of the canyon along a southeast/northwest trend. The ephemeral drainage includes a riparian corridor dominated by Arroyo willows, Muelfat, Coast Live Oaks and adjacent upland habitat. The following analysis is based on this information.



FIGURE 7. EXISTING CONDITIONS AT THE SITE FOR A5-01 EXCAVATION.



FIGURE 8. EXISTING CONDITIONS AT SITE FOR B5-02/B5-03 EXCAVATION.



FIGURE 9. EXISTING CONDITIONS AT SITE B6-03 EXCAVATION.

Prior to field efforts, resources were reviewed to determine the locations of potential hydrologic features, including a) the USGS Sisquoc, CA 7.5-minute quadrangle map (USGS 2018); b) the USDA-NRCS Web Soil Mapper (USDA 2021); c) the National Hydrography Dataset (NHD) (USGS 2021); d) the National Wetlands Inventory (USFWS 2021); and e) a high quality aerial photograph of the Study Area and its surroundings. The USGS 7.5-minute quadrangle map and the NHD indicated the presence of one potential hydrological feature (the unnamed drainage within Bradley Canyon) within the Study Area. Biological studies prepared for neighboring sites were reviewed (Garcia and Associates 2015). Biological studies were completed throughout the properties associated with the proposed project and included surveys conducted on both the UCAL Lease (APN No. 129-180-038) and the CAL Lease (APN No. 129-180-018). Biological surveys took place on February 8, 2020, October 15, 2021, and July 7, 2022. Sites were assessed for suitable habitat for special-status species such as California red-legged frog (Rana draytonii) and California tiger salamander (Ambystoma californiense).

Approximately 2.59 acres of previously developed areas will be used for equipment storage and soil stockpile at locations 1 - 7. The parcels adjacent to the Project Site are designated agricultural use and are currently managed for cattle grazing, oil production, and vineyard operations. There are also existing oil production facilities, oil field roads and well pads adjacent to the western and southern property boundaries. The Project Site is located approximately 1.6 miles northwest of the Cat Canyon Resources production site.

Flora:

Plant species in the region that are classified as Endangered or Threatened under the Federal ESA or the California ESA; or considered rare under the California Native Plant Protection Act; or considered rare by resource agencies, professional organizations, and/or the scientific community are identified in the Biological Resource Assessment (Langan, October 2022). The topography, soils, and vegetation throughout the project

site have been impacted at various levels due to routine maintenance and past oil development and agricultural activities. No special-status botanical species were documented during the survey. However, within the 37.11 acre study area, four Vegetative Communities were identified during the field surveys, identified below:

Wild Oats Grassland. Approximately 18.76 acres of wild oat grasslands were observed within the Study Area. Approximately 1.35 acres of wild oats grassland will be temporarily impacted by project activities [0.75 acres at A5-01, 0.26 acres at B5-02/B5-06, 0.02 acres at B6-03, 0.32 acres within the Well Pad Restoration areas].

California sagebrush - black sage scrub (Artemisia californica – Salvia mellifera Shrubland Alliance). Approximately 2.00 acres of California sagebrush – black sage scrub was observed within the Study Area. Temporary impacts to this vegetation type includes up to 1.06 acres for grading of well pads 40, 50, and 89.

Coast live oak woodland (Quercus agrifolia / grass Woodland Alliance). Approximately 6.59 acres of coast live oak woodland was observed within the Study Area. Temporary impacts to 0.03 acres of coast live oak woodland understory may occur for grading of well pads 40, 50, and 89 but no removal of individual oak trees are anticipated.

Coast live oak riparian woodland (Quercus agrifolia – Salix lasiolepis Woodland Alliance). Approximately 6.55 acres of coast live oak riparian woodland was observed within the Study Area. Approximately 0.17 acres of Coast Live Oak Riparian Woodland will be temporarily impacted [0.02 acres at A5-01, 0.11 acres at B5-02/B5-06, and 0.04 acres at B6-03].

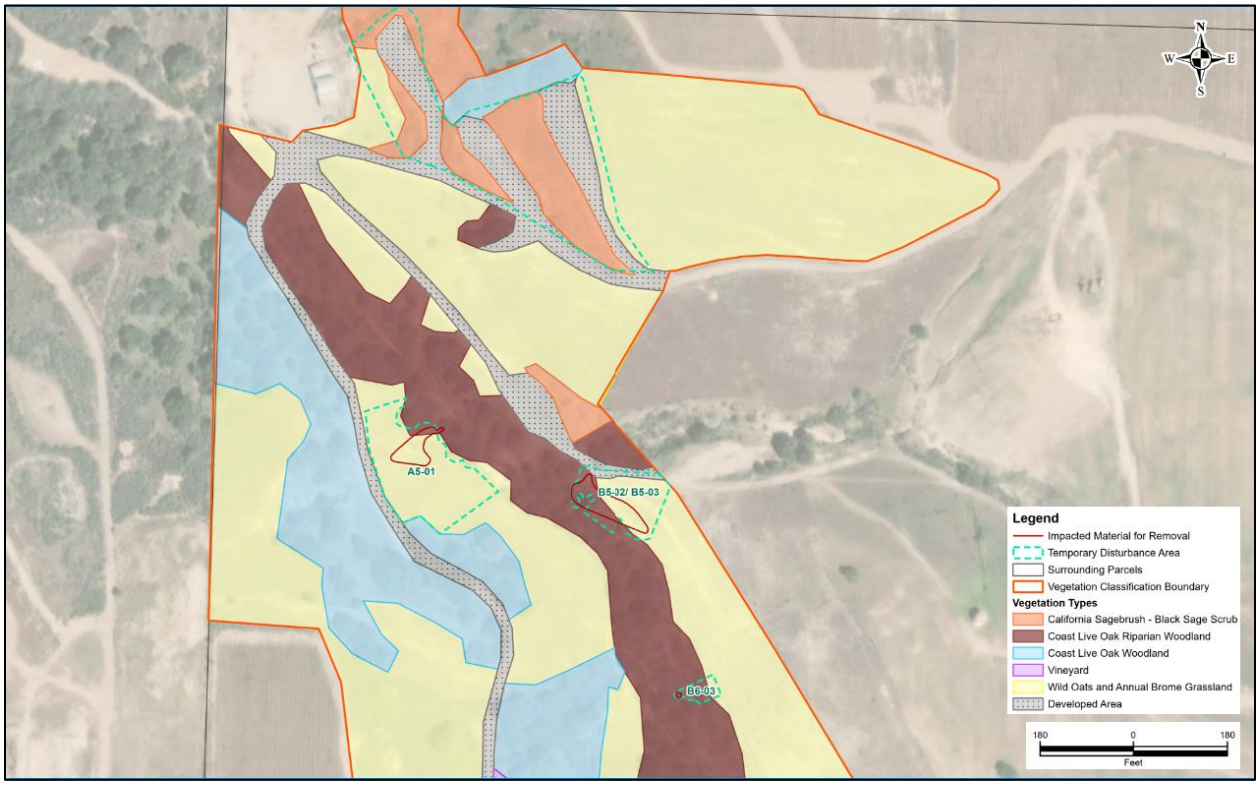


FIGURE 10. VEGETATION COMMUNITIES SURROUNDING THE EXCAVATION SITES WITHIN THE CLASSIFICATION BOUNDARY.

The CAL and UCAL Leases have a number of agricultural/oil field roads, access areas, soil remediation areas, and well pads. They have been maintained for access and are generally clear of vegetation. Developed areas will be used for stockpiling soil, staging equipment, and is within the temporary disturbance area of B5-02/B5-06. Approximately 2.59 acres will be used for soil stockpiles on established well pads and previously disturbed

areas. Equipment will be staged on approximately 0.77 acres of well pads 40, 50, and 89 near the work areas. Approximately 2.19 acres of additional developed area was observed within the Study Area. Existing oil field road within the temporary disturbance area for B5-02 accounts for approximately 0.04 acres of the work area. Much of the CAL Lease has been developed as vineyards. In addition to the developed areas described above an additional 1.02 acres of established vineyard was observed within the Study Area, however, vineyards will not be impacted by the Project.

Sensitive Habitat:
Critical Habitat for multiple species occur within the project region and include Arroyo toad, California red-legged frog, California tiger salamander, La Graciosa thistle, and Lompoc yerba santa. The nearest Designated Critical Habitat is for California Tiger Salamander, located approximately 1.2 miles west of the Site, however, no critical habitat occur within the Survey Area.

Table 1. Sensitive Habitat within the Project Region

Sensitive Habitat	**Protection Status**	**Distance from Project Site**
U.S. Fish and Wildlife Service/National Marine Fisheries Service Designated Critical Habitat		
Arroyo toad Critical Habitat	Designated Critical Habitat	<10 miles
California red-legged frog Critical Habitat	Designated Critical Habitat	<10 miles
California tiger salamander Critical Habitat	Designated Critical Habitat	~1.2 miles
La Graciosa thistle Critical Habitat	Designated Critical Habitat	<5 miles
Lompoc yerba santa Critical Habitat	Designated Critical Habitat	<10 miles
California Department of Fish and Wildlife Communities of Special Concern		
Coast live oak/arroyo willow woodland	G3/S3	Within project site

California Tiger Salamander. The Project Site is within the Santa Barbara County Distinct Population Segment for the California tiger salamander or the Tiger Salamander Range, and the 2 kilometer CTS buffer zone. However, no USFWS-designated California tiger salamander Critical Habitat is located within the Project Site. The closest known California tiger salamander Critical Habitat area is approximately 1.2 miles northwest of the Site.

Coast Live Oak/Arroyo willow woodland. Coast live oak woodland (Quercus agrifolia / grass Woodland Alliance) was observed within upland portions of the Study Area. Approximately 6.59 acres of coast live oak woodland was observed within the Study Area. Temporary impacts to 0.03 acres of coast live oak woodland understory may occur for grading of well pads 40, 50, and 89 but no removal of individual oak trees is anticipated. Individual coast live oak trees and coast live oak woodlands are protected resources within Santa Barbara County but are not a CDFW Community of Special Concern.

Special Status Plant Species:
The California Natural Diversity Database (CNDDB) identified twelve (12) special plant status species with the potential to occur onsite. However, no federal or state endangered or threatened plant species are expected to occur on site because no special-status perennial shrub species were observed during the surveys by Langan biologists. Suitable habitat is present for Black-flowered Figwort (Scrophularia atrata) and Straight awned spineflower (Chorizanthe rectispina). However, no evidence of dried figwort flowers or vegetation was observed within the disturbance areas. Historical occurrences of straight awned spineflower are recorded in the region however, the history of disturbance at the Project Site likely precludes the suitability for the species.

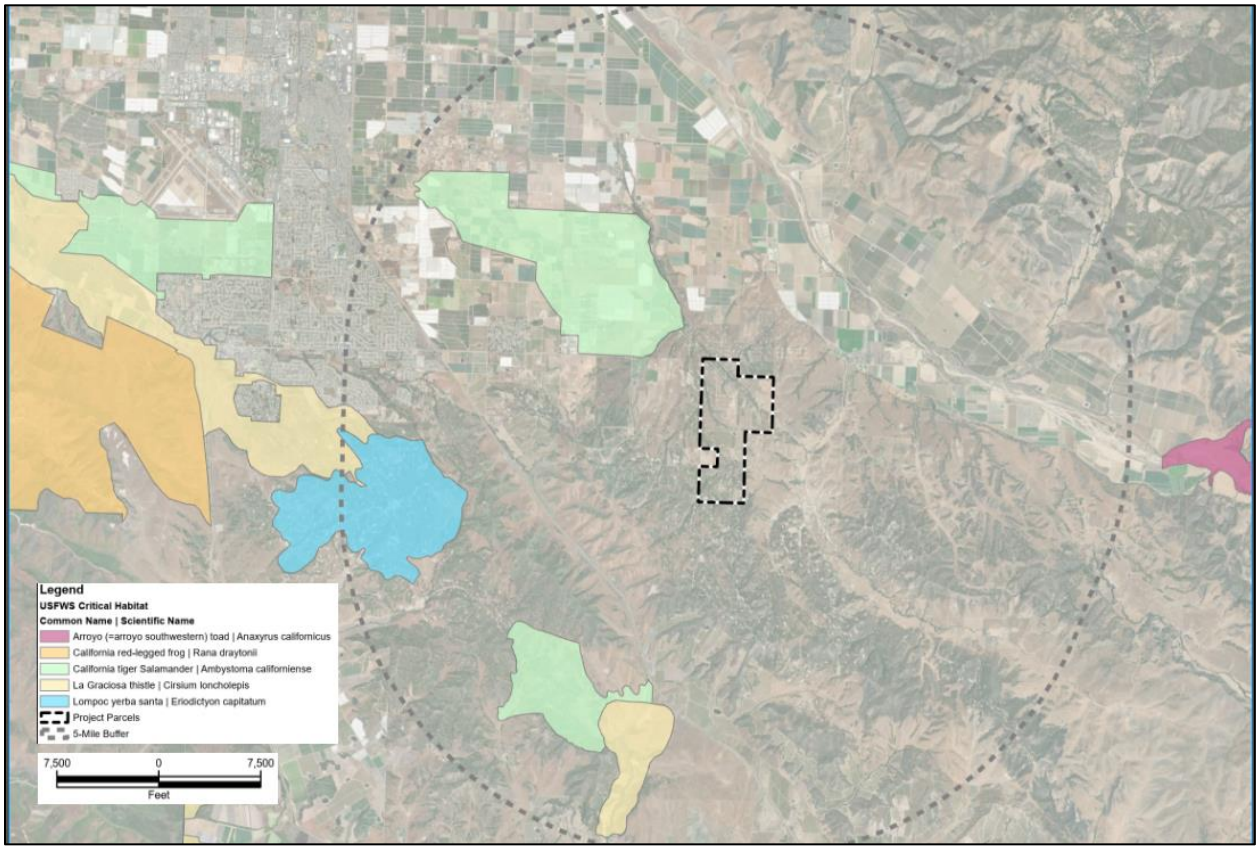


FIGURE 11. USFWS CRITICAL HABITAT WITHIN 5 MILES OF THE PROJECT SITE.

Fauna:

Of the 16 Special-status wildlife species that have known occurrences within the region according to the CNDDB, only 6 had a moderate potential to occur within the project area due to presence of habitat, including the American badger, California horned lark, Southern California rufous-crowned sparrow, California red-legged frog, Coast horned lizard, and Northern California legless lizard. No special-status species were documented during field surveys.

American Badger (Taxidea taxus); California Species of Special Concern (CDFW). The American Badger uses grasslands, forests and shrub habitats with friable soil and is known to occur within Project region. The open areas within the coast live oak upland and riparian woodlands and oat grasslands are suitable habitat for the species. Burrows may occur in the creek terraces and surrounding upland habitat. However, no large mammal burrows or this species were observed within the Project Site. The nearest known population is within 5-miles from the Site.

California horned lark (Eremophila alpestris actia); CDFW Watch List. The California horned lark lives in sparsely vegetated habitats. Breeding habitat consists of short grasslands, short-stature shrubland, desert, or alpine and arctic tundra. The project site includes a small amount of annual grasslands or other low growing habitat and therefore, the species may occur on site, however, the nearest known occurrence is 5-miles away. This species was not observed within the Project Site.

Southern California rufous-crowned sparrow (Aimophila ruficeps canescens); CDFW Watch List. The Southern California rufous-crowned sparrow requires Coastal scrub habitat and is known to occur within the region because California coastal scrub habitat is adjacent to the disturbance area. The nearest known occurrence is within 5-miles from the Site. However, this species was not observed within the Site.

California Red-Legged Frog (Rana draytonii); Federal Threatened & California Species of Special Concern. California red-legged frog (CRLF) may be found in lowlands and foothills in or near permanent standing

water during the breeding season with dense riparian or emergent vegetation. CRLF was observed in an agricultural pond approximately 850 feet south of the Project Site, on the CAL Lease in 2009, but was not detected in a 2011 survey. Other surveys identified the species along the Sisquoc River, approximately 5 miles north of the Project Site. The ephemeral drainage may provide a movement corridor during winter months and agriculture ponds on CAL or UCAL Leases do provide potential nearby breeding habitat.

Coast horned lizard (Phrynosoma Blainvillii); CDFW California Species of Special Concern. The Coast horned lizard can be found in a wide variety of habitats, most common in lowlands along sandy washes with low shrub cover. Coast horned lizard likely occurs within the Project Site because the sandy drainage onsite is a high quality habitat for the species. However, the nearest known location is within 1-mile of the Site and none were observed during the biological surveys. The adjacent upland habitat is a mixture of grasslands and coast live oak woodland habitat, which is suitable habitat for this species.

Northern California legless lizard (Anniella pulchra); CDFW California Species of Special Concern. The Northern California legless lizard is commonly found in sandy or loose loamy soils under sparse vegetation. The nearest known location is 0.25-miles southwest of the Soil Stockpile area 5. California legless lizard have been observed within Sisquoc River and due to the connectivity and suitable habitat along Bradley Drainage, so there is potential that this species could be found on site. Sandy soils on the Project Site provide potential habitat, although, none were observed during the biological surveys.

California tiger salamander (Ambystoma californiense); Federally Endangered, State Threatened. Although not identified in the CNDDB search as having a moderate potential to occur, the project site is within the mapped potential range of the California tiger salamander (CTS), adjacent to the East Santa Maria meta-population USFWS designated critical habitat unit. The California tiger salamander (CTS) is restricted to vernal pools and seasonal ponds (including many constructed stock ponds) or other seasonal water sources providing water through the breeding season, in central California. The young migrate from ponds to upland habitat during May to August. Upland habitats include grasslands, edge of oak savannas, and occasionally, chaparral and shrublands. Ponds must hold water for a minimum of 70 consecutive days to allow successful breeding to occur and for larvae to metamorphose and leave the ponds as adults. The species requires small mammal burrows in upland habitat areas.

The closest known breeding ponds TWDA-11 and TWDA-10 are 1.20 and 1.84 miles from the Project Site, respectively. Potential breeding pond SISQ-14 is within California tiger salamander dispersal distances from the temporary development areas, equipment staging, and soil stockpile areas. The excavation locations are approximately 0.24 miles east of SISQ-14. No California tiger salamanders were observed during aquatic surveys at SISQ-14. The Biological Assessment identified this species as having a low potential to occur within the project site.

Migratory Nesting Birds. The trees within and adjacent to the project site provide moderately suitable habitat for nesting birds and raptors. Hydroseeding and restoration efforts may occur during the nesting season.

USFWS General Conservation Plan:

In June 2022, the U.S. Fish and Wildlife Service (USFWS or the Service) finalized a General Conservation Plan (GCP) for Oil and Gas Activities associated with issuance of Endangered Species Act section 10(a)(1)(B) permits for the Santa Barbara County distinct population segment of the California tiger salamander, California red-legged frog, and Lompoc yerba santa within Santa Barbara County. The GCP streamlines the application for a Section 10(a)(1)(B) Incidental Take Permit (ITP) by allowing the Service to develop a single general conservation plan for a local area. Individual non-federal entities may apply for an ITP, provided they commit to complying with the monitoring, minimization, and mitigation measures in the general conservation plan.

The project is considered a Midstream Activity, which includes habitat restoration activities and therefore falls under the GCP covered activities. The GCP analyzes the impacts to listed species and identifies

mitigation measures to minimize all unavoidable impacts according to the Mitigation Strategies for the California tiger salamander, California red-legged frog and the anticipated impacts described in the proposed project application.

According to the GCP, the Service included impacts to habitat as a proxy to quantify take levels and define the permitted take limits. Within the Western Santa Maria area, there is approximately 12,963 acres of CTS habitat and the GCP allows 260 acres to be temporarily impacted. No permanent impacts to or loss of California red-legged frog aquatic breeding habitat is allowed under the GCP, but it is expected that activities with a duration of 1 year or fewer would impact only one-third of the adult lifespan of the average California red-legged frog and mitigation required to offset impacts would be one-third that of an equivalent permanent impacts.

Hydrology:
The Project Site includes portions of Bradley Drainage to Bradley Canyon Creek, a tributary to the Sisquoc River. Three jurisdictional areas were studied: Non-wetland waters of the U.S., Wetland Waters of the U.S., and CDFW jurisdictional streams. The Study Area includes 0.50 acres of non-wetland waters of the U.S., no wetland waters of the U.S., and 6.62 acres of CDFW jurisdictional stream habitat. These areas do not meet federal wetland criteria but do meet the County of Santa Barbara criteria for a protected wetland resource.

Environmental Thresholds. Santa Barbara County's Environmental Thresholds and Guidelines Manual (2008) includes guidelines for the assessment of biological resource impacts. The following thresholds are applicable to this project:

Wetlands: Projects which result in a net loss of important wetland area or wetland habitat value, either through direct or indirect impacts to wetland vegetation, degradation of water quality, or would threaten the continuity of wetland-dependent animal or plant species are considered to have a potentially significant effect on the environment. Projects which substantially interrupt wildlife access, use and dispersal in wetland areas would typically be considered to have a potentially significant impact. Projects which disrupt the hydrology of wetlands systems would be considered to have a potentially significant impact.

Riparian Habitats: Project created impacts may be considered significant due to: direct removal of riparian vegetation; disruption of riparian wildlife habitat, particularly animal dispersal corridors and or understory vegetation; or intrusion within the upland edge of the riparian canopy leading to potential disruption of animal migration, breeding, etc. through increased noise, light and glare, and human or domestic animal intrusion; or construction activity which disrupts critical time periods for fish and other wildlife species.

Native Grasslands: In general, project created impacts to native grasslands may be considered significant if they involve removal of or severe disturbance to a patch or a combined patch area of native grasses that is greater than one-quarter (1/4) acre in size. The grassland must contain at least 10 percent relative cover of native grassland species (based on a sample unit). Impacts to patch areas less than one-quarter acre in size that are clearly isolated and not part of a significant native grassland or an integral component of a larger ecosystem are usually considered insignificant.

Oak Woodlands and Forests: Project created impacts may be considered significant due to habitat fragmentation, removal of understory, alteration to drainage patterns, disruption of the canopy, removal of a significant number of trees that would cause a break in the canopy, or disruption in animal movement in and through the woodland.

Individual Native Trees: Project created impacts may be considered significant due to the loss of 10% or more of the trees of biological value on a project site.

Other Rare Habitat Types: The Manual recognizes that not all habitat-types found in Santa Barbara County are addressed by the habitat-specific guidelines. Impacts to other habitat types or species may be considered significant, based on substantial evidence in the record, if they substantially: (1) reduce or eliminate species diversity or abundance; (2) reduce or eliminate the quality of nesting areas; (3) limit

reproductive capacity through losses of individuals or habitat; (4) fragment, eliminate, or otherwise disrupt foraging areas and/or access to food sources; (5) limit or fragment range and movement; or (6) interfere with natural processes, such as fire or flooding, upon which the habitat depends.

Impact Discussion:

(a-b). Threatened Plant Species/Communities. No USFWS/NMFS Critical Habitat for plant species or Environmentally Sensitive Habitat (ESH) area was identified within the Site. The project would result in the temporary impact of 1.35 acres of Wild Oats and Annual Brome Grassland and 0.17 acres of Coast Live Oak Riparian Woodland. Tree exclusion zones (TEZ-1, TEZ-2 and TEZ-3) and depth exclusion zones (DEZ-1 and DEZ-2) have been established within the A5-01 and B5-02/B5-03 remedial areas to minimize impacts to riparian and oak tree habitat. Although natural habitat exists in the survey area, the quality is considered low due to current baseline conditions and associated impacts from historic and current anthropogenic disturbances to the natural environment. These activities include oil extraction and agricultural operations/grazing, which have occurred throughout the survey area and adjacent properties. No federal or state endangered or threatened plant species are expected to occur on site. No special-status perennial shrub species were observed during the surveys and no Environmentally Sensitive Habitat Areas are within the areas of disturbance. Special-status plant species are not expected to occur within the Project and therefore impacts will be *less than significant*.

(c-d). Reduce quality of native vegetation. Work areas have been identified to provide access, staging, and material removal at each work location. The proposed project would result in the temporary disturbance of approximately 9 acres including approximately 9,598 cy of cut and approximately 9,598 cy of fill material. Approximately 1.35 acres of Wild Oats and Annual Brome Grassland and 0.17 acres of Coast Live Oak Riparian Woodland would be temporarily impacted as a result of the project. Grubbing of vegetation will occur in excavation locations, for temporary stockpile of soil and infrastructure materials, and areas requiring grading. For the plants that inhabit these areas, ground disturbance could lead to injury and mortality of individuals. Native vegetation may also be impacted by an accumulation of fugitive dust, increased erosion, and sedimentation during proposed project activities. When project activities are complete, the site would return to its natural contours and excavated areas would be restored with native vegetation communities. Impacts would be further mitigated through a Habitat Restoration Plan (BIO-05) for any temporary loss of vegetative cover and biological monitoring (BIO-04 & BIO-11). The Habitat Restoration Plan will ensure the site returns to its existing conditions. The proposed project would replace the contaminated soil with clean fill and restore the project site to existing conditions, therefore creating a cleaner environmental for native vegetation to grow. The proposed project would not result in a reduction in the numbers or restriction in the range of any unique, rare or threatened species of plants. With this, impacts to native and non-native vegetation are expected to be *less than significant with mitigation*.

(e). Native Trees. No individual trees will be removed as a result of the project. The Project Site includes approximately 0.02 acres of upland coast live oak woodland and 0.17 acres of coast live oak riparian woodland. Impacts to coast live oaks may include impacts to the root zone of coast live oaks while excavating to remove impacted material, subsequent earthwork and compaction, and installation of hydroseed. The project will require removal of soil near ten coast live oaks. Contamination in areas A5-01 and B5-02/B5-03 encroaches into the canopies often (10) coast live oak trees. Tree exclusion zones (TEZs) have been established to protect and monitor coast live oak trees during remediation activities (TEZ-1, TEZ-2 and TEZ-3 shown in Figures 2-4). The TEZs are intended to minimize impacts to riparian and oak tree habitat within remedial areas and reduce excavation instability at depth. The TEZs were calculated as a function of the trees' critical root zone (CRZ), which is defined as a one-foot radius per one inch of diameter at breast height (DBH). These zones will allow for some impacted material to remain under these tree canopies. The TEZs and DEZs will minimize impacts to tree and riparian habitats, by allowing a minimal volume of soil with COPCs in exceedance of SSCGs to remain in place. These trees

may have a portion of their root system disturbed by the excavation. Following the soil removal action, backfilling with clean material and surface restoration will be completed. Oak Tree Protection will be installed prior to ground disturbing activities (BIO-01). In the event trees are damaged, they will be replaced at a 10:1 ratio and monitored for two to three years, depending on Biologist recommendations (BIO-02 & BIO-03). Therefore, impacts to protected coast live oak trees are expected to be *less than significant level with mitigation.*

(f). Introduction of factors that would change the existing habitat. The three former diluent pipeline areas (A5-01, B5-02/B5-03, and B6-03) are located adjacent to an ephemeral tributary to the Bradley Creek. The project would result in the temporary disturbance of a minimal amount of temporary CDFW jurisdictional stream habitat (approximately 0.11 acres). No impacts to non-wetland waters of the U.S. are anticipated. A CDFW Streambed Alteration Agreement (SAA) is required prior to ground disturbing activities. The restoration areas at abandoned wells 40, 50, and 89 are not within CDFW or USACE jurisdictional areas. Therefore, submission and approval of a habitat restoration plan (BIO-05) and agency permitting (BIO-15) are required prior to ground disturbing activities. Additionally, to prevent pollution from entering Bradley Creek, equipment will be washed and stored in a designated area at least 100 feet away from any sensitive resources (BIO-06 & BIO-07). Once contaminated soil and construction equipment is removed, the site will return to pre-construction conditions. Additionally, one groundwater monitoring well will be installed at each of the three remediation areas. Wells will be completed with screened intervals within previously observed perched water zones at depths between 7.5 and 33 feet. The wells will be monitored semiannually for up to two years to confirm that constituents in perched water are stable or decreasing; or that natural attenuation is occurring. Upon cessation of groundwater monitoring and with concurrence from Central Coast Regional Water Quality Control Board (CC-RWQCB) and Santa Barbara County Environmental Health Services (SBCEHS), the groundwater monitoring wells will subsequently be abandoned. County EHS approved the Remedial Action Workplan, California Lease, on December 17, 2021 (Attachment 5). The project does not propose introducing permanent structures. Additionally, applicant proposed mitigation measure, Emergency Response Action Plan (BIO-14) will include procedures for timely re-establishment of vegetation that replicates the habitats disturbed. Therefore, with implementation of minimization measures (BIO-05, BIO-06, BIO-07, and BIO-15), agency permitting, and restoration of the temporarily impacted areas the impacts to jurisdictional resources will be *less than significant*.

(g, h). Reduction in critical habitat or numbers of animals onsite. Marginally suitable upland habitat is present for, American Badger, California horned lark, Southern California rufous-crowned Sparrow, CTS, CRLF, Coast horned lizard, and Northern California legless lizard. However, no special-status wildlife species were observed during the survey.

American Badgers. Equipment moving and excavating or decompacting soil within the Project Site could potentially injure or kill badgers that remain in dens. Due to the large amount of habitat adjacent to the Project Site, badgers would have sufficient habitat to retreat to and occupy. All impacts to badgers will be temporary and do not pose a significant risk. Areas that will be excavated will be surveyed for active American badger dens prior to commencement of work (BIO-11). If an active den is observed the work in the area, work will be halted until approval from CDFW and the County to continue work is provided (BIO-12 and BIO-17). No impacts to active dens will occur when cubs may be present.

California horned lark & Southern California rufous-crowned Sparrow. Although project impacts will be temporary during daylight hours, presence throughout the site has the potential to occur as transient visitors. Hydroseeding and restoration efforts may occur during the nesting season (i.e., February 15 – September 15) and will require pre-construction bird surveys to be completed (BIO-08). If active nests are observed a nest protection plan will be developed including appropriate protective buffers. To the greatest extent possible, vegetation removal will occur outside of the

nesting season. With implementation of avoidance measures the impacts to nesting birds protected by the Migratory Bird Treaty Act will be *less than significant*.

California Tiger Salamander. No USFWS-designated California tiger salamander Critical Habitat is located within the Project Site. The closest known breeding ponds TWDA-11 and TWDA-10 are 1.20 and 1.84 miles from the Project Site, respectively. No breeding habitat occurs within the remediation area and onsite upland habitat is low quality habitat. Small mammal burrows that might be used as refugia are considered suitable upland habitat and may be impacted temporarily during excavation and remediation activities. These burrows could provide seasonal/temporary refuge for CTS during upland migratory and dispersal movements. Direct impacts to this species, could occur from being crushed or trampled by vehicles and equipment. Following remediation, areas disturbed by the project would be backfilled and allowed to naturally recover. No permanent impacts to CTS habitat would occur. Although project impacts are described as temporary, with the expectation that habitat function within work areas will be restored, there is potential for incidental take if CTS are present during construction activities. Initial consultation with CDFW and USFWS resulted in the determination that the project qualifies for the Service's GCP and associated performance standards and mitigation measures for the identified special status species. Therefore, protocol level surveys were not required. Measures from the GCP to avoid and minimize impacts to California tiger salamander are included below (BIO-09 through BIO-13, BIO-16 & BIO-17).

California Red-Legged Frog. The species was observed in an agricultural pond on the CAL Lease in 2009 but has not been seen in subsequent surveys since. The pond is approximately 850 feet south of the Project Site (SISQ-14) and provides suitable breeding habitat. The ephemeral Bradley Drainage does not provide breeding habitat for CRLF but it may provide a movement corridor during winter months or possible refuge areas in the form of small mammal burrows. The nearest critical habitat designation is more than 5 miles to the east of the project site. The project would result in temporary disturbance to approximately 9 acres of potential upland habitat for CRLF. Following remediation, the areas involved would be backfilled and allowed to naturally recover. There would be no permanent impacts to CRLF habitat, particularly if work avoids the rainy season of the year when sub-adult CRLF could be dispersing. Direct impacts to this species may occur from being crushed or trampled by vehicles and equipment during construction activities. CRLF is a covered species under the USFWS GCP, therefore the mitigation measures to avoid and minimize impacts to CRLF are included below.

Consultation with USFWS has confirmed this project is consistent for coverage under the General Conservation Plan for Oil and Gas Activities (General Conservation Plan) in Santa Barbara County (USFWS 2022b). Measures to avoid and minimize impacts to California tiger salamander and California red-legged frog required within the General Conservation Plan have been applied to the project and include biological monitoring (BIO-04), worker awareness training (BIO-09), delineation of project disturbance limits to decrease the potential for habitat damage and individual take (BIO-10), pre-activity clearance surveys (BIO-11), guidance on wildlife relocation (BIO-12), exclusionary fencing (BIO-13), and coordination with state and federal agencies (BIO-16 & BIO-17). Therefore impacts to CTS and CRLF will be *less than significant with mitigation*.

Coast Horned Lizard. The Coast horned lizard has a moderate potential to occur in suitable habitat in the project vicinity. The sandy drainage is high quality habitat for the species and the nearest known location is within 1-mile of the Site. Impacts to this species could be significant during excavation activities, when they may be injured or killed. Direct impacts to coast horned lizards may also occur as a result of vehicle strikes if this species is present in work areas and/or basking on roadways. These impacts can be reduced by pre-activity surveys and relocation of any observed individuals to adjacent suitable habitat (BIO-11). Residual impacts to this species would be *less than significant with mitigation*.

Northern California Legless Lizard. Northern legless lizards have a moderate potential to occur within the project vicinity where loose, sandy soils are present. Northern legless lizards rely on loose sandy soils and may be impacted indirectly by compacting soils within the project footprint or during excavation. California legless lizard have been observed within Sisquoc River and due to the connectivity and suitable habitat along Bradley Drainage there is potential that California legless lizard could be found on site. If northern legless lizards are present, they may be impacted during excavation activities, when they could be crushed or trampled by vehicles and equipment. Pre-activity surveys prior to excavation activities would reduce the likelihood of direct mortality to the northern legless lizards (BIO-11), in addition to keeping the project footprint within pre-determined boundaries (BIO-10). With the addition of these protection measures the potential impacts to Norther California legless lizards would be *significant but mitigable*.

Direct impacts to all species may include mortality from vehicle or equipment moving and excavating or decompacting soil within the Project Site. Project impacts will be temporary during working hours. Impacts to all species will be reduced through biological monitoring (BIO-04), worker awareness training (BIO-09), delineation of project disturbance limits (BIO-10), pre-activity surveys (BIO-08 and BIO-11), guidance on wildlife relocation (BIO-12), exclusionary fencing (BIO-13), and coordination with state and federal agencies (BIO-16 & BIO-17). Additionally, applicant proposed mitigation measure, Emergency Response Action Plan (BIO-14) will include specific measures to avoid impacts to wildlife habitats, animal species, and environmentally sensitive habitat areas during response and cleanup operations. Therefore impacts to critical habitat or number of animals onsite will be *less than significant with mitigation*.

(j). Prevent movement of any resident or migratory fish or wildlife species. Construction of the proposed project would be temporary and would not interfere substantially with the movement of any native resident or migratory wildlife species. The net removal of abandoned oil facilities and contaminated soil throughout the project area only improves the ability for wildlife species to move freely among areas of suitable habitat. Therefore, impacts to wildlife movement by the proposed project would be *less than significant.*

(k). Human factors. Construction activities would introduce light, fencing, noise, and human presence to the site. at least one groundwater monitoring well will be installed at each of the three remediation areas between 7.5 and 33 feet deep to monitor constituents are stable or decreasing. Once groundwater monitoring is complete, the wells will be abandoned. Standard BMPs and site maintenance measures would mitigate impacts from human caused factors to a *less than significant* level.

Cumulative Impacts. Since the project would not significantly impact biological resources onsite, it would not have a cumulatively considerable effect on the County's biological resources.

Mitigation and Residual Impact. The following mitigation measures would reduce the project's biological resource impacts to an insignificant level:

BIO-01 Oak Tree Protection. The Owner / Applicant shall submit a Tree Protection Plan (TPP) prepared by a P&D-approved arborist and/or biologist. The Owner Applicant shall comply with and specify the following as notes on the TPP and Grading and Building Plans:

a. Protected trees adjacent to the work areas will be clearly marked with fencing, rope, or signage at the discretion of an onsite Project biologist.
b. Fencing of all trees to be protected at least six feet outside the dripline with chain-link (or other material satisfactory to P&D) fencing at least 3 ft high, staked to prevent any collapse, and with signs identifying the protection area placed in 15-ft intervals on the fencing.
c. Fencing/staking/signage shall be maintained throughout all grading and construction activities.
d. No irrigation is permitted within 6 ft of the dripline of any protected tree unless specifically authorized.

e. The following shall be completed only by hand and under the direction of a P&D approved arborist/biologist:
    i. Any trenching required within the dripline or sensitive root zone of any specimen.
    ii. Cleanly cutting any roots of one inch in diameter or greater, encountered during grading or construction.
f. Special equipment: If the use of hand tools is deemed infeasible by P&D, P&D may authorize work with rubber-tired construction equipment weighing five tons or less. If significant large rocks are present, or if spoil placement will impact surrounding trees, then a small tracked excavator (i.e., 215 or smaller track hoe) may be used as determined by P&D staff and under the direction of a P&D approved biologist.
g. Grading shall be designed to avoid ponding and ensure proper drainage within driplines of oak trees.

PLAN REQUIREMENTS: The Owner/Applicant shall: (1) submit the TPP; (2) Include all applicable components in Tree Replacement Plan; (3) include as notes or depictions all plan components listed above, graphically depicting all those related to earth movement, construction, and temporarily and/or permanently installed protection measures. **TIMING**: The Owner/Applicant shall comply with this measure prior to issuance of the Land Use Permit. Plan components shall be included on all plans prior to the issuance of grading permits. The Owner/Applicant shall install tree protection measures onsite prior to issuance of grading/building permits and pre-construction meeting. **MONITORING**: The Owner/Applicant shall demonstrate to P&D compliance monitoring staff that trees identified for protection were not damaged or removed or, if damage or removal occurred, that correction is completed as required by the TPP prior to Final Building Inspection Clearance.

BIO-02 Oak Tree Protection Plan-Unexpected Damage and Mitigation. In the event of unexpected damage or removal, this mitigation shall include but is not limited to posting of a performance security and hiring an outside consulting biologist or arborist to assess the damage and recommend mitigation. The required mitigation shall be done under the direction of P&D. Any performance securities required for installation and maintenance of replacement trees will be released by P&D after its inspection and approval of such installation and maintenance. Damaged trees shall be mitigated on a minimum 10:1 ratio. If it becomes necessary to remove a tree not planned for removal, if feasible, the tree shall be boxed and replanted. If a P&D approved arborist certifies that it is not feasible to replant the tree, it shall be replaced at a 10:1 basis. If replacement trees cannot all be accommodated on site, a plan must be approved by P&D for replacement trees to be planted off site.

BIO-03 Tree Replacement. The owner/applicant shall submit Oak Tree Mitigation Plan prior to tree removal prepared by a P&D-approved arborist/biologist and designed to mitigate removal of protected native trees and include the following components:

a. The replacement trees shall be coast live oak and shall be:
    i. 15-gallon size coast live oak trees obtained from locally occurring saplings or seed stock at a 10:1 ratio for every coast live oak tree approved to be removed or significantly disturbed. The replanting location will be shown on the plans.
b. Species shall be from locally obtained plans and seed stock.
c. The trees shall be gopher fenced.
d. The trees shall be irrigated with drip irrigation on a timer until established (per TPP).
e. The trees shall be weaned off of irrigation over a period of two to three years.
f. No permanent irrigation shall occur within the dripline of any tree.
g. If replacement trees cannot all be accommodated on site, the Owner/Applicant shall submit a plan for P&D approval for replacement trees to be planted off site.

TIMING: Plans shall be submitted prior to issuance of the Land Use Permit. The Owner/Applicant shall post a performance security to ensure installation prior to Final Building Inspection Clearance and maintenance for three years. **MONITORING**: The Owner/Applicant shall demonstrate to P&D compliance

monitoring staff that all required components of the approved plan(s) are in place as required prior to Final Inspection Clearance. P&D compliance monitoring staff signature is required to release the installation security upon satisfactory installation of all items in approved plans and maintenance security upon successful implementation of this plan.

BIO-04 Onsite Biologist. The Owner/Applicant shall designate a P&D-approved biologist and Service approved biologist to be onsite throughout all grading and construction activities to conduct avoidance and minimization measures to Special Status species onsite. Duties include the responsibility to ensure all aspects of the approved Tree Protection & Tree Replacement Plans are carried out. **PLAN REQUIREMENTS / TIMING:** This condition shall be included on grading plans. The name and contact information for the arborist shall be provided to P&D prior to the preconstruction meeting. No project activities will begin until the applicant has received notice from the Service that the biologists and monitors are approved to do the work. **MONITORING**: The Owner/Applicant shall submit to P&D compliance monitoring staff the name and contact information for the approved arborist/biologist prior to commencement of construction / pre-construction meeting. P&D compliance monitoring staff shall site inspect as appropriate.

BIO-05 Habitat Restoration. The Owner/Applicant shall submit for P&D approval a Habitat Restoration Plan prepared by a P&D-approved biologist and designed to mitigate temporary impacts from remediation activities. The plan shall include the following components:

a. Landscaping shall be with native riparian species.
b. Species shall be from locally obtained plants and seed stock.
c. The new plantings shall be irrigated with drip irrigation on a timer, and shall be weaned off of irrigation over a period of two to three years.
d. Non-native species shall be removed from the creek, however, removal of native species in the creek shall be prohibited.
e. Erosion and sediment controls (e.g., silt fences, fiber rolls, sandbags) will be installed, where necessary, utilizing weed-free materials in areas with a predominance of native plants.
f. Where necessary, restored areas will be maintained and monitored, including weed removal (focused on noxious weeds and excluding non- native annual grasses).
g. All planting and seeding will occur the first year after construction is complete, after the first significant rain event of the year (i.e., > 0.25 inch of precipitation.

PLAN REQUIREMENTS: The Owner/Applicant shall: (1) Submit the HRP; (2) Include all applicable components in the HRP; (3) include as notes or depictions all plan components listed above, graphically depicting all those related to earth movement, construction, and temporarily and/or permanently installed protection measures. **TIMING:** Plans shall be submitted prior to approval of the Land Use Permit. The Owner/Applicant shall post a performance security to ensure installation prior to Final Building Inspection Clearance and maintenance for three years. **MONITORING:** The Owner/Applicant shall demonstrate to P&D compliance monitoring staff that all required components of the approved plan(s) are in place as required prior to Final Inspection Clearance. P&D compliance monitoring staff signature is required to release the installation security upon satisfactory installation of all items in approved plans and maintenance security upon successful implementation of this plan.

BIO-06 Equipment Storage-Construction. The Owner/Applicant shall designate one or more construction equipment filling and storage areas on an existing oil field pad to contain spills, facilitate clean-up and proper disposal and prevent contamination from discharging to the storm drains, street, drainage ditches, creeks, or wetlands. The areas shall be no larger than 50 x 50 foot unless otherwise approved by P&D and shall be located at least 100 feet from any storm drain, waterbody or sensitive biological resources. **PLAN REQUIREMENTS**: The Owner/Applicant shall designate the P&D approved location on all Land Use and Grading permits. **TIMING**: The Owner/Applicant shall install the area prior to commencement of construction. **MONITORING**: P&D compliance monitoring staff shall ensure compliance prior to and throughout construction.

BIO-07 Equipment Washout-Construction. The Owner/Applicant shall designate one or more washout areas for the washing of concrete trucks, paint, equipment, or similar activities to prevent wash water from discharging to the storm drains, street, drainage ditches, creeks, or wetlands. Note that polluted water and materials shall be contained in these areas and removed from the site regularly. The areas shall be located at least 100 feet from any storm drain, waterbody or sensitive biological resources. Sandbags and/or absorbent pads shall be available to prevent spilled fuel from leaving the site. Inadvertent fluid releases shall be stopped and cleaned immediately. **PLAN REQUIREMENTS**: The Owner/Applicant shall designate the P&D approved location on all Land Use and Grading permits. **TIMING**: The Owner/Applicant shall install the area prior to commencement of construction. **MONITORING**: P&D compliance monitoring staff shall ensure compliance prior to and throughout construction.

BIO-08 Nesting Bird Surveys. To avoid disturbance of nesting birds, including raptorial species, protected by the Federal Migratory Bird Treaty Act (MBTA) and Sections 3503, 3503.5, and 3513 of the California Fish and Game Code (CFGC), the removal of vegetation, ground disturbance, exterior construction activities, and demolition shall occur outside of the bird nesting season (February 1 through August 31) whenever feasible. If these activities must occur during the bird nesting season, then a pre-construction nesting bird survey shall be performed by a County-qualified biologist. Pre-construction surveys for nesting birds shall occur within the area to be disturbed and shall extend outward from the disturbance area by 500 feet. The distance surveyed from the disturbance may be reduced if property boundaries render a 500-foot survey radius infeasible, or if existing disturbance levels within the 500-foot radius (such as from a major street or highway) are such that project-related activities would not disturb nesting birds in those outlying areas. If any occupied or active bird nests are found, a buffer shall be established and demarcated by the biologist with bright orange construction fencing, flagging, construction lathe, or other means to mark the boundary. The buffer shall be 300 feet for non-raptors and 500 feet for raptors, unless otherwise determined by the qualified biologist and approved by P&D. Buffer reductions shall be based on the known natural history traits of the bird species, nest location, nest height, existing pre-construction level of disturbance in the vicinity of the nest, and proposed construction activities. All construction personnel shall be notified as to the location of the buffer zone and to avoid entering the buffer zone during the nesting season. No ground disturbing activities or vegetation removal shall occur within this buffer until the County-qualified biologist has confirmed that nesting is completed, the young have fledged and are no longer dependent on the nest, or the nest fails, and there is no evidence of a second nesting attempt; thereby determining the nest unoccupied or inactive. If birds protected under MBTA or CFGC are found to be nesting in construction equipment, that equipment shall not be used until the young have fledged and are no longer dependent on the nest, and there is no evidence of a second nesting attempt. **PLAN REQUIREMENTS AND TIMING:** If construction must begin within the nesting season, then the pre-construction nesting bird survey shall be conducted no more than one week (7 days) prior to commencement of vegetation removal, grading, or other construction activities. Active nests shall be monitored by the biologist at a minimum of once per week until it has been determined that the nest is no longer being used by either the young or adults, and there is no evidence of a second nesting attempt. Bird survey results and buffer recommendations shall be submitted to County Planning and Development for review and approval prior to commencement of grading or construction activities. The qualified biologist shall prepare weekly monitoring reports, which shall document nest locations, nest status, actions taken to avoid impacts, and any necessary corrective actions taken. Active nest locations shall be marked on an aerial map and provided to the construction crew on a weekly basis after each survey is conducted. Active nests shall not be removed without written authorization from USFWS and CDFW. **MONITORING:** P&D shall be given the name and contact information for the biologist prior to initiation of the pre-construction survey. Permit Compliance and P&D staff shall review the survey report(s) for compliance with this condition prior to the commencement of ground-disturbing activities and perform site inspections throughout the construction period to verify compliance in the field.

BIO-09 Worker Environmental Awareness Training. An environmental awareness training shall be presented to all construction personnel by a qualified biologist prior to the start of project activities. The training shall discuss sensitive species and habitat areas with potential to occur in the construction zone, with emphasis on special-status wildlife and plant species specifically California tiger salamander and California red-legged frog, as well as other sensitive resources requiring avoidance near project impact areas. The training shall also include a description of protection measures required by discretionary permits (if required), an overview of the Endangered Species Act (ESA), implications of noncompliance with the ESA, and required avoidance and minimization measures. **PLAN REQUIREMENTS:** This condition shall be noted on any plans. A sign in sheet of construction workers who attended the training shall be provided to P&D Compliance staff. **TIMING:** The training shall occur before any ground disturbing work (including vegetation clearing and grading) occurs in the construction footprint. **MONITORING:** The Owner/Applicant shall demonstrate to P&D compliance monitoring staff. P&D processing planner shall ensure measures are on plans.

BIO-10 Delineation of Project Disturbance Limits. Prior to construction the jobsite will be clearly delineated under the guidance of a P&D approved biologist. Delineation of the site will clearly identify areas where equipment and other activities are not permitted. The area shall be fenced with a fencing type and in a location acceptable to P&D. **PLAN REQUIREMENTS:** The fencing locations shall be shown on all grading plans. **TIMING:** Fencing shall be installed prior to any earth movement. **MONITORING:** Building and Safety and/or Compliance staff shall perform site inspections throughout the construction phase.

BIO-11 Special Status Surveys and Monitoring. A pre-activity clearance survey shall be conducted by a Service-approved biologist each morning prior to commencement of work. The biologist will monitor initial clearing and grubbing of all sites during construction and restoration efforts and will be responsible for ensuring that conditions of approval are being enforced and that success criteria are being met. The Service-approved biologist will have the authority to temporarily halt activities if permit requirements and conditions are not being met. The following measures shall be implemented to further mitigate impacts to sensitive species:

- During the survey, the biologist shall gently disturb or rake the upper layers of exposed sandy soil to inspect the site. All rodent burrows shall be identified and clearly marked by a qualified biologist for avoidance to the extent feasible, daily. This shall include all equipment staging areas and access routes. Rodent burrows within the project areas that overlap the Covered Species' habitat will be excavated by a Service-approved biologist using hand tools until it is certain that the burrows are unoccupied.
- Steep-walled excavations (e.g., trenches) that may act as pitfall traps will be inspected for wildlife at least once per day and immediately before backfilling. In lieu of daily inspections (weekends, etc.), exclusionary fencing, covers, ramps, or similar measures will be taken to prevent wildlife entrapment.
- All vehicles, equipment, and materials staged on site overnight shall be inspected each morning by a designated member of the construction crew. If special-status wildlife (coast horned lizard, northern California legless lizard, CRLF) is found within the staging area or vehicle, the area shall not be used until the animal has vacated the area on its own accord or has been relocated out of harm's way in accordance with **BIO-12.**
- No ground-disturbing project activities shall be conducted during rain events, within 24 hours of any predicted rain event (i.e., 50% chance of rain or greater), or during the 48 hours after these events. If work extends into the rainy season, P&D and other agencies as appropriate shall be notified and construction may only extend to the first significant storm event, unless approved by the County biologist.
- No construction work will be initiated until a Service-approved biologist determines that the work area is clear of California tiger salamanders and California red-legged frogs.
- If special status plan species are discovered, regulatory agencies will be notified. The area will be avoided to the greatest extent feasible. If avoidance is not possible then a translocation plan will

be established and approved by regulatory agencies prior to implementation. Rare plant populations will be mapped using a GPS unit and flagged prior to construction. The plant populations will be avoided to the greatest extent feasible. If avoidance is not possible then a revegetation/relocation plan will be developed, submitted to regulatory agencies for approval and implemented.

PLAN REQUIREMENTS: This condition shall be noted on any plans. The contact information of the biological monitor shall be provided to P&D processing staff. **TIMING:** The biological monitor shall be designated prior to issuance of grading permits. The biological components apply from the beginning of any grading or construction throughout all development activities until Final Building Inspection Clearance is issued. **MONITORING:** The Owner/Applicant shall submit to P&D compliance monitoring staff the name and contact information for the approved arborist/biologist prior to commencement of construction / pre-construction meeting. P&D compliance monitoring staff shall site inspect as appropriate.

BIO-12 Wildlife Relocation. If coast horned lizard, northern California legless lizard, California red-legged frog and/or other protected species are found during pre-construction surveys or monitoring, work shall be halted, and they shall be allowed to leave the work area on their own volition or be hand captured by a qualified biologist and relocated to suitable habitat outside of the area of impact no more than 300 feet outside of the project area, unless otherwise approved by the Service. The Service-approved biologist will document both the capture site and the relocation site by photographs and GPS positions. All documentation will be provided to the Service within 24 hours of relocation. Work would not resume until approval to do so is provided by the agencies. If full avoidance of special status species is not feasible, consultation with the resource agencies would be initiated to obtain a CDFW Incidental Take Permit (ITP) and USFWS authorization. In the event individuals may be dead or injured as a result of project-related activities, notification will be made within 72 hours to the Service Ventura Field Office at (805) 644-1766. Notification of dead or injured California tiger salamander should also be made to the Department at (562) 342-7100. **PLAN REQUIREMENTS AND TIMING:** This condition shall be printed on project plans submitted for Land Use Permit Issuance and installed prior to Grading Permit issuance. **MONITORING**: P&D processing planner shall ensure measures are on plans. P&D Compliance inspectors shall spot check; and shall ensure compliance onsite.

BIO-13 Exclusionary Fencing. Prior to the start of remediation activities, the project site would be enclosed with silt fence or fabric material at the discretion of a Service-approved biologist to minimize the potential for California tiger salamanders or California red-legged frogs to enter the worksite. Exclusionary fencing will be maintained for the duration of the project and inspected each work day during construction activities. The fence would be buried 6 inches deep and extend at least 30 inches above ground. When remediation activities have been completed, the fence material would be removed. If an individual of the Covered Species or other wildlife species is observed within an enclosed worksite, a portion of the fencing will be removed to allow the individual to vacate the area on its own. Alternatively, the animal may be relocated out of harm's way in accordance with **BIO-12**.

BIO-14 Emergency Response Action Plan. Applicants for projects involving oil drilling, oil wells and/or oil pipelines will prepare an Emergency Response Action Plan that addresses protection of sensitive biological resources and revegetation of any areas disturbed during an oil spill or cleanup activities. The Emergency Response Action Plan will, at a minimum, include specific measures to avoid impacts to native vegetation and wildlife habitats, plant and animal species, and environmentally sensitive habitat areas during response and cleanup operations. These measures will include integration of a service-approved biologist on the initial response team to assist with avoidance of sensitive resources and to quantify impacts resulting from control, cleanup, and maintenance. Where feasible, low-impact, site-specific techniques such as hand-cutting contaminated vegetation and using low-pressure water flushing will be specified to remove spilled material from particularly sensitive wildlife habitats, such as riparian woodlands, because procedures such as shoveling, bulldozing, and raking can cause more damage to a sensitive habitat than the oil spill itself. The Emergency Response Action Plan will evaluate the non-cleanup option for

ecologically vulnerable habitats as identified by the applicants. When habitat disturbance cannot be avoided, the Emergency Response Action Plan will provide stipulations for development and implementation of site-specific habitat restoration plans and other site-specific and species-specific measures appropriate for mitigating impacts to local populations of special-status plant and wildlife species and to restore native plant and animal communities to pre-spill conditions. Access and egress points, staging areas, and material stockpile areas that avoid sensitive habitat areas will be identified. The Emergency Response Action Plan will include species- and site-specific procedures for collection, transportation and treatment of oiled wildlife, particularly for sensitive species. The Emergency Response Action Plan will include procedures for timely re-establishment of vegetation that replicates the habitats disturbed (or, in the case of disturbed habitats dominated by nonnative species, replaces them with suitable native species).

BIO-15 Fish & Wildlife. No alteration to stream channels or banks shall be permitted (i.e., no Land Use Permit shall be issued) until the owner/applicant demonstrates receipts of authorization for the California Department of Fish and Wildlife and/or other federal agencies for any planned alteration to stream channel or banks.

BIO-16 Fish and Wildlife Jurisdiction Advisory. The project site is within the range of California Tiger Salamander, a species listed as Endangered by the U.S. Fish and Wildlife Service, and Threatened by California Department of Fish and Wildlife. Based upon a report prepared by Langan Engineering and Environmental Services, Inc., dated June 1, 2023, it has been determined that the probability for CTS occurrence on the site is low. The issuance of this permit does not relieve the permit-holder of any duties, obligations, or responsibilities under the federal or California Endangered Species Act or any other law. The permit-holder shall contact the necessary jurisdictional agencies to ascertain his or her level of risk under the federal and California Endangered Species Act in implementing the project herein permitted.

Indemnity for Violation of the Endangered Species Act: The applicant shall defend, indemnify and hold harmless the County or its agents, officers and employees from any and all claims, actions, proceedings, demands, damages, costs, expenses (including attorneys fees), judgments or liabilities, against the County or its agents, offices or employees brought by any entity or person for any and all actions or omissions of the applicant or his agents, employees or other independent contractors arising out of this permit alleged to be in violation of the federal or California Endangered Species Acts (16 USC Sec. 1531 et seq.; Cal. Fish and Game Code Sec. 2050 et sec.). This permit does not authorize, approved or otherwise support a "take" of any listed species as defined under the federal or California Endangered Species Acts. Applicant shall notify County immediately of any potential violation of the federal and/or California Endangered Species Act.

BIO-17 Threatened and Endangered Species Approvals. The permittee shall obtain all necessary approvals from the California Department of Fish and Wildlife, the U.S. Fish and Wildlife Service, and/or National Marine Fisheries Service, including an Incidental Take Permit and/or Habitat Conservation Plan for the CTS, if required, prior to Land Use Permit issuance. **TIMING** Permittee shall provide to P&D copies of approvals obtained from CDFW, FWS and/or NMFS prior to issuance of Land Use Permit. **MONITORING:** Permittee shall provide to P&D copies of approvals from CDFW, FWS and/or NMFS. P&D staff shall confirm receipt of any necessary approvals prior to issuance of Land Use Permit.

With the incorporation of these measures, residual impacts would be insignificant.

4.5 CULTURAL RESOURCES

Will the proposal:	Poten. Signif. and Unavoid.	Signif. But Mitigable	Insignif.	No Impact / Beneficial Impact	Reviewed Under Previous Document
a. Cause a substantial adverse change in the significance of any object, building, structure, area, place, record, or manuscript that qualifies as a historical resource as defined in CEQA Section 15064.5?		X			
b. Cause a substantial adverse change in the significance of a prehistoric or historic archaeological resource pursuant to CEQA Section 15064.5?		X			
c. Disturb any human remains, including those located outside of formal cemeteries?			X		
d. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in the Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: 1) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or 2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.			X		

Environmental Thresholds. Chapter 8 of the Santa Barbara County Environmental Thresholds and Guidelines Manual (2008, revised February 27, 2018) contains guidelines for the identification, significance evaluation, and mitigation of impacts to cultural resources, including archaeological, historic, and tribal cultural resources. In accordance with the requirements of CEQA, these guidelines specify that if a resource cannot be avoided, it must be evaluated for importance under specific CEQA criteria. CEQA Section 15064.5(a)(3)A-D contains the criteria for evaluating the importance of archaeological and historic resources. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the significance criteria for listing in the California Register of Historical Resources: (A) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage; (B) Is associated with the lives of persons important in our past; (C) Embodies

the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or (D) Has yielded, or may be likely to yield, information important in prehistory or history. The resource also must possess integrity of at least some of the following: location, design, setting, materials, workmanship, feeling, and association. For archaeological resources, the criterion usually applied is (D).

CEQA calls cultural resources that meet these criteria "historical resources". Specifically, a "historical resource" is a cultural resource listed in, or determined to be eligible for listing in, the California Register of Historical Resources, or included in or eligible for inclusion in a local register of historical resources, as defined in subdivision (k) of Section 5020.1, or deemed significant pursuant to criteria set forth in subdivision (g) of Section 5024.1. As such, any cultural resource that is evaluated as significant under CEQA criteria, whether it is an archaeological resource of historic or prehistoric age, a historic built environment resource, or a tribal cultural resource, is termed a "historical resource".

CEQA Guidelines Section 15064.5(b) states that "a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment." As defined in CEQA Guidelines Section 15064.5(b), substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired. The significance of an historical resource is materially impaired when a project: (1) demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources; (2) demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources; or (3) demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.

For the built environment, a project that follows the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings or the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (Weeks and Grimmer 1995), is generally considered as mitigated to an insignificant impact level on the historical resource.

Existing Setting. For at least the past 10,000 years, the area that is now Santa Barbara County has been inhabited by Chumash Indians and their ancestors. The subject property consists of 320 acres of predominately undeveloped land, bound by undeveloped land in all directions and is intersected by Bradley Canyon. The site has historically been used for oil and gas production, agriculture and cattle raising. Based on Phase I Cultural Resources Technical Report prepared by Heather McDaniel McDevitt with Dudek (December 2022) as well as records on file at the CCIC (Central Coast Information Center of the University of California, Santa Barbara), cultural resources are not located in the vicinity of the proposed project. Based on a records search conducted at the CCIC on April 24, 2022, four (4) cultural resources have been previously recorded within the 1-mile radius of the proposed Project site, including one (1) prehistoric site, one (1) prehistoric isolate (a fragmented chert projectile point), one (1) historic adobe, and one (1) historic road. Fifteen (15) cultural resource studies have been conducted within 1-mile of the Project site between 1978 and 2018. Of these studies, one (1) addressed a portion of the Project site. A Phase 1 archaeological survey conducted by Dudek on August 29 and September 21, 2022 included examination of two (2) well pad locations, three (3) temporary disturbance areas, and three (3) equipment staging areas:

> *CA-SBA-3628* is a prehistoric archaeological site containing weathered marine shell, chert flakes, and fire-affected rock, likely used for a possible seasonal camp site, of an unknown antiquity, that related to other coast sites. The site is approximately 5,400 feet from the disturbance area and has not been

evaluated for listing on the National Register of Historic Places, the California Register of Historical Resources, or a local register of historical resources and/or landmarks.

P-42-038875 is a prehistoric isolate, a fragmented chert projectile point, observed during the pedestrian survey within a disturbed context. Due to the prehistoric isolate being encountered in a disturbed context and the isolated nature of the artifact, it is not eligible for listing on the National Register of Historic Places, the California Register of Historical Resources, or a local register of historical resources and/or landmarks.

CA-SBA-3989H is a built environment resource described as a historic adobe building, likely built for agricultural use the Ruiz family who were previous owners of a larger ranch in the vicinity and has not been evaluated for listing on the National Register of Historic Places, the California Register of Historical Resources, or a local register of historical resources and/or landmarks.

P-42-041180 is the West Cat Canyon Oil Field (WCCOF) Historic District (District) encompassing approximately 5,247 acres is described as a "robust landscape of historic features and artifacts associated with oil exploration and extraction" consisting of oil wells, historic refuse deposits, residential infrastructures, and other oil extraction and production features. The California Historical Resource Information System (CHRIS) database at the Central Coast Information Center (CCIC) determined that one cultural resource, a historic district, has been identified within the general Project boundary, but not within improvement areas where ground disturbances would occur.

No prehistoric resources of any kind were observed within the Project improvement areas, however, some raw material typically used for prehistoric tool making (chert) was observed during the survey. The area was not identified as significant under CEQA for its ability to yield information important in prehistory. A segment of the historically significant Santa Maria Valley Railroad (SMVRR) was identified within the vicinity of the present Project site, this resource is west and outside of the Project site boundaries and is not within any of the proposed impact areas, including the well pad sites, equipment staging area, and temporary disturbance area. No built environment historical resources of significance were identified within the Project site.

On March 27, 2023, a formal notice of application completeness for the proposed project was sent to Julie Tumamait-Stenslie, Chair, Barbareno/Ventureno Band of Mission Indians and Kenneth Kahn, Tribal Chairman of the Santa Ynez Band of Chumash Indians. The notice provided notification of the opportunity for consultation pursuant to Public Resources Code (PRC) Section 21080.3.1 and in accordance with the provisions of Assembly Bill (AB) 52, and included a description of the proposed project. On May 10, 2023, the Santa Ynez Band of Chumash Indians responded, requesting the presence of a Native American monitor in place during all ground disturbance. No other reply was received and no tribal cultural resources (TCRs) were identified on the subject parcel.

Impact Discussion:

(a). Historic Resources. A segment of the historically significant SMVRR was identified within the vicinity of the present Project site, but is outside of the Project site boundaries. The West Cat Canyon Oil Field (WCCOF) Historic District (District) overlaps approximately one-third of the southern portion of the Project site boundary; however, the resource is not located within any Project improvement area proposed for ground disturbing activities. Intact built environment elements remaining from oil industry activity were observed at well 85, built/installed in 1973, as a result of the pedestrian survey. These elements did not meet the thresholds for eligibility as a significant historical resource under any NRHP or CRHR criteria due to falling outside the established period of significance and not meeting the "exceptionally important" thresholds for consideration of resources that are less than 50 years in age. Based on the proximity of the proposed ground disturbances to a historic district, the potential for proposed disturbances to encounter unknown historic cultural resources is possible and all

construction personnel will be briefed regarding unanticipated discoveries prior to the start of ground disturbing activities (CULTRES-01). Therefore, impacts would be *less than significant with mitigation.*

(b). Archeological Resources. Based on the Phase I pedestrian survey and previously discovered cultural resources the potential to encounter unknown prehistoric resources cannot be excluded but is considered improbable since ground disturbance will be predominantly limited to previously disturbed soils in areas formerly utilized for oil extraction and production. No known significant cultural resources, as defined by CEQA Section 15064.5, exist within the Project improvement areas proposed for ground disturbance. However, it is always possible that unknown cultural material and features could be encountered during Project implementation therefore the potential to encounter unknown prehistoric resources cannot be excluded. If yet unknown cultural resources, possessing the characteristics outlined in CEQA as significant, exist and are inadvertently encountered during implementation of the Project, there is potential for a substantial adverse change in the significance of an historical resource to occur. A Native American monitor was also requested to be present during all ground disturbing activates through the AB 52 consultation process (CULRES-02). Therefore, mitigation including a workers environmental awareness training by a qualified archeologist (CULRES-01) and a stop work order measures (CULRES-03) are required for approval of the project. Implementation of these measures would decrease impacts to a *less than significant level with mitigation.*

(c, d). Human Remains & Tribal Cultural Resources. As a result, the proposed project would not disturb any human remains, or cause a substantial adverse change in the significance of a tribal cultural resource. In order to comply with cultural resource policies, the development project would be conditioned with a standard archaeological discovery clause which requires that any previously unidentified cultural resources discovered during site development are treated in accordance with the County's Cultural Resources Guidelines [Chapter 8 of the County's Environmental Thresholds and Guidelines Manual (rev.2/2018)]. Impacts would be *insignificant*.

Cumulative Impacts. Since the project would not significantly impact cultural resources, it would not have a cumulatively considerable effect on the County's cultural resources with implementation of the mitigation measures described below.

Mitigation and Residual Impact. The following mitigation measures would reduce the project's cultural resource impacts to an insignificant level:

CULRES-01. Workers Environmental Awareness Program (WEAP) Training. Prior to ground disturbing activities, all construction personnel and monitors who are not trained archaeologists should be briefed regarding unanticipated discoveries. A basic presentation should be prepared and presented by a qualified archaeologist to inform all personnel working on the Project about the potential of encountering cultural materials within the Project area. The purpose of the WEAP training is to provide specific details on the kinds of cultural materials that may be identified during Project implementation and explain the importance of and legal basis for the protection of significant cultural resources. Each worker should also be instructed on the proper procedures to follow in the event that cultural resources or human remains are encountered during ground-disturbing activities. These procedures include work curtailment or redirection, and the immediate contact of a qualified archaeologist and if appropriate, Tribal representative. Necessity of training attendance should be stated on all Project plans intended for use by those conducting the ground disturbing activities. **PLAN REQUIREMENTS:** This condition shall be noted on any plans. A sign in sheet of construction workers who attended the training will be provided to P&D staff. **TIMING:** The training shall occur before any ground disturbing work (including vegetation clearing and grading) occurs in the construction footprint. **MONITORING:** The Owner/Applicant shall demonstrate to P&D compliance monitoring staff. Confirmation of training shall be documented and kept onsite at all times. P&D processing planner shall ensure measures are on plans.

CULRES-02 Cultural Resource Monitor. The Owner/Applicant shall have all earth disturbances including scarification and placement of fill within the archaeological site area monitored by a P&D approved archaeologist and a Native American consultant in compliance with the provisions of the County Archaeological Guidelines. **TIMING**: Prior to issuance of the Land Use Permit, the Owner/Applicant shall submit for P&D review and approval, a contract or Letter of Commitment between the Owner/Applicant and the archaeologist, consisting of a project description and scope of work, and once approved, shall execute the contract. **MONITORING**: The Owner/Applicant shall provide P&D compliance monitoring staff with the name and contact information for the assigned onsite monitor(s) prior to grading/building permit issuance and pre-construction meeting. P&D compliance monitoring staff shall confirm monitoring by archaeologist and Native American consultant and P&D grading inspectors shall spot check field work.

CULRES-03 Stop Work at Encounter. The Owner/Applicant and/or their agents, representatives or contractors shall stop or redirect work immediately in the event potential prehistoric or historic-era archaeological or built environment resources (sites, features, or artifacts) are exposed or encountered during grading, construction, landscaping or other construction-related activity. The Owner/Applicant shall immediately contact P&D staff, all ground disturbing activities occurring within 50 feet of the discovery shall immediately stop and a qualified archaeologist should be notified immediately in order to assess of the discovery, to evaluate the significance of the find in compliance with the provisions of the County Archaeological Guidelines, and determine whether additional study is warranted. Depending upon the nature of the discovery, the archaeologist/architectural historian may simply record the find and allow work to continue. If the discovery proves potentially significant under CEQA, additional work such as subsurface testing and resource evaluation may be warranted. If the discovery is determined significant under CEQA and avoidance is not feasible, data recovery will likely be required. If archaeological resources are discovered or are suspected to be of Native American origin, each of the consulting tribes for the Project should also be notified. **PLAN REQUIREMENTS:** This condition shall be printed on all building and grading plans. **MONITORING:** P&D permit processing planner shall check plans prior to issuance of the Land Use Permit. Permit Compliance and Building & Safety staff shall spot check in the field throughout grading and construction.

With the incorporation of these measures, residual impacts would be insignificant.

4.6 ENERGY

Will the proposal result in:	Poten. Signif. and Unavoid.	Signif. But Mitigable	Insignif.	No Impact / Beneficial Impact	Reviewed Under Previous Document
a. Substantial increase in demand, especially during peak periods, upon existing sources of energy?				X	
b. Requirement for the development or extension of new sources of energy?				X	

Impact Discussion:

(a-b). The County has not identified significance thresholds for electrical and/or natural gas service impacts (Thresholds and Guidelines Manual). Private electrical and natural gas utility companies provide service to customers in Central and Southern California, including the unincorporated areas of Santa Barbara County. However, only mobile equipment would be used to execute the soil excavation and concrete removal work, which would not result any increase in demand upon nearby energy sources. There are no

structures proposed as part of this project, therefore no new energy sources would be required. No adverse impacts would result.

Cumulative Impacts. The project's contribution to the regionally significant demand for energy is not considerable, and is therefore insignificant.

Mitigation and Residual Impact. No impacts are identified. No mitigation is required.

4.7 FIRE PROTECTION

Will the proposal result in:	Poten. Signif. and Unavoid.	Signif. But Mitigable	Insignif.	No Impact / Beneficial Impact	Reviewed Under Previous Document
a. Introduction of development into an existing high fire hazard area or exposure of people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?				X	
b. Project-caused high fire hazard?				X	
c. Introduction of development into an area without adequate water pressure, fire hydrants or adequate access for fire fighting?				X	
d. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?				X	
e. Introduction of development that will substantially impair an adopted emergency response plan, emergency evacuation plan, or fire prevention techniques such as controlled burns or backfiring in high fire hazard areas?				X	
f. Development of structures beyond safe Fire Dept. response time?				X	

County Standards. The following County Fire Department standards are applied in evaluating impacts associated with the proposed development:

- The emergency response thresholds include Fire Department staff standards of one on-duty firefighter per 4000 persons (generally 1 engine company per 12,000 people, assuming three firefighters/station). The emergency response time standard is approximately 5-6 minutes.
- Water supply thresholds include a requirement for 750 gpm at 20 psi for urban single family dwellings in urban and rural developed neighborhoods, and 500 gpm at 20 psi for dwellings in rural areas (lots larger than five acres).
- The ability of the County's engine companies to extinguish fires (based on maximum flow rates through hand held line) meets state and national standards assuming a 5,000 square foot structure. Therefore, in any portion of the Fire Department's response area, all structures over 5,000 square feet are an unprotected risk (a significant impact) and therefore should have internal fire sprinklers.

- Access road standards include a minimum width (depending on number of units served and whether parking would be allowed on either side of the road), with some narrowing allowed for driveways. Cul-de-sac diameters, turning radii and road grade must meet minimum Fire Department standards based on project type.
- Two means of egress may be needed and access must not be impeded by fire, flood, or earthquake. A potentially significant impact could occur in the event any of these standards is not adequately met.

Impact Discussion:

(a - e). The project is located within a High Fire Hazard Area. Predictions about the long-term effects of global climate change in California include increased incidence of wildfires and a longer fire season, due to drier conditions and warmer temperatures. Any increase in the number or severity of wildfires has the potential to impact resources to fight fires when they occur, particularly when the state experiences several wildfires simultaneously. Such circumstances place greater risk on development in high fire hazard areas. Short-term impacts may arise as a result of the introduction of mechanized equipment during removal work, however, the temporary usage would not hamper fire prevention techniques in the area. No new structures are proposed to be developed. Therefore, *no impacts* are expected.

Cumulative Impacts. Since the project would not create significant fire hazards, it would not have a cumulatively considerable effect on fire safety within the County.

Mitigation and Residual Impact. No impacts are identified. No mitigation is required.

4.8 GEOLOGIC PROCESSES

Will the proposal result in:	**Poten. Signif. and Unavoid.**	**Signif. But Mitigable**	**Insignif.**	**No Impact / Beneficial Impact**	**Reviewed Under Previous Document**
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving exposure to or production of unstable earth conditions such as landslides, earthquakes, liquefaction, soil creep, mudslides, ground failure (including expansive, compressible, collapsible soils), or similar hazards?			X		
b. Disruption, displacement, compaction or overcovering of the soil by cuts, fills or extensive grading?			X		
c. Exposure to or production of permanent changes in topography, such as bluff retreat or sea level rise?			X		
d. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				X	
e. Any increase in wind or water erosion of soils, either on or off the site?		X			

Will the proposal result in:	Poten. Signif. and Unavoid.	Signif. But Mitigable	Insignif.	No Impact / Beneficial Impact	Reviewed Under Previous Document
f. Changes in deposition or erosion of beach sands or dunes, or changes in siltation, deposition or erosion which may modify the channel of a river, or stream, or the bed of the ocean, or any bay, inlet or lake?				X	
g. The placement of septic disposal systems in impermeable soils with severe constraints to disposal of liquid effluent?				X	
h. Extraction of mineral or ore?				X	
i. Excessive grading on slopes of over 20%?			X		
j. Sand or gravel removal or loss of topsoil?			X		
k. Vibrations, from short-term construction or long-term operation, which may affect adjoining areas?				X	
l. Excessive spoils, tailings or over-burden?			X		

Environmental Threshold. Pursuant to the County's Adopted Thresholds and Guidelines Manual, impacts related to geological resources may have the potential to be significant if the proposed project involves any of the following characteristics:

1. The project site or any part of the project is located on land having substantial geologic constraints, as determined by P&D or PWD. Areas constrained by geology include parcels located near active or potentially active faults and property underlain by rock types associated with compressible/collapsible soils or susceptible to landslides or severe erosion. "Special Problems" areas designated by the Board of Supervisors have been established based on geologic constraints, flood hazards and other physical limitations to development.
2. The project results in potentially hazardous geologic conditions such as the construction of cut slopes exceeding a grade of 1.5 horizontal to 1 vertical.
3. The project proposes construction of a cut slope over 15 feet in height as measured from the lowest finished grade.
4. The project is located on slopes exceeding 20% grade.

Table 2. Preliminary Earthwork Volumes at each excavation site and well pad.

LOCATION	TPM IMPACTED SOIL REMOVAL VOLUME (CY)	RAW EARTHWORK CUT (CY)	RAW EARTHWORK FILL (CY)	IMPORT FILL (CY)
A5-01	2,195	3,293	3,293	2,195
B5-02/B5-03	2,108	3,162	3,162	2,108
B6-03	3	5	5	3
WELL 40	0	1,188	1,188	0
WELL 50	0	1,202	1,202	0
WELL 89	0	784	784	0
TOTAL	4,306	9,598	9,598	4,306

Impact Discussion:

(a, c, l). Potential to Result in Geologic Hazards. The project site is not underlain by any known fault. Liquefaction potential in the area has been determined to be low. Any potential for expansive soils would be mitigated by the use of non-expansive engineered fill. There would not be any exposure to or production of unstable earth conditions such as landslides, earthquakes, liquefaction, soil creep, mudslides or ground failure resulting from the proposed project. The proposed project would not involve any permanent changes in topography. No excessive spoils, tailings or overburden is proposed. Per the plan requirements, shallow soil samples would also be collected to confirm the removal of petroleum hydrocarbon-containing soils in excess of action levels. Assessment and remediation would be conducted according to the work plans approved by the appropriate agency. All soils-related hazards would be *less than significant* through the normal grading permit review.

(b, i). Potential for Grading-Related Impacts. As discussed in the project description, approximately 4,926 CY of soil with COPCs in exceedance of SSCGs are present at areas A5-01, B5-02/B5-03, and B6-03. Approximately 4,306 cubic yards of contaminated soil and perched water surrounding former diluent pipeline will be removed to protect oak and habitat impacts. 4,306 cubic yards of clean soil will be imported to fill and restore the project site to previous conditions. Petroleum hydrocarbon-containing soils would be handled in accordance with the project's approved Remedial Action Workplan (Langan, July 2021) included as Attachment 3. As mentioned, confirmation soil samples would be collected and chemically analyzed to ensure that the excavation activities have adequately removed impacted soils to approved cleanup levels. EHS would provide oversight of the sample collection and would ensure that the remediation activities are conducted in compliance with the approved work plan and EHS requirements (Attachment 6). The project would involve replacement of 2,195 cy of soil, 25' deep at site A5-01; 2,108 cy of soil, 25' deep at site B5-02/B5-03; and 3 cy of soil at site B6-03 (Table 2). The excavation sites would be backfilled with clean overburden and imported soil and topsoil would be replaced. Additionally, surface restoration activities will be completed at well pads associated with abandoned wells 40, 50, and 89. Regrading of the three well pads would involve 3,138 cy of cut and fill. These activities will include restoring the pads and surrounding areas to resemble natural topography and seeding native vegetation in areas of disturbance. Topography would be restored to match the surrounding area. Impacts would be temporary and *less than significant*.

(e). Potential Erosion and Sedimentation Impacts. Grading operations that would occur on the project site would remove vegetative cover and disturb the ground surface, thereby increasing the potential for erosion and sedimentation impacts. However, the potential for the project to cause substantial erosion and sediment transport would be adequately mitigated by the County's standard erosion control and drainage requirements (GEO-01). Thus, impacts would be *less than significant with mitigation*.

(j). Sand or gravel removal, or loss of topsoil. As stated above, the project would involve excavation work to remove TPH and associated VOCs and PAH-containing soil and backfill the resulting excavations with clean fill soil. Excavated overburden soils would be used as backfill material and therefore there would be no loss of topsoil. Impacts would be *less than significant.*

(d, f, g, h, k). Other Potential Geological Hazards. The project would not cause destruction, covering or modification of any unique geologic, paleontologic, or physical features. The project would not involve the placement of septic disposal systems. No permanent extraction of soil for mineral or ore materials is proposed. This grading work would occur on relatively flat surfaces (approximately 0-10% gradients). The project is not located within the vicinity of the ocean and would not be subject to issues associated with seas-level rise. Any vibrations from construction work that would affect adjoining areas (residence) are likely to be short term, occur during daylight hours, and minimal in comparison to vibrations from the railroad adjacent to the site. *No impacts* are anticipated.

Cumulative Impacts. Since the project would not result in significant geologic impacts after mitigation, and geologic impacts are typically localized in nature, it would not have a cumulatively considerable effect on geologic hazards within the County.

Mitigation and Residual Impact. The following mitigation measures would reduce the project's geologic impacts to an insignificant level:

GEO-01 Erosion and Sediment Control Plan. Where required by the latest edition of the California Green Code and/or Chapter 14 of the Santa Barbara County Code, a Storm Water Pollution Prevention Plan (SWPPP), Storm Water Management Plan (SWMP) and/or an Erosion and Sediment Control Plan (ESCP) shall be implemented as part of the project. Grading and erosion and sediment control plans shall be designed to minimize erosion during construction and shall be implemented for the duration of the grading period and until re-graded areas have been stabilized by structures, long-term erosion control measures or permanent landscaping. The Owner/Applicant shall submit the SWPPP, SWMP or ESCP) using Best Management Practices (BMP) designed to stabilize the site, protect natural watercourses/creeks, prevent erosion, convey storm water runoff to existing drainage systems keeping contaminants and sediments onsite. The SWPPP or ESCP shall be a part of the Grading Plan submittal and will be reviewed for its technical merits by P&D. Information on Erosion Control requirements can be found on the County web site re: Grading Ordinance Chapter 14 (http://sbcountyplanning.org/building/grading.cfm) refer to Erosion and Sediment Control Plan Requirements; and in the California Green Code for SWPPP (projects < 1 acre) and/or SWMP requirements. **PLAN REQUIREMENTS**: The grading and SWPPP, SWMP and/or ESCP shall be submitted for review and approved by P&D prior to approval of land use clearances. The plan shall be designed to address erosion, sediment and pollution control during all phases of development of the site until all disturbed areas are permanently stabilized. **TIMING**: The SWPPP requirements shall be implemented prior to the commencement of grading and throughout the year. The ESCP/SWMP requirements shall be implemented between November 1st and April 15th of each year, except pollution control measures shall be implemented year round. **MONITORING**: P&D staff shall perform site inspections throughout the construction phase.

With the incorporation of these measures, residual impacts would be insignificant.

4.9 HAZARDOUS MATERIALS/RISK OF UPSET

Will the proposal result in:	Poten. Signif. and Unavoid.	Signif. But Mitigable	Insignif.	No Impact / Beneficial Impact	Reviewed Under Previous Document
a. In the known history of this property, have there been any past uses, storage or discharge of hazardous materials (e.g., fuel or oil stored in underground tanks, pesticides, solvents or other chemicals)?			X		
b. The use, storage or distribution of hazardous or toxic materials?			X		
c. A risk of an explosion or the release of hazardous substances (e.g., oil, gas, biocides, bacteria, pesticides, chemicals or radiation) in the event of an accident or upset conditions?		X			
d. Possible interference with an emergency response plan or an emergency evacuation plan?			X		

Will the proposal result in:	Poten. Signif. and Unavoid.	Signif. But Mitigable	Insignif.	No Impact / Beneficial Impact	Reviewed Under Previous Document
e. The creation of a potential public health hazard?			X		
f. Public safety hazards (e.g., due to development near chemical or industrial activity, producing oil wells, toxic disposal sites, etc.)?			X		
g. Exposure to hazards from oil or gas pipelines or oil well facilities?			X		
h. The contamination of a public water supply?			X		

Environmental Threshold. The County's safety threshold addresses involuntary public exposure from projects involving significant quantities of hazardous materials. The threshold addresses the likelihood and severity of potential accidents to determine whether the safety risks of a project exceed significant levels.

Existing Setting. The subject property is located approximately seven miles east of the City of Santa Maria, California. The site is currently vacant and the future use of the Site will likely be limited to agricultural or continued oil production. Vineyards are planted on the properties to the north. The property contains many idle and plugged well sites including Well 40 [American Petroleum Institute (API) number 0408320278], Well 50 (API number 0408320465), and Well 89 (API number 0408320805), all of which will be recontoured to resemble the natural topography. According to the CalGEM website, Wells 50 and 89 were plugged and abandoned in 1972 and 1975, respectively. Well 40 remains Idle. The Project Site is associated with the SBCEHS Site Mitigation Unit (SMU) 20059, and State Water Resources Control Board Geotracker Global ID T10000001823.

In 2019, Langan investigated soil and perched groundwater conditions in areas A5-01, B5-02/B5-03, and B6-03. Perched groundwater was encountered during drilling activities at a minimum depth of 7.5 feet bgs at B6-03, and in a range of 10 to 33 feet bgs at A5-01, and a range of 14 to 25 feet bgs at B5-02/B5-03. The A5-01, B5-02/B5-03, and B6-03 investigation areas contained soil with maximum detected concentrations of 54,400 mg/kg (A5-01) and 14,613 (B5-02/B5-03) mg/kg for TPH and 15 mg/kg (A5-01) for naphthalene above their respective SSCGs and perched groundwater reported maximum detected concentrations of 2.25 mg/L (A5-01), 3.45 mg/L (B5-02/B5-03) and 0.84 mg/L (B6-03) for TPH.

Based on laboratory data, hydrocarbon-impacted material with TPH concentrations above 100 mg/kg is present from approximately 6 to 10 feet but may extend up to approximately 5 feet bgs in some areas, and down to approximately 11 feet bgs in some areas. Approximately 4,926 cy of soil impacted by constituents of potential concern in exceedance of the site-specific cleanup goals are present at areas A5-01, B5-02/B5-03, and B6-03. Impacted soil at these areas is recommended for removal; however, due to Santa Barbara County and California Department of Fish and Wildlife protections for mature oak trees and State jurisdictional streambeds, Tree Exclusion Zones (TEZ-1, TEZ-2, TEZ-3) have been established in the areas of critical root zones around mature oak trees in these three areas. The TEZs and DEZs will minimize impacts to tree and riparian habitats, by allowing a minimal volume of contaminated soil to remain in place.

Upon completion of the backfill and restoration activities, up to one groundwater monitoring well may be installed at each of the three remediation areas A5-02, B5-02/B5-03 and B6-03, for a total of three wells. The viability and final location of the monitoring wells will be determined at the end of the excavation activities and be placed in the location of perched groundwater zones. If groundwater is not encountered during excavation or in the borings advanced for monitoring well installation, no well will be installed in a given area. The wells will be monitored for a period of two years, at a semi-annual schedule.

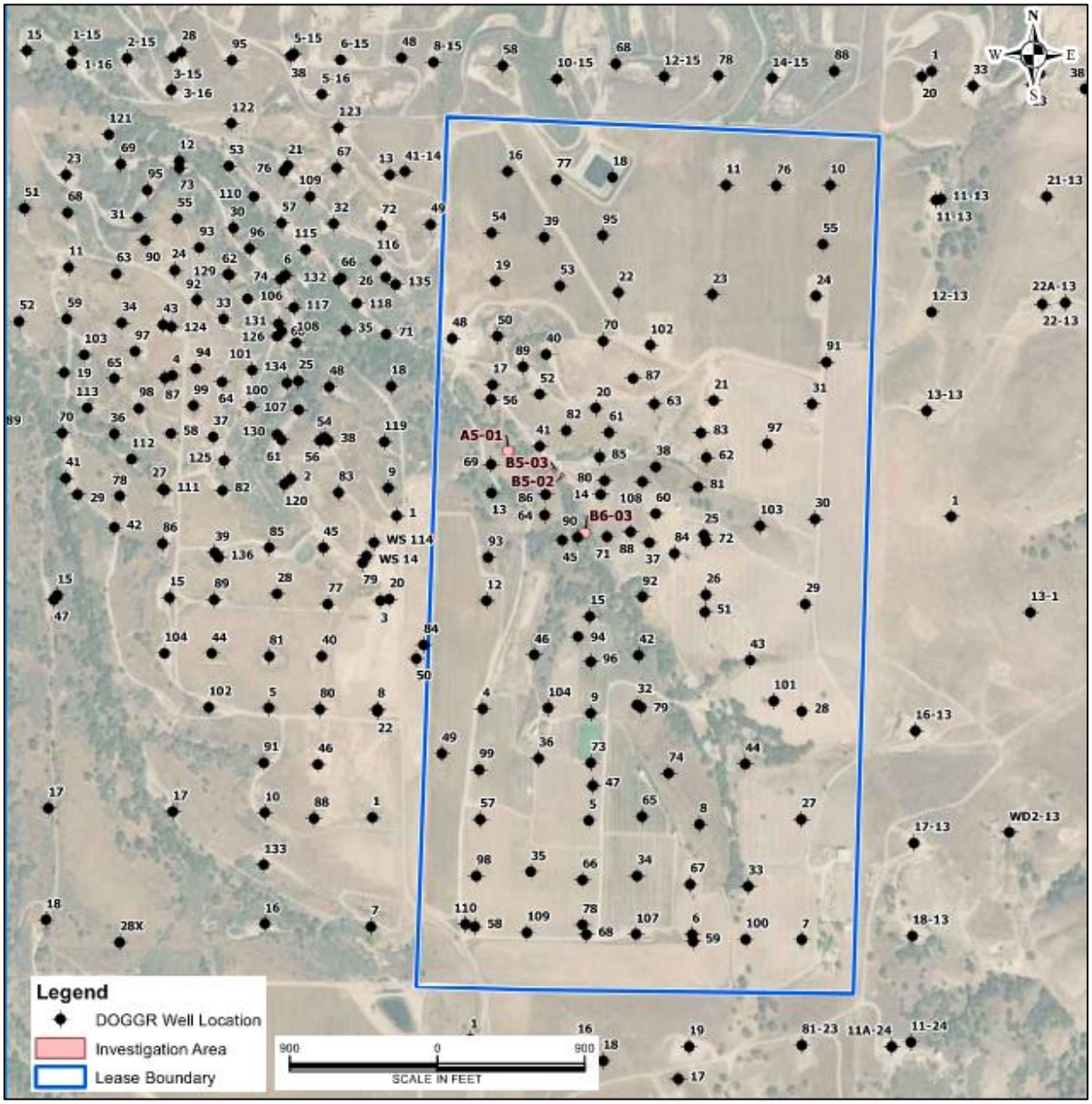


FIGURE 12. SITE PLAN SHOWING DOGGR WELL LOCATIONS WITHIN THE CAL LEASE AREA. THREE INVESTIGATION AREAS HIGHLIGHTED.

Impact Discussion:

(a, b, g, h). The project site was historically used for oil exploration and production. The proposed project is a site remediation project which would result in the excavation of total petroleum hydrocarbons and associated volatile organic compounds and polycyclic aromatic hydrocarbons in soil and perched water surrounding former diluent pipelines in three areas. The project would involve a one-time removal of contaminated soil and temporary transportation of removed onsite infrastructure including abandoned oil wells (Well 50 & 89) and associated appurtenances and miscellaneous oil field debris. If excavated material tests indicate the contamination is above ESLs, excavated material would be sent offsite for disposal at a California Licensed waste disposal facility, via truck transportation. Hazardous materials encountered during the remediation, including contaminated soils, would be required to be handled in accordance with the approved Remedial Action Workplan (July 2021), included as Attachment 3. Excavated soils from each area will be staged on adjacent, plastic-lined

stockpile areas, pending waste characterization and offsite disposal. The stockpiled material will be covered with sheeting or a soil binder at the end of each workday and prior to precipitation events. During removal actions, excavations will be field screened. Field screening will consist of olfactory observations using a photoionization detector (PID) and visual observations (e.g. staining) to identify potential areas of additional contamination. Field assay tests (e.g. Hanby test kits) will also be used for field estimation of TPH concentrations. Upon completion of the initial excavation, the boundaries of the excavation may be expanded, based on the results of field screening (i.e. PID and visual observations), and field assay tests (e.g. Hanby test kits). Excavation will continue until field screening indicates TPH concentrations are below SSCGs or at the boundary of the TEZs and DEZs, at which time confirmation soil samples will be collected and sent to a State-of-California certified laboratory. No permanent development is proposed. The work sites involving heavy equipment are not readily accessible to the public. The project would remove potential hazardous materials from the site before project completion and therefore, impacts would be *less than significant* because the project would have a net benefit to the environment**.**

(c). An excavator will be used to remove the impacted soil at areas A5-02 and B5-02/B5-03 and store it in one of the identified stockpile areas. The stockpiled material would be covered with sheeting or a soil binder at the end of each workday and prior to precipitation events. In the location of B6-03, manual excavation will be implemented, since the area is located adjacent to a sensitive oak and riparian habitat. The amount of residual contaminated soil left in place is expected to be minimal within the TEZs and DEZs. Following reclamation activities, a Remedial Action Completion Report will be provided to SBCEHS documenting the confirmation sampling, final remedial excavation activities, areas excavated and monitoring well installation including boring logs and construction details. The Report will include final quantities of materials removed, final quantities of materials left in place, waste profiling data, disposal manifest information, confirmatory sampling results, and photo documentation of the activities. This Report will serve as the final report for the project and will include a request for a statement of regulatory acceptance that no further action is required for the areas investigated and remediated. The proximity of the hydrocarbons to the sensitive habitats requires implementation of mitigation measure HazMat-01 Spill contingency Plan. With this, impacts from the release of hazardous substances is *less than significant with mitigation*.

(d, e, f). The project would not interfere with any emergency response or evacuation plans, nor would it create a potential public health or safety hazard. The work sites involving heavy equipment are not readily accessible to the public. Impacts would be *less than significant.*

Cumulative Impacts. Since the project would not create significant impacts with respect to hazardous materials and/or risk of upset, it would not have a cumulatively considerable effect on safety within the County.

Mitigation and Residual Impact. The following mitigation measures would reduce the project's effects regarding hazardous materials and/or risk of upset to an insignificant level:

HazMat-01 Spill Contingency. A Spill Contingency Plan (SCP) outlining measures to prevent the release of oil and/or other hazardous materials from the abandoned and removed pipeline segments including containment methods for emergency clean-up operations shall be developed for the project. All vehicles shall be staged only in appropriately marked and protected areas and at no time shall any cleaning and/or refueling of equipment be allowed upslope and/or within the vicinity of streambeds. If an accidental spill of a hazardous or toxic material occurs, the RWQCB, CDFG and the SBCFPD shall be notified. **Plan Requirements:** Prevention measures shall include, but not be limited to the identification of appropriate fueling areas away from sensitive habitat areas such as streambeds and on-site storage of containment and spill response materials. The applicant shall designate staging areas, a minimum of 50 feet from wetlands/riparian habitat and stream channels, and these areas shall be depicted on project plans. **Timing:** The SCP shall be developed prior to project implementation and staging areas shall be in place

and maintained throughout project activities. **Monitoring:** This plan shall be submitted to SBCPDD and SBCFPD prior to the initiation of ground-disturbing activities.

With the incorporation of these measures, residual impacts would be insignificant.

4.10 LAND USE

Will the proposal result in:	Poten. Signif. and Unavoid.	Signif. But Mitigable	Insignif.	No Impact / Beneficial Impact	Reviewed Under Previous Document
a. Structures and/or land use incompatible with existing land use?				X	
b. Cause a significant environmental impact due to a conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?			X		
c. The induction of substantial unplanned population growth or concentration of population?				X	
d. The extension of sewer trunk lines or access roads with capacity to serve new development beyond this proposed project?				X	
e. Loss of existing affordable dwellings through demolition, conversion or removal?				X	
f. Displacement of substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				X	
g. Displacement of substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X	
h. The loss of a substantial amount of open space?				X	
i. An economic or social effect that would result in a physical change? (i.e. Closure of a freeway ramp results in isolation of an area, businesses located in the vicinity close, neighborhood degenerates, and buildings deteriorate. Or, if construction of new freeway divides an existing community, the construction would be the physical change, but the economic/social effect on the community would be the basis for determining that the physical change would be significant.)				X	
j. Conflicts with adopted airport safety zones?				X	

Existing Setting. The Site is located in the rural area, approximately seven miles southeast of the City of Santa Maria, California. The Site and surrounding area consist of inactive and abandoned oil wells located within the United California Lease of the Cat Canyon Oilfield. The United California Lease is bounded on the east by the California Lease and on the south by the Bradley Lease, all zoned AG-II-100. Historically, the site has been used as an oil processing area encompassing approximately 4.1 acres and consists of a number of former containment facilities including aboveground storage tanks, heater treaters, associated piping,

production water tanks, produced water injection facilities, and skim ponds areas. The containment facilities have historically been used for the separation and temporary storage of crude oil and produced water. All aboveground and underground facilities have been removed from the area. Currently, the Site is vacant and the future use of the Site will likely be limited to agricultural or continued oil production.

Environmental Threshold. The Thresholds and Guidelines Manual contains no specific thresholds for land use. Generally, a potentially significant impact can occur if a project would result in substantial growth inducing effects or result in a physical change in conflict with County policies adopted for the purpose of avoiding or mitigating an environmental effect.

Impact Discussion:

(a, c– j). The proposed project includes excavating approximately 4,306 cubic yards of TPH, associated VOC, and PAH impacted soil from the CAL Lease in the North Cat Canyon Oil Field, replacing with clean fill in lifts and compacting, and restoring the project site to previous conditions. Approximately 620 cubic yards of contaminated soil will be left in place due to its proximity to the Bradley creek drainage or sensitive tree root zones. Therefore, the project would not cause a physical change that conflicts with adopted environmental policies or regulations. The project is not growth inducing, and does not result in the loss of affordable housing, loss of open space, or a significant displacement of people. The project would not result in the addition of any structures or a change in land use, does not involve the extension of a sewer trunk line, and does not conflict with any airport safety zones. No short or long-term adverse impacts to land uses would result from the proposed project. No open space would be lost. No negative economic or social effects would result from the proposed remediation project. The project is compatible with existing land uses and would have *no impact*.

(b). The intent of the project is to remove and remediate TPH, VOC, and PAH impacted soils in a manner that protects existing resources, which is the purpose of the depth and tree exclusion zones. This is consistent with oil and gas and water quality policies listed in Section 9 of this document. On the other hand, the ground disturbance caused by the necessary excavations and soil treatment for the project may affect biological resources that are protected by policies in the Conservation and Land Use Elements of the Comprehensive Plan (also listed in Section 9). The project site is within the range of the Endangered California Tiger Salamander, and the Threatened California Red-Legged Frog. Because of these varied Comprehensive Plan policies that relate to both oil development and conservation of resources, the proposed project and the applicable policies need to be balanced such that the risks are minimized and impacts are reduced. Impacts to existing land use policies are *less than significant*.

Cumulative Impacts. The implementation of the project is not anticipated to result in any substantial change to the site's conformance with environmentally protective policies and standards or have significant growth inducing effects. Thus, the project would not cause a cumulatively considerable effect on land use.

Mitigation and Residual Impact. With the incorporation of biological and geologic mitigation measures, residual impacts would be less than significant.

4.11 NOISE

Will the proposal result in:	Poten. Signif. and Unavoid.	Signif. But Mitigable	Insignif.	No Impact / Beneficial Impact	Reviewed Under Previous Document
a. Long-term exposure of people to noise levels exceeding County thresholds (e.g. locating noise sensitive uses next to an airport)?				X	

Will the proposal result in:	Poten. Signif. and Unavoid.	Signif. But Mitigable	Insignif.	No Impact / Beneficial Impact	Reviewed Under Previous Document
b. Short-term exposure of people to noise levels exceeding County thresholds?		X			
c. Project-generated substantial increase in the ambient noise levels for adjoining areas (either day or night)?				X	

Existing Setting/Environmental Threshold. Noise is generally defined as unwanted or objectionable sound which is measured on a logarithmic scale and expressed in decibels (dB(A)). The duration of noise and the time period at which it occurs are important values in determining impacts on noise-sensitive land uses. The Community Noise Equivalent Level (CNEL) and Day-Night Average Level (L_{dn}) are noise indices which account for differences in intrusiveness between day- and night-time uses. County noise thresholds are: 1) 65 dB(A) CNEL maximum for exterior exposure, 2) 45 dB(A) CNEL maximum for interior exposure of noise-sensitive uses, and 3) an increase in noise levels by 3 db(A) – either individually or cumulatively when combined with other noise-generating sources when the existing (ambient) noise levels already exceed 65 db(A) at outdoor living areas or 45db(A) at interior living areas. Noise-sensitive land uses include: residential dwellings; transient lodging; hospitals and other long-term care facilities; public or private educational facilities; libraries, churches; and places of public assembly.

The proposed project site is located outside of 65 dB(A) noise contours for roadways, public facilities, airport approach and take-off zones. There are no noise-sensitive uses within proximity to the proposed work areas. Noise sources existing in the project area include noise associated with agricultural operations.

Impact Discussion:

(a, c.) The proposed project would be short-term in nature and consist of targeted soil removal in areas where soil hydrocarbon concentrations exceed ESLs and confirmation soil sampling, and would not result in: 1) the generation of any noise exceeding County thresholds; 2) substantially increase ambient noise levels in adjoining areas; or 3) exposure of noise sensitive uses on the proposed project site to off-site noise levels exceeding County thresholds. *No long-term noise-related impacts* would result.

(b). Excavation and soil stockpile would result in a temporary increase in noise levels at the project site due to the use of heavy equipment and haul trucks. It is estimated that Remediation activities would occur over a period of 6 months. Therefore, the project could cause short-term construction-related noise impacts. The highest construction noise levels would most likely result from the use of heavy construction equipment, including bulldozers, excavators, loaders, etc. No nighttime work is proposed. This potential short-term impact would be reduced to a *less than significant level with the implementation of Mitigation Measure* Noise-01, which limits the days and hours that construction (grading) operations may occur.

Cumulative Impacts. The implementation of the project is not anticipated to result in any substantial noise effects. Therefore, the project would not contribute in a cumulatively considerable manner to noise impacts.

Mitigation and Residual Impact. The following mitigation measures would reduce the project's noise effects to an insignificant level:

Noise-01 Construction Hours. The Owner /Applicant, including all contractors and subcontractors shall limit construction activity, including equipment maintenance and site preparation, to the hours between 8:00 a.m. and 5:00 p.m. Monday through Friday. No construction shall occur on weekends or State holidays. Non-noise generating interior construction activities such as plumbing, electrical,

drywall and painting (which does not include the use of compressors, tile saws, or other noise-generating equipment) are not subject to these restrictions. Any subsequent amendment to the Comprehensive General Plan, applicable Community or Specific Plan, or Zoning Code noise standard upon which these construction hours are based shall supersede the hours stated herein. **PLAN REQUIREMENTS:** The Owner/Applicant shall provide and post a sign stating these restrictions at all construction site entries. **TIMING**: Signs shall be posted prior to commencement of construction and maintained throughout construction. **MONITORING**: The Owner/Applicant shall demonstrate that required signs are posted prior to grading/building permit issuance and pre-With the incorporation of these measures, residual impacts would be insignificant.

With the incorporation of these measures, residual impacts would be insignificant.

4.12 PUBLIC FACILITIES

Will the proposal require or result in:	Poten. Signif. and Unavoid.	Signif. But Mitigable	Insignif.	No Impact / Beneficial Impact	Reviewed Under Previous Document
a. A need for new or altered police protection and/or health care services?				X	
b. Student generation exceeding school capacity?				X	
c. Significant amounts of solid waste or breach any federal, state, or local standards or thresholds relating to solid waste disposal and generation (including recycling facilities and existing landfill capacity)?				X	
d. The relocation or construction of new or expanded wastewater treatment facilities (sewer lines, lift-stations, etc.) the construction or relocation of which could cause significant environmental effects?				X	
e. The relocation or construction of new or expanded storm water drainage or water quality control facilities, the construction of which could cause significant environmental effects?				X	

Impact Discussion:

(a-e). Existing service levels would be sufficient to serve the proposed project. The soil to be removed would be transported and disposed of at a California Licensed waste disposal facility. The proposed project would not generate solid waste in excess of County thresholds. The project would not cause the need for new or altered sewer system facilities as it is already in the service district, and the District has adequate capacity to serve the project. No additional drainages or water quality control facilities would be necessary to serve the project. Therefore, the project would have *no impact* to public facilities.

Mitigation and Residual Impact. No impacts are identified. No mitigation is necessary.

4.13 RECREATION

Will the proposal result in:	Poten. Signif. and Unavoid.	Signif. But Mitigable	Insignif.	No Impact / Beneficial Impact	Reviewed Under Previous Document
a. Conflict with established recreational uses of the area?				X	
b. Conflict with biking, equestrian and hiking trails?				X	
c. Substantial impact on the quality or quantity of existing recreational opportunities (e.g., overuse of an area with constraints on numbers of people, vehicles, animals, etc. which might safely use the area)?				X	

Existing Setting/Environmental Threshold. The Thresholds and Guidelines Manual contains no threshold for park and recreation impacts. However, the Board of Supervisors has established a minimum standard ratio of 4.7 acres of recreation/open space per 1,000 people to meet the needs of a community. The Santa Barbara County Parks Department maintains more than 900 acres of parks and open spaces, as well as 84 miles of trails and coastal access easements.

The proposed project site is located within the Cat Canyon Oil Field. No established recreational uses (including parks, biking, equestrian or hiking trails) are located on or adjacent to the proposed project site.

Impact Discussion:

(a - c). The proposed project site is private and not located on or near any established recreational uses, including biking, equestrian or hiking trails. There are no parks or public trails located on or near the project site. The proposed project would not result in any population increase and would have *no adverse impacts* on the quality or quantity of existing recreational opportunities, either in the project vicinity or County-wide.

Mitigation and Residual Impact. No impacts are identified and no mitigation is required.

4.14 TRANSPORTATION

Will the proposal result in:	Poten. Signif. and Unavoid.	Signif. But Mitigable	Insignif.	No Impact / Beneficial Impact	Reviewed Under Previous Document
a. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadways, bicycle, and pedestrian facilities?			X		
b. Conflict or be inconsistent with CEQA Guidelines Section 15064.3(b)?			X		
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X	
d. Result in inadequate emergency access?			X		

Existing Setting. The proposed project is located within the California Lease in the northern Cat Canyon Oil Field, at 6525 Dominion Road in Santa Maria. The remediation sites are accessed via dirt/ag roads

throughout the site (see Figure 1). Dominion Road is managed by the Santa Barbara County Transportation Division, which maintains 1,650 lane miles of roads in the unincorporated areas of Santa Barbara County. The project site is in a rural area approximately seven miles east of the City of Santa Maria. Dominion Road is open with two-way traffic.

Santa Barbara County Association of Governments (SBCAG) is responsible for all regional transportation planning within Santa Barbara County, including identifying and funding major infrastructure improvements, determining transit needs, creating and updating bicycle and pedestrian master plans, determining the feasibility of and planning of enhancements to the passenger rail system, and developing and implementing ongoing efforts to reduce traffic congestion throughout the region (SBCAG, 2020). SBCAG adopted the *Regional Transportation Plan and Sustainable Communities Strategy* in 2017, and this plan applies to the proposed Project. Other applicable plans include the Circulation Element of the *Santa Barbara County Comprehensive Plan* (2014) and the *Montecito Community Plan* (1993).

Environmental Thresholds. According to the County's Environmental Thresholds and Guidelines Manual, a significant transportation impact would occur when:

a. Potential Conflict with a Program, Plan, Ordinance, or Policy. The SBCAG's 2040 Regional Transportation Plan and Sustainable Communities Strategy (SBCAG, 013) and the County's Comprehensive Plan, zoning ordinances, capital improvement programs, and other planning documents contain transportation and circulation programs, plans, ordinances, and policies. Threshold question "a" considers a project in relation to those programs, plans, ordinances, and polices that specifically address multimodal transportation, complete streets, transportation demand management (TDM), and other vehicle miles traveled (VMT)-related topics. The County and CEQA Guidelines Section 15064.3(a) no longer consider automobile delay or congestion an environmental impact. Therefore, threshold question "a" does not apply to provisions that address LOS or similar measures of vehicular capacity or traffic congestion.

A transportation impact occurs if a project conflicts with the overall purpose of an applicable transportation and circulation program, plan, ordinance, or policy, including impacts to existing transit systems and bicycle and pedestrian networks pursuant to Public Resources Code Section 21099(b)(1). In such cases, applicants must identify project modifications or mitigation measures that eliminate or reduce inconsistencies with applicable programs, plans, ordinances, and policies. For example, some community plans include provisions that encourage complete streets. As a result, an applicant for a multifamily apartment complex may need to reduce excess parking spaces, fund a transit stop, and/or add bike storage facilities to comply with a community plan's goals and policies.

b. Potential Impact to VMT. The County expresses thresholds of significance in relation to existing, or baseline, county VMT. Specifically, the County compares the existing, or baseline, county VMT (i.e., pre-construction) to a project's VMT. Projects with VMT below the applicable threshold would normally result in a less than significant VMT impact and, therefore, would not require further analyses or studies. Nonetheless, CEQA Guidelines Section 15064(b)(2) states, "Compliance with the threshold does not relieve a lead agency of the obligation to consider substantial evidence indicating that the Project's environmental effects may still be significant." Projects with a VMT above the applicable threshold would normally result in a significant VMT impact and, therefore, would require further analyses and studies, and, if necessary, project modifications or mitigation measures. CEQA Guidelines Section 15064.3 establish VMT as the most appropriate measure of transportation impacts under CEQA.

The County presumes that land use or transportation projects meeting any of the screening criteria would have less than significant VMT impacts and would not require further analysis. County thresholds identify Small Projects as a project that generates 110 or fewer average daily trips. The VMT thresholds of significance are for general use and should apply to most projects subject to environmental review. However, the thresholds may not be appropriate for unique projects. In such cases, CEQA Guidelines Section 15064.7(c) allows the County to use other thresholds "… on a case-by-case basis as provided in

Section 15064(b)(2).” The OPR Technical Advisory recommended thresholds of significance for land use projects including Residential, Employment, Regional Retail, Mixed-Use Projects, and Other Land Use types.

Projects subject to Absolute Thresholds and Land Use Plans. Transportation projects and some land use projects are subject to an absolute threshold of significance (i.e., total roadway VMT or total VMT). Projects and plans that exceed the thresholds of significance require project modifications or mitigation measures to avoid or reduce VMT impacts to a less-than-significant level (i.e., below the applicable threshold of significance). As discussed above, the VMT Calculator contains and, therefore, can help applicants assess the effectiveness of possible mitigation measures.

Cumulative Impacts

CEQA requires lead agencies to consider a project’s individual and cumulative impacts. Specifically, CEQA Guidelines Section 15064(h)(1) states, “the lead agency shall consider whether the cumulative impact is significant and whether the effects of the project are cumulatively considerable. The County typically uses one of two methods to determine whether a project’s VMT impact is cumulatively considerable. As explained below, one method is for projects subject to an efficiency-based threshold of significance. The other method is for projects subject to an absolute threshold of significance and land use plans.

c. Design Features and Hazards. Threshold “c” considers whether a project would increase roadway hazards. An increase could result from existing or proposed uses or geometric design features. In part, the analysis should review these and other relevant factors and identify results that conflict with the County’s Engineering Design Standards or other applicable roadway standards.

d. Emergency Access. Threshold “d” considers any changes to emergency access resulting from a project. To identify potential impacts, the analysis must review any proposed roadway design changes and determine if they would potentially impede emergency access vehicles.

Impact Discussion:

(a). The scope of the project includes targeted soil removal in areas where soil and perched water concentrations of TPH and associated VOCs and PHAs are elevated in three areas: A5-01, B5-02/B5-03, and B6-03. No new structures or uses are proposed as a result of the project aside from up to three ground water monitoring well installed after remediation activities. These wells will stay installed and monitored for a period of two years. No new operational vehicle miles would be introduced to the area besides during excavation activities. Construction equipment would access the site via dirt and ag roads and a private driveway connecting to Dominion Road (Figure 1). Formal well pads within the lease area will be used as the stockpile and staging areas. Waste soil will be stockpiled, loaded into trucks, and disposed of at a California Licensed waste disposal facility. Once excavation confirmation sample results confirm that the SSCGs are met, excavations will be backfilled with approximately 4,306 cubic yards of imported clean fill consisting of virgin material obtained from a commercial quarry in Santa Barbara County. The project would be consistent with programs, plans, ordinances, and policies related to circulation. Therefore the project would have a *less than significant impact* to existing programs.

(b). Approximately 300 truck trips are expected to be made for export soil and 300 truck trips for import soil. There would be an average of about 10 truck trips per day, with a peak of about 50 truck trips per day. Waste soil will be disposed of as Non-Hazardous Hydrocarbon Impacted Soil (NHIS) at a California Licensed waste disposal facility. According to the Santa Barbara County Environmental Thresholds and Guidelines Manual, amended January 2021, the proposed Project is exempt from further VMT analysis based on Step 1, Project Screening. The project would be similar to existing conditions upon completion of excavation. The proposed project would not decrease future vehicle capacity or create long-term changes to traffic patterns or VMT. Roadway users would continue to be similar to those currently using Dominion Road. No change in traffic patterns, VMT, or ADT would

result from the proposed Project. The proposed project would not result in the construction of a permanent structure or use that would intensify the VMT of the area. Therefore, the project would cause a *less than significant impact* under CEQA and would not require further VMT analysis due to its nature and limited duration.

(c). The proposed project is located on a parcel used for oil and agricultural activities. Once trucks and equipment enter the site, the project would not impact traffic flow of the surrounding roads. The project would not introduce any design features or incompatible uses that would result in new hazards in the Project Study Area or vicinity. The project would maintain sight distance, private property ingress/egress, and emergency access throughout project construction and operation. The Project does not propose a new geometric design which would increase hazardous conditions. The proposed project would have *no impact* in this regard, and no mitigation measures are required.

(d). Emergency access to surrounding areas is currently available along Dominion Road which is a two way road. During construction, the road would remain open and un-impacted by construction vehicles which would be stored onsite until project completion. The project would be in compliance with applicable regulations, and ensure that there would be no impacts related to traffic hazards, emergency access, and other transportation safety and access considerations. The project would not interfere with police and fire response times or school bus routes. Therefore, the proposed project impacts would be *less than significant*, and no mitigation is required.

Cumulative Impacts. The County's Environmental Thresholds were developed, in part, to define the point at which a project's contribution to a regionally significant impact constitutes a significant effect at the project level. In this instance, the project has been found not to exceed the threshold of significance for transportation. Therefore, the project's contribution to the regionally significant transportation impacts is not considerable, and is insignificant.

Mitigation and Residual Impact. No impacts are anticipated Mitigation measures are not required.

4.15 WATER RESOURCES/FLOODING

Will the proposal result in:	**Poten. Signif. and Unavoid.**	**Signif. But Mitigable**	**Insignif.**	**No Impact / Beneficial Impact**	**Reviewed Under Previous Document**
a. Changes in currents, or the course or direction of water movements, in either marine or fresh waters?			X		
b. Changes in percolation rates, drainage patterns or the rate and amount of surface water runoff?			X		
c. Change in the amount of surface water in any water body?			X		
d. Discharge, directly or through a storm drain system, into surface waters (including but not limited to wetlands, riparian areas, ponds, springs, creeks, streams, rivers, lakes, estuaries, tidal areas, bays, ocean, etc) or alteration of surface water quality, including but not limited to temperature, dissolved oxygen, turbidity, or thermal water pollution?			X		
e. Alterations to the course or flow of flood water or need for private or public flood control projects?			X		

Will the proposal result in:	Poten. Signif. and Unavoid.	Signif. But Mitigable	Insignif.	No Impact / Beneficial Impact	Reviewed Under Previous Document
f. Exposure of people or property to water related hazards such as flooding (placement of project in 100 year flood plain), accelerated runoff or tsunamis, sea level rise, or seawater intrusion?			X		
g. Alteration of the direction or rate of flow of groundwater?			X		
h. Change in the quantity of groundwater, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations or recharge interference?			X		
i. Overdraft or over-commitment of any groundwater basin? Or, a significant increase in the existing overdraft or over-commitment of any groundwater basin?			X		
j. The substantial degradation of groundwater quality including saltwater intrusion?			X		
k. Substantial reduction in the amount of water otherwise available for public water supplies?			X		
l. Introduction of storm water pollutants (e.g., oil, grease, pesticides, nutrients, sediments, pathogens, etc.) into groundwater or surface water?			X		

Existing Setting. The site is located within the southeast portion of the Santa Maria Basin and is underlain by Pleistocene alluvium deposits. During heavy rainfall, surface water drains into Bradley Canyon, a tributary of the Santa Maria River/Sisquoc River. Groundwater in this region sources from the regional aquifer of the Santa Maria Basin. According to the Santa Barbara County Water Agency, groundwater in the region varies by season and periods of drought. Additionally, the Site groundwater flow is assumed to be to the north, toward the Santa Maria River/Sisquoc River, based on regional groundwater flow. Depth to regional groundwater levels at the Site has been estimated to range from 367 to 390 feet bgs based on historical well completion logs.

Thirty-three areas within CAL Lease were identified to contain TPH concentrations greater than 1,000 ppm. Groundwater was found to not be affected due to the depth of groundwater (present at 90 to 150 feet bgs), the limited vertical extent of the impacted soil (25 feet bgs) and the presence of multiple, relatively impermeable hardpan layers at shallow depth at one to eight feet bgs and 20 to 25 feet bgs. In 2019, Langan investigated soil and perched groundwater conditions in areas A5-01, B5-02/B5-03, and B6-03. Perched groundwater was encountered during drilling activities at a minimum depth of 7.5 feet bgs at B6-03, and in a range of 10 to 33 feet bgs at A5-01, and a range of 14 to 25 feet bgs at B5-02/B5-03. The A5-01, B5-02/B5-03, and B6-03 investigation areas contained soil with maximum detected concentrations of 54,400 mg/kg (A5-01) and 14,613 (B5-02/B5-03) mg/kg for TPH and 15 mg/kg (A5-01) for naphthalene above their respective SSCGs and perched groundwater reported maximum detected concentrations of 2.25 mg/L (A5-01), 3.45 mg/L (B5-02/B5-03) and 0.84 mg/L (B6-03) for TPH.

The Project Site includes portions of Bradley Drainage (an ephemeral tributary) to Bradley Canyon Creek. Three jurisdictional areas were studied: Non-wetland waters of the U.S., Wetland Waters of the U.S., and CDFW jurisdictional streams. The Study Area includes 0.50 acres of non-wetland waters of the U.S., no

wetland waters of the U.S., and 6.62 acres of CDFW jurisdictional stream habitat (Figure 14 below). These areas do not meet federal wetland criteria but do meet the County of Santa Barbara criteria for a protected wetland resource. There are inactive water wells that have not been abandoned but are located outside of the project limit of disturbance.

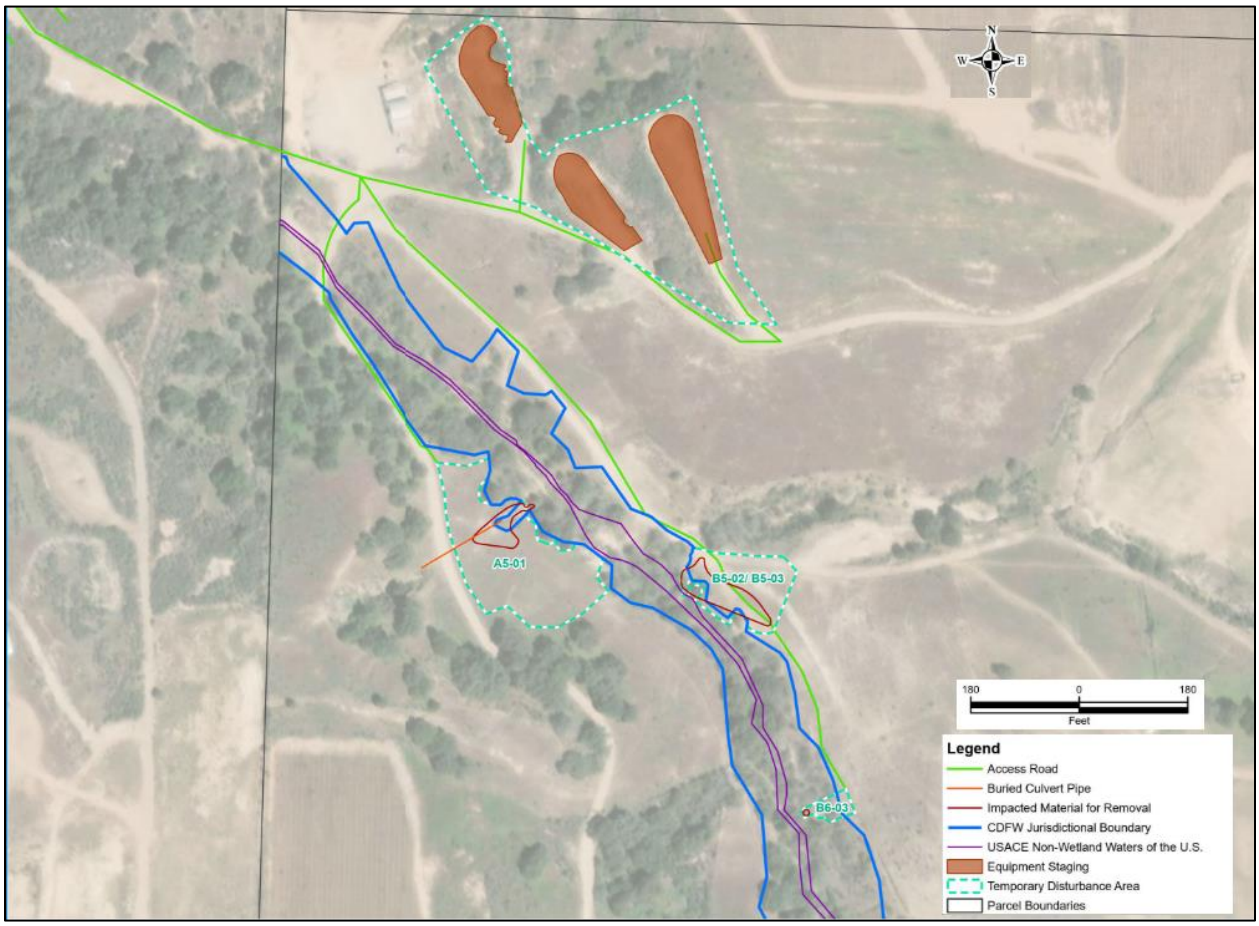


FIGURE 13. JURISDICTIONAL STREAMBEDS WITHIN THE BIOLOGICAL STUDY AREA ASSOCIATED WITH THE BRADLEY DRAINAGE. USACE NON-WETLAND WATERS OF THE U.S. AND CDFW JURISDICTIONAL STREAMBED IDENTIFIED.

Water Resources Thresholds. A project is determined to have a significant effect on water resources if it would exceed established threshold values which have been set for each over drafted groundwater basin. These values were determined based on an estimation of a basin's remaining life of available water storage. If the project's net new consumptive water use [total consumptive demand adjusted for recharge less discontinued historic use] exceeds the threshold adopted for the basin, the project's impacts on water resources are considered significant.

A project is also deemed to have a significant effect on water resources if a net increase in pumpage from a well would substantially affect production or quality from a nearby well.

Water Quality Thresholds. A significant water quality impact is presumed to occur if the project:

- Is located within an urbanized area of the county and the project construction or redevelopment individually or as a part of a larger common plan of development or sale would disturb one (1) or more acres of land;
- Increases the amount of impervious surfaces on a site by 25% or more;
- Results in channelization or relocation of a natural drainage channel;

- Results in removal or reduction of riparian vegetation or other vegetation (excluding non-native vegetation removed for restoration projects) from the buffer zone of any streams, creeks or wetlands;
- Is an industrial facility that falls under one or more of categories of industrial activity regulated under the NPDES Phase I industrial storm water regulations (facilities with effluent limitation; manufacturing; mineral, metal, oil and gas, hazardous waste, treatment or disposal facilities; landfills; recycling facilities; steam electric plants; transportation facilities; treatment works; and light industrial activity);
- Discharges pollutants that exceed the water quality standards set forth in the applicable NPDES permit, the Regional Water Quality Control Board's (RWQCB) Basin Plan or otherwise impairs the beneficial uses[1] of a receiving water body;
- Results in a discharge of pollutants into an "impaired" water body that has been designated as such by the State Water Resources Control Board or the RWQCB under Section 303 (d) of the Federal Water Pollution Prevention and Control Act (i.e., the Clean Water Act); or
- Results in a discharge of pollutants of concern to a receiving water body, as identified by the RWQCB.

Impact Discussion:

(a-d). The project would create minor amounts of temporary additional storm water runoff and erosion problems as a result of excavation activity. However, none of the proposed activities are expected to significantly alter currents or the course or direction of water movements, percolation rates, surface water flows or drainage patterns. The project would not create additional storm water runoff because no new impermeable surfaces (i.e. structures, driveways, patios, etc.) are proposed. Construction activities such as grading could potentially create temporary runoff and erosion problems. The well pad areas are not within close proximity to any streams or drainages. Two depth exclusion zones (DEZ-1 and DEZ-2) are proposed to protect the riparian and oak tree habitat and reduce excavation instability. The removal of impacted material will impact approximately 0.11 acres of CDFW jurisdictional stream habitat in work areas A5-01, B5-02, and B6-03 (Figure 14 above). All impacts to CDFW jurisdictional stream habitat will be temporary [0.03 acres at A5-01, 0.04 acres at B5-02, and 0.04 acres at B6-03]. No permanent impacts to the Jurisdictional waters are proposed. Application of standard County grading, erosion, and drainage-control measures would ensure that no significant increase of erosion or storm water runoff would occur. Adherence to standard County grading, erosion, and drainage-control measures would ensure that no significant increase of erosion or storm water runoff would occur. Impacts would be reduced to *less than significant levels*.

(e, f). Although the Project Site includes portions of Bradley Drainage (an ephemeral tributary) to Bradley Canyon Creek, the inland project is not located in or near any mapped 100-year floodplains and would not alter the course or flow of flood water, or result in exposure of people or property to water related hazards such as flooding. Therefore impacts are expected to be *less than significant*.

(g-j). The project would not impact groundwater quality. The project would involve the excavation of soil for remediation of TPH, associated VOCs, and PAH impacts from historical oil field operations, specifically three identified areas of the California Lease, within the State-designated Cat Canyon Oil Field. The excavation would be backfilled and compacted following excavation. The excavation site would be restored and the soil stabilized. The proposed project would not decrease available surface

[1] Beneficial uses for Santa Barbara County are identified by the Regional Water Quality Control Board in the Water Quality Control Plan for the Central Coastal Basin, or Basin Plan, and include (among others) recreation, agricultural supply, groundwater recharge, fresh water habitat, estuarine habitat, support for rare, threatened or endangered species, preservation of biological habitats of special significance.

or groundwater supplies nor degrade groundwater quality. Water needed for dust suppression would be provided by construction water trucks and runoff minimized through erosion control BMPs (Mitigation Measure GEO-01). The project would not require a permanent onsite water source and no water would be pumped from the groundwater basin as a result of the project. The project would not involve the placement of septic disposal systems. The project's impact on water supplies would therefore be *less than significant*.

(l). The project could adversely affect surface water quality by introducing excavation equipment which would be used to remove the impacted material, and stored on nearby staging areas. The stockpiled material for each work area would be covered with sheeting or a soil binder at the end of each workday and prior to precipitation events. Minor amounts of materials from onsite vehicular use would not present a significant potential for release of waterborne pollutants and would be highly unlikely to create a public health hazard.

Upon completion of the backfill and restoration activities, one groundwater monitoring wells may be installed at investigation areas A5-02, B5-02/B5-03 and B6-03, for a total of three wells. The viability and final location of the monitoring wells will be determined at the end of the excavation activities and be placed in the location of perched groundwater zones. If groundwater is not encountered during excavation or in the borings advanced for monitoring well installation, no well will be installed in a given area. The wells will be monitored for a period of two years, at a semi-annual schedule beginning late in the first quarter of each year (after the rainy season) and again in the third quarter of each year. The first round of semi-annual monitoring will be conducted during either the first or third quarter after remedial activities are complete. An annual groundwater monitoring report will summarize the semi-annual monitoring activities and will be prepared at the end of each year. Groundwater monitoring results are anticipated to show stability and/or natural attenuation of the remaining mass of COPCs after two years of monitoring, after which, the groundwater monitoring wells will be abandoned. If wells do not show stable or decreasing trends of COPCs in groundwater after two years, next steps will be discussed with SBCEHS. Therefore, because no permanent structures or uses are proposed as a result of the project, and the installation of the groundwater monitoring wells after remediation activities, impacts are expected to be *less than significant*.

Cumulative Impacts. The County's Environmental Thresholds were developed, in part, to define the point at which a project's contribution to a regionally significant impact constitutes a significant effect at the project level. In this instance, the project has been found not to exceed the threshold of significance for water resources. Therefore, the project's contribution to the regionally significant issues of water supplies and water quality is not considerable, and is insignificant.

Mitigation and Residual Impact. No mitigation is required. Residual impacts would be insignificant.

5.0 INFORMATION SOURCES

5.1 County Departments Consulted

County Fire, Public Works, Flood Control, Parks, Environmental Health, Special Districts, APCD

5.2 Comprehensive Plan

X	Seismic Safety/Safety Element	X	Conservation Element
X	Open Space Element	X	Noise Element
	Coastal Plan and Maps	X	Circulation Element
X	ERME		

5.3 Other Sources

X	Field work	X	Ag Preserve maps
X	Calculations	X	Flood Control maps
X	Project plans	X	Other technical references (reports, survey, etc.)
	Traffic studies		
X	Records	X	Planning files, maps, reports
X	Grading plans	X	Zoning maps
	Elevation, architectural renderings	X	Soils maps/reports
X	Published geological map/reports	X	Plant maps
X	Topographical maps	X	Archaeological maps and reports
			Other

6.0 PROJECT SPECIFIC *(short- and long-term)* AND CUMULATIVE IMPACT SUMMARY

The following is a summary of project-specific impacts:

Class I Impacts (Significant and Unavoidable): None identified.

Class II Impacts (Potentially Significant and Subject to Mitigation): Air Quality, Biological Resources, Cultural Resources, Geologic Processes, Hazardous Materials/Risk of Upset, and Noise.

Significant direct short- and long-term project specific impacts would be reduced to a less than significant level through the implementation of the mitigation measures listed in the sections above.

Class III Impacts (Less than Significant): Aesthetics, Land Use, Transportation, and Water Resources.

The project would have **no impacts** on Agriculture, Energy, Fire Protection, Public Facilities, and Recreation.

Cumulative Impacts: With the implementation of the mitigation measures discussed above in each section, the proposed project's contribution to cumulative environmental impacts would not be substantial or significant.

7.0 MANDATORY FINDINGS OF SIGNIFICANCE

Will the proposal result in:	Poten. Signif. and Unavoid.	Signif. But Mitigable	Insignif.	No Impact / Beneficial Impact	Reviewed Under Previous Document
1. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, contribute significantly to greenhouse gas emissions or significantly increase energy consumption, or eliminate important examples of the major periods of California history or prehistory?		X			
2. Does the project have the potential to achieve short-term to the disadvantage of long-term environmental goals?			X		
3. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects and the effects of probable future projects.)		X			
4. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?		X			
5. Is there disagreement supported by facts, reasonable assumptions predicated upon facts and/or expert opinion supported by facts over the significance of an effect which would warrant investigation in an EIR ?			X		

(1) Substantially Degrade the Quality of the Environment. The proposed project does not have the potential to substantially degrade the quality of the environment because the proposed site remediation activities would be performed in order to prevent further possible degradation of the environment from TPH, VOC, and PAH-contaminated soils. As discussed in Section 4.4 (Biological Resources), the project does have the potential to substantially degrade the quality of the environment and substantially reduce the number or restrict the range of a rare or endangered plant or animal. However, mitigation measures BIO-04 and BIO-08 - BIO-17 will reduce impacts to biological resources to less than significant levels. The proposed project would not contribute significantly to greenhouse gas emissions or significantly increase energy consumption. As discussed in Section 4.5 (Cultural Resources), with the implementation of mitigation measures Special CulRes-01, CulRes-02, and CulRes-03, the project would not eliminate important examples of the major periods of California history or prehistory. Therefore, impacts would be *less than significant with mitigation* identified.

(2) Disadvantage Long-term Environmental Goals. The proposed project is designed to achieve the goal of removing contaminated soils and abandoned oil infrastructure within rural agricultural areas in Cat

Canyon and Santa Maria. The proposed project does not have the potential to achieve short-term goals to the disadvantage of long-term environmental goals. Therefore, impacts would be *less than significant*.

(3) Cumulative Impacts. As discussed throughout this document, because the project does not propose a new or significantly different use than the existing use, it does have any impacts that are individually limited, but cumulatively considerable. Any contribution of the project to significant cumulative impacts would be adequately reduced by mitigation measures identified to address project-specific impacts. Therefore, impacts would be *less than significant with mitigation* described within each issue area.

(4) Substantially Affect Human Beings. The proposed project would not create environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly. Project effects would be very limited in duration. Construction equipment would generate short term noise impacts on the site; however, this effect would be minimized with the implementation of mitigation measure NOISE-01. Therefore, impacts would be *less than significant with mitigation*.

(5) Disagreement over the Significance of an Effect. There is no disagreement supported by or predicated upon facts and/or expert opinion over the significance of an effect which would warrant investigation in an EIR. Therefore, impacts would be *less than significant*.

8.0 PROJECT ALTERNATIVES

CEQA does not require an analysis of potential project alternatives because the proposed project would not result in potentially significant, adverse and unmitigated impacts.

9.0 INITIAL REVIEW OF PROJECT CONSISTENCY WITH APPLICABLE SUBDIVISION, ZONING AND COMPREHENSIVE PLAN REQUIREMENTS

The project is an improvement project necessary to restore the surrounding environment to natural conditions to the maximum extent feasible. The project would restore the site to reflect site conditions as they existed prior to oil activities, which would enhance existing habitat and ground water resources. Preliminary analysis indicates that it would be consistent with applicable subdivision, zoning and comprehensive plan requirements.

An analysis of the consistency of the proposed project with applicable policies of the Comprehensive Plan is provided below. The proposed project, with incorporated mitigation measures is expected to be consistent with all land use and development policies.

9.1 Zoning Requirements: The project site is zoned AG-II-100, minimum lot size 100 acres, under the County Land Use & Development Code, and is subject to the requirements of this zone district.

9.2 Comprehensive Plan Requirements: The proposed project is subject to the following Policies of the County Comprehensive Plan:

Hazardous Waste 10-1: The County and cities should work with other involved agencies to establish a coordinated interagency effort for identification, regulation, mitigation, and notification of contaminated sites.

Hazardous Waste 10-2: The County and cities in conjunction with the State Department of Health Services shall encourage onsite treatment and remediation to reduce the transport of hazardous waste from contaminated sites.

Land Use Development Policy 13: Oil and gas facilities shall be dismantled and removed, their host sites cleaned of contamination and reclaimed to natural conditions, or conditions to accommodate reasonably foreseeable development, in an orderly and timely manner that avoids long-term impacts to the health, safety, and welfare of the public and environment.

Hillside & Watershed Protection Policy 5: Temporary vegetation, seeding, mulching, or other suitable stabilization method shall be used to protect soils subject to erosion that have been disturbed during grading or development. All cut and fill slopes shall be stabilized as rapidly as possible with planting of native grasses and shrubs, appropriate non-native plants, or with accepted landscaping practices.

Hillside & Watershed Protection Policy 6: Provisions shall be made to conduct surface water to storm drains or suitable watercourses to prevent erosion. Drainage devices shall be designed to accommodate increased runoff resulting from modified soil and surface conditions as a result of development. Water runoff shall be retained onsite whenever possible to facilitate groundwater recharge.

Hillside & Watershed Protection Policy 7: Degradation of the water quality of groundwater basins, nearby streams, or wetlands shall not result from development of the site. Pollutants, such as chemicals, fuels, lubricants, raw sewage, and other harmful waste, shall not be discharged into or alongside coastal streams or wetlands either during or after construction.

Archaeological Site Policy 2: When developments are proposed for parcels where archaeological or other cultural sites are located, project design shall be required which avoids impacts to such cultural sites if possible.

Archaeological Site Policy 3: When sufficient planning flexibility does not permit avoiding construction on archaeological or other types of cultural sites, adequate mitigation shall be required. Mitigation shall be designed in accord with guidelines of the State Office of Historic Preservation and the State of California Native American Heritage Commission.

Archaeological Site Policy 4: Off-road vehicle use, unauthorized collection of artifacts, and other activities other than development which could destroy or damage archaeological or cultural sites shall be prohibited.

Archaeological Site Policy 5: Native Americans shall be consulted when development proposals are submitted which impact significant archaeological or cultural sites.

10.0 RECOMMENDATION BY P&D STAFF

On the basis of the Initial Study, the staff of Planning and Development:

____ Finds that the proposed project WILL NOT have a significant effect on the environment and, therefore, recommends that a Negative Declaration (ND) be prepared.

_X_ Finds that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures incorporated into the REVISED PROJECT DESCRIPTION would successfully mitigate the potentially significant impacts. Staff recommends the preparation of an ND. The ND finding is based on the assumption that mitigation measures will be acceptable to the applicant; if not acceptable a revised Initial Study finding for the preparation of an EIR may result.

____ Finds that the proposed project MAY have a significant effect on the environment, and recommends that an EIR be prepared.

____ Finds that from existing documents (previous EIRs, etc.) that a subsequent document (containing updated and site-specific information, etc.) pursuant to CEQA Sections 15162/15163/15164 should be prepared.

Potentially significant unavoidable adverse impact areas:

_____ With Public Hearing ___X___ Without Public Hearing

PREVIOUS DOCUMENT:

PROJECT EVALUATOR:_____ **DATE:**

11.0 DETERMINATION BY ENVIRONMENTAL HEARING OFFICER

____ I agree with staff conclusions. Preparation of the appropriate document may proceed.
____ I DO NOT agree with staff conclusions. The following actions will be taken:
____ I require consultation and further information prior to making my determination.

SIGNATURE:_____ **INITIAL STUDY DATE**: __October 11, 2023_____

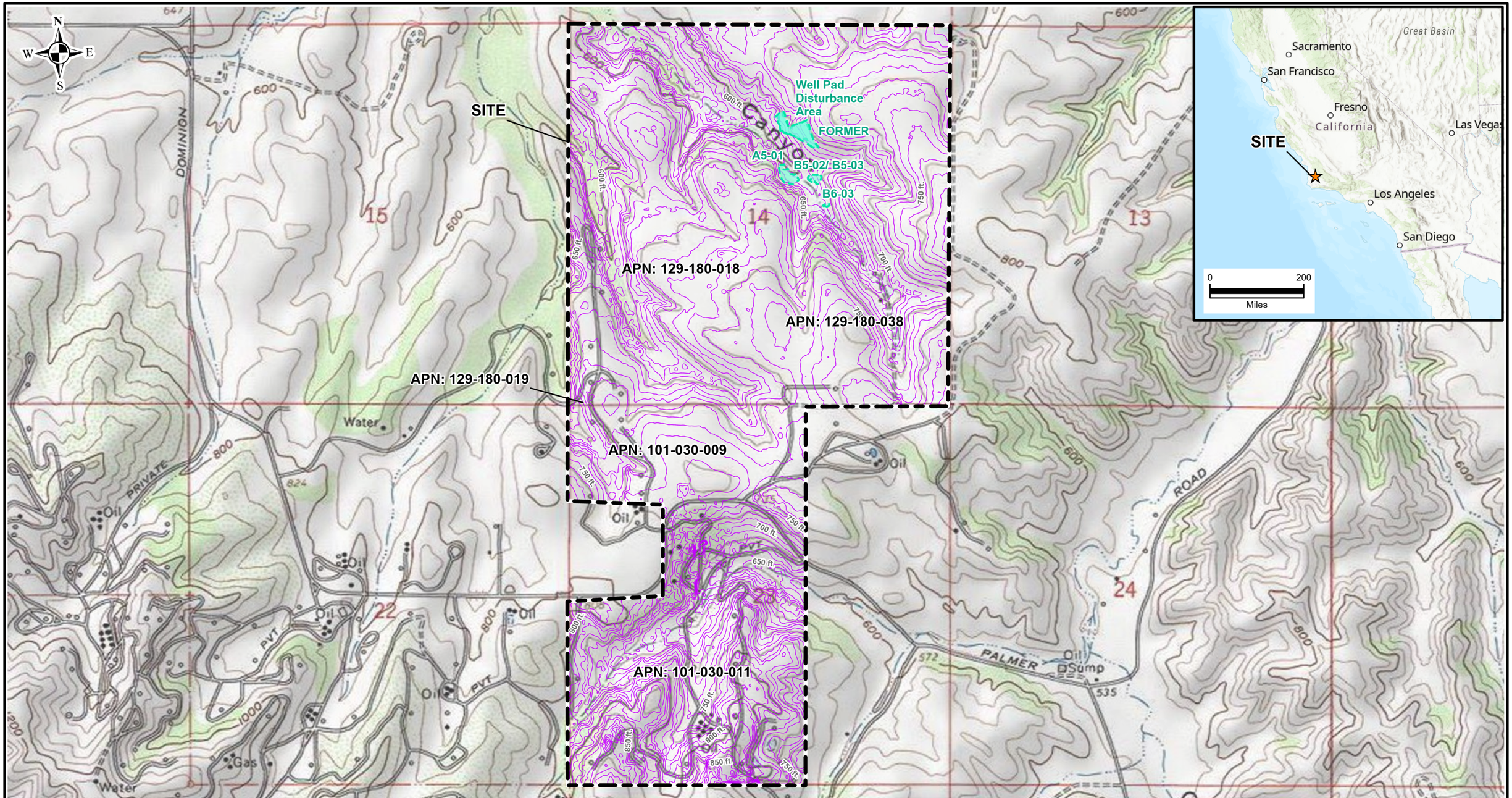
SIGNATURE:_____ **NEGATIVE DECLARATION DATE**: _November 6, 2023__

SIGNATURE:_____ **REVISION DATE:** _____

SIGNATURE:_____ **FINAL NEGATIVE DECLARATION DATE:** _____

12.0 ATTACHMENTS

1. Vicinity Map
2. Site Plan
3. Remedial Action Workplan for the California Lease (SMU #20059), dated July 2021
4. APCD Fugitive Dust Control Measures and Diesel Particulate and NOx Emission Reduction Measures
5. EHS Approval of the Remedial Action Workplan, California Lease dated December 17, 2021
6. EHS Approval of Soil Sampling Plan dated August 24, 2023



Legend

- Elevation Contour- 10 ft. Interval
- Project Parcels
- Temporary Disturbance Area
- Parcel Boundaries

Notes:
1. Topographic basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online, National Geographic Society, i-cubed
2. Parcel boundaries provided by Santa Barbara County.
3. All locations shown are approximate.
4. Slope average calculated at 13.74% from 2002 DEM data.
6. Contours at 10 fcot intervals.

1,300 0 1,300
Feet

LANGAN

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Project
CALIFORNIA LEASE REMEDIATION PROJECT
SANTA MARIA
SANTA BARBARA COUNTY CALIFORNIA

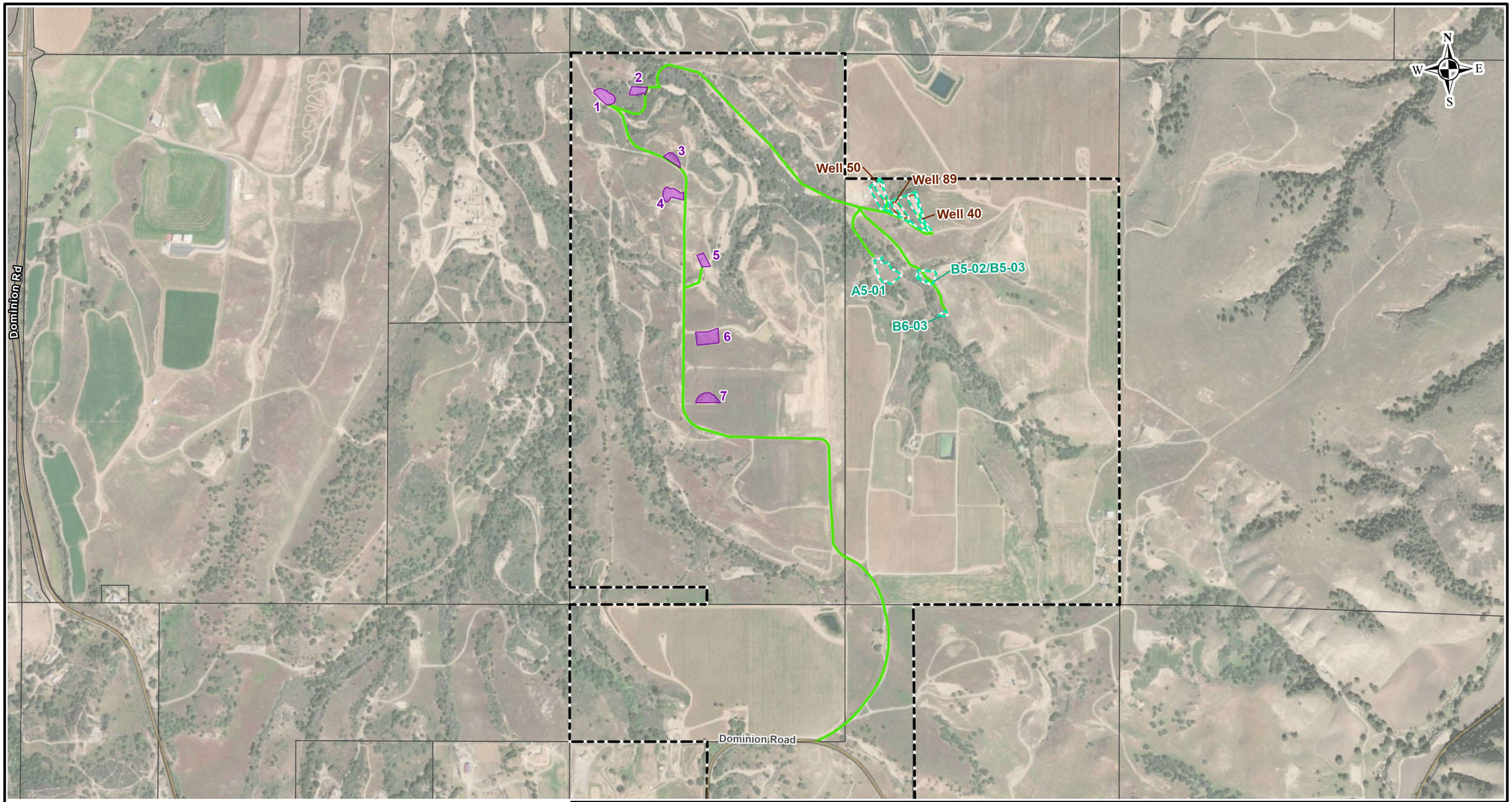
Figure Title
SITE LOCATION MAP

Project No.	781010001
Date	4/27/2023
Scale	1" = 1,300'
Drawn By	AC

Figure 1

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Legend

- Access Road
- Equipment Staging
- Soil Stockpile
- Temporary Disturbance Area
- Project Parcels
- Parcel Boundaries

Notes:
1. World imagery basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online, National Geographic Society, i-cubed.
2. Parcel data provided by Santa Barbara County.
3. All features shown are approximate.

900 0 900
Feet

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Project

CALIFORNIA LEASE REMEDIATION PROJECT

SANTA MARIA

SANTA BARBARA COUNTY CALIFORNIA

Figure Title

WORK AREAS

Project No.	781010001
Date	4/27/2023
Scale	1" = 900'
Drawn By	AC

Figure 2

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REMEDIAL ACTION WORKPLAN
California Lease (SMU #20059)
Santa Barbara County, California

for

Santa Barbara County Environmental Health Services
LUFT/SMU Program
2125 South Centerpointe Parkway, Room 333
Santa Maria, California 93455

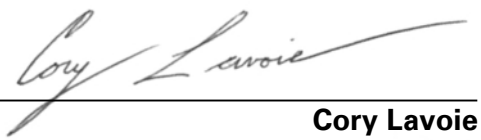
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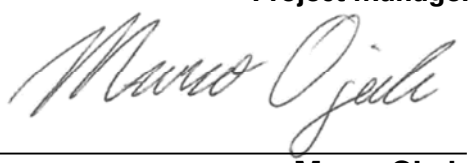
On Behalf Of:

California Resources Corporation
900 Old River Road
Bakersfield, California 93311





Cory Lavoie
Project Manager



Marco Ojeda
Professional Geologist, PG #9646

781010001
July 2021

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1.0 EXECUTIVE SUMMARY

Langan Engineering and Environmental Services, Inc. (Langan) has prepared this *Remedial Action Workplan* (Workplan) for the remediation of portions of the California (CAL) Lease in the North Cat Canyon Oil Field, Santa Barbara County, California. In October and November 2019, Langan performed an environmental investigation of the Site, and the results of the investigation were documented in the *Site Investigation Report*, dated 30 March 2020. Previous environmental Site assessments were performed at the Site by Waterstone Environmental, Inc. (Waterstone) in 2000 and 2001 and by the Source Group, Inc. (SGI, 2016b) in 2016. Langan's *Site Investigation Report* found the A5-01, B5-02/B5-03, and B6-03 investigation areas (the Site) contained soil concentrations above site-specific cleanup goals (SSCGs; SGI, 2014) and perched water concentrations above Santa Barbara County Environmental Health Services investigation levels (SBCEHS ILs). These areas were delineated laterally and vertically to SBCEHS ILs, with the exception of the western portion of investigation area B5-02/B5-03 where access was limited due to terrain and the presence of mature oak trees. The *Site Investigation Report* recommended targeted remedial activities at A5-01, B5-02/B5-03 and B6-03 based on the investigation results.

This Workplan presents an overview of the planned remedial activities at the Site in response to the findings of the investigation conducted at the CAL Lease completed by Langan in 2019, which indicated impacted soils above SSCGs at three former diluent pipeline areas at the Site (A5-01, B5-02/B5-03 and B6-03). The proposed remediation within three former diluent pipeline areas is designed to meet SSCGs through soil excavation. The proposed remedial activities presented in this Workplan will accommodate protection for oak trees and jurisdictional stream boundaries at the Site, and will include backfill and restoration after removal actions are complete. The Site is associated with the SBCEHS Site Mitigation Unit (SMU) 20059, and State Water Resources Control Board Geotracker Global ID T10000001823.

The purpose of Waterstone's and SGI's site assessments was to vertically and laterally delineate and characterize petroleum hydrocarbon-impacted areas located on the Site. Waterstone's assessment (Waterstone) relied on historical aerial photograph reviews and site reconnaissance to identify potential petroleum hydrocarbon-impacted pipeline areas. Waterstone prepared a base map and divided the Site into equally-sized areas using gridlines. Using the gridlines, blocks were created and given a numeric designation in order to identify potentially impacted features/areas. Waterstone identified areas of potential impacts and focused their subsurface investigation throughout the blocks. The analytical results from Waterstone's investigation indicated which features were above or below 1,000 part per million (ppm) for total petroleum hydrocarbons (TPH) which included the areas A5-01, B5-02/B5-03, B6-03 and F4-01/F4-02.

In 2016, at the request of SBCEHS, SGI conducted further investigation of the impacted areas identified as A5-01, B6-03 and F4-01/F4-02 (SGI, 2016b). The purpose of this additional investigation was to document the Site conditions in an effort to make recommendations for remediation, additional assessment or site closure. These assessments used a combination of exploratory trenches and soil borings to further identify impacts at the three identified areas. Visually identifiable petroleum hydrocarbon impacts were observed and subsequently sampled and analyzed (to characterize the chemical composition of the contaminants) during both assessments conducted by Waterstone and SGI. SGI recommended further investigations and remedial actions at A5-01 due to the depth of constituents of potential concern (COPCs). Lateral extents of COPCs were not investigated in 2016. SGI also concluded that COPCs at B6-01 were centralized to soil boring B6-03-01 and removal of COPCs using hand tools would be sufficient to close out the area.

In 2019, Langan investigated soil and perched groundwater conditions in areas A5-01, B5-02/B5-03, B6-03, Well No.109 (former SMU 602), Cattleguard (Former SMU 590), and Well California 67. Soil and perched groundwater analytical results from the investigation areas were compared to the SSCGs established in *Proposed Cleanup Goals, Oil Processing Area and Adjacent Areas, United California Lease, North Cat Canyon Oilfield*, dated 14 August 2014 (SGI, 2014) and compared to SBCEHS ILs. Perched groundwater was encountered during drilling activities at a minimum depth of 7.5 feet below ground surface (bgs) at B6-03, and in a range of 10 to 33 feet bgs at A5-01 and a range of 14 to 25 feet bgs at B5-02/B5-03. Samples were collected using a portable low-flow pump with downhole tubing.

The A5-01, B5-02/B5-03, and B6-03 investigation areas contained soil with maximum detected concentrations of 54,400 mg/kg (A5-01) and 14,613 (B5-02/B5-03) mg/kg for TPH and 15 mg/kg (A5-01) for naphthalene above their respective SSCGs and perched groundwater reported maximum detected concentrations of 2.25 mg/L (A5-01), 3.45 mg/L (B5-02/B5-03) and 0.84 mg/L (B6-03) for TPH (Tables 1 and 2, **Appendix A**). COPCs in soil were delineated laterally and vertically to SBCEHS ILs, with the exception of COPCs in the western portion of investigation area B5-02/B5-03, where access was limited due to terrain and the presence of oak trees.

In the 29 May 2020 response letter to the *Site Investigation Report*, SBCEHS (2020) agreed with Langan's recommendation for further risk evaluation or targeted remediation for the remaining investigation areas A5-01, B5-02/B5-03, and B6-03 and requested further investigation and delineation of the perched groundwater in the area.

Based on existing investigation data, approximately 4,926 cubic yards (CY) of soil impacted by COPCs (in exceedance SSCGs) are present at areas A5-01, B5-02/B5-03, and B6-03. Impacted

soil at these areas is recommended for removal; however, due to Santa Barbara County (SBC) and California Department of Fish and Wildlife (CDFW) protections for mature oak trees and State jurisdictional streambeds, Tree Exclusion Zones (TEZ-1, TEZ-2, TEZ-3) have been established in the areas of critical root zones (CRZs) around mature oak trees in these three areas. A CRZ is defined as 1-foot radius per 1-inch of diameter at breast height (DBH). As a result, TEZ-1, TEZ-2 and TEZ-3 will also protect riparian and oak tree habitat within the investigation area of A5-01 and B5-02/B5-06 (**Figures 3A and 4A**). Additionally, in order to minimize surface disturbance, reduce encroachment in oak and riparian habitat and minimize potential excavation stability issues, depth exclusion zones (DEZ-01 and DEZ-02) have also been established at depths greater than 25 feet bgs for A5-01 and B5-02/B5-03. The TEZs and DEZs will minimize impacts to tree and riparian habitats, by allowing a minimal volume of soil with COPCs in exceedance of SSCGs to remain in place.

The remedial method selected is mass removal through targeted soil excavations. Approximately a total of 2,195 CY will be excavated within the A5-01 investigation area to a total depth no deeper than 25 feet bgs. DEZ-1 located within A5-01 in a CDFW jurisdictional wetland and TEZ-1 found at a depth deeper than 25 feet bgs comprises of a total of 14.6% or 376 CY of the COPC-containing soil above the TPH SSCG (1,800 milligrams per kilogram [mg/kg]). A total of 28 CY within TEZ-1 and 349 CY from the DEZ-1 will be left in place. Approximately 2,108 CY will be excavated from average depths of 0 to 9 feet bgs, but no deeper than 25 feet from B5-02/B5-03 and approximately 3 CY will be excavated from B6-03. TEZ-2, TEZ-3 and DEZ-2, located within B5-02/B5-03 comprise of a total of 10.4% or 244 CY of the COPC-impacted soil with TPH exceeding the SSCGs of 1,800 mg/kg. A total of 193 CY from TEZ-2, 13 CY from TEZ-3 and 37 CY from the DEZ-2 will be left in place. There are no TEZs or DEZs designated for B6-03. Soil removal volumes at each area are presented in **Tables 1 and 2.**

Following removal of impacted soil at the three areas, confirmation soil sampling will be completed to confirm that the remaining soils (outside the TEZs and DEZs) are below SSCGs, prior to backfilling excavation areas. Following excavation of impacted soils, the disturbed areas will be backfilled with native soils and graded for positive drainage. Erosion and sediment controls, including dispersal of native seeds, will be applied to the ground surface.

Upon completion of the backfill and restoration activities, one groundwater monitoring wells may be installed at investigation areas A5-02, B5-02/B5-03 and B6-03, for a total of three wells. The viability and final location of the monitoring wells will be determined at the end of the excavation activities and be placed in the location of perched groundwater zones. If groundwater is not encountered during excavation or in the borings advanced for monitoring well installation, no well will be installed in a given area. The wells will be monitored for a period of two years, at a

semi-annual schedule beginning late in the first quarter of each year (after the rainy season) and again in the third quarter of each year. The first round of semi-annual monitoring will be conducted during either the first or third quarter after remedial activities are complete. An annual groundwater monitoring report will summarize the semi-annual monitoring activities and will be prepared at the end of each year. Groundwater monitoring results are anticipated to show stability and/or natural attenuation of the remaining mass of COPCs after two years of monitoring, after which, the groundwater monitoring wells will be abandoned. If wells do not show stable or decreasing trends of COPCs in groundwater after two years, next steps will be discussed with SBCEHS.

Upon completion of soil remedial activities, a Remedial Action Completion Report (Report) will be provided to SBCEHS documenting the confirmation sampling, final remedial excavation activities, areas excavated and monitoring well installation including boring logs and construction details. The Report will include final quantities of materials removed, final quantities of materials left in place, waste profiling data, disposal manifest information, confirmatory sampling results, and photo documentation of the activities. Concentrations of TPH below applicable SSCGs remaining at the Site, but above 100 mg/kg (SBCEHS IL), will be utilized to calculate the mass and volume of TPH remaining on a feature-by-feature basis, and compared to the total mass removed. Cross-sections depicting the remaining extent of TPH at each feature will also be included. This Report will serve as the final report for the project and will include a request for a statement of regulatory acceptance that no further action (NFA) is required for the areas investigated and remediated. A future NFA request will be submitted after two years of groundwater monitoring data is collected and results indicate reduced concentrations of COPCs and/or evidence of naturally attenuation of COPCs.

2.0 INTRODUCTION

On behalf of California Resources Corporation (CRC), Langan Engineering and Environmental Services, Inc. (Langan) is submitting this *Remedial Action Workplan* (Workplan) to Santa Barbara County Environmental Health Services (SBCEHS) for the California (CAL) Lease (**Figure 1A**) located in the North Cat Canyon Oil Field, Santa Barbara County, California. The investigation is associated with SBCEHS Site Mitigation Unit (SMU) 20059, and State Water Resources Control Board Geotracker Global ID T10000001823. The purpose of the planned remedial actions is to remove previously identified impacted in soil at three former diluent pipeline areas, identified as locations A5-01, B5-02/B-03, and B6-03 (the Site). These investigation areas (A5-01, B5-02/B5-03, and B6-03) are located in the central portion of the Site (**Figure 1B**).

This Workplan outlines planned procedures for targeted soil removal in areas where detected concentrations of Contaminants of Potential Concern (COPCs) exceed their respective site-specific cleanup goals (SSCGs), as established in Source Group, Inc.'s (SGI) *Proposed Cleanup Goals, Oil Processing Area and Adjacent Areas, United California Lease, North Cat Canyon Oilfield*, dated 14 August 2014. This Workplan also outlines planned confirmation soil sampling (which will be conducted following soil excavation), backfill and restoration and groundwater monitoring well installation activities (per SBCEHS request, to further evaluate perched groundwater at the Site).

3.0 SITE DESCRIPTION AND BACKGROUND

The Site is located approximately seven miles southeast of the City of Santa Maria, California. The Site consists of inactive and abandoned oil wells, well pads, and is currently used for cattle grazing, and cultivation of hay and vineyards. The Site is bounded on the west by the United California Lease and on the south by the Bradley Lease. Bradley Canyon Creek is an ephemeral stream that bisects the Site along a southeast/northwest trend and contains an intermittent stream. The Site elevation ranges from approximately 600 feet above mean sea level (amsl) near the seasonal stream to 800 feet amsl along the eastern edge of the CAL Lease.

4.0 GEOLOGY AND HYDROGEOLOGY

The Site is located within the southeast portion of the Santa Maria Basin. According to the California Geologic Survey's Geologic Map of California (California Department of Natural Resources, 1959), the Site is underlain by Pleistocene alluvium deposits. During heavy rainfall, surface water drains into Bradley Canyon, a tributary of the Santa Maria River/Sisquoc River. Groundwater in this region sources from the regional aquifer of the Santa Maria Basin and is primarily contained in the Careaga Sands below the Paso Robles Formation. Information on

regional groundwater water levels near the Site were obtained from Santa Barbara County Water Agency (SBCWA). Based on the information from SBCWA, groundwater in the region varies by season and periods of drought. Additionally, the Site groundwater flow is assumed to be to the north, toward the Santa Maria River/Sisquoc River, based on regional groundwater flow. Depth to regional groundwater levels at the Site has been estimated to range from 367 to 390 feet bgs based on historical well completion logs as shown on **Figure 1C**.

5.0 PREVIOUS SITE INVESTIGATION ACTIVITIES

In 2000 and 2001, Waterstone Environmental, Inc. (Waterstone) conducted a two-phased site investigation, which involved the collection and analysis of soil samples collected in potentially diluent and/or crude oil impacted areas of the Site. The first phase of the site investigation utilized direct push and hand auger sampling methods at depths between one to 10 feet bgs. Samples were collected at various depths within the top 10 feet and were analyzed for total petroleum hydrocarbon (TPH), volatile organic compounds (VOCs) and Polycyclic Aromatic Hydrocarbons (PAHs). A second-phase site investigation was conducted in areas that exhibited analytical results of TPH concentrations in excess of 1,000 parts per million (ppm) from the first-phase site investigation. Soil samples were collected in five-foot intervals to a total depth of 20 to 30 feet and analyzed for TPH, VOCs, and PAHs. A total of 42 areas within the CAL Lease were sampled during both phases of site investigation. Soil samples were collected and analyzed in order to laterally and vertically identify areas with suspected diluent and/or crude oil contamination. Thirty-three areas within CAL Lease were identified to contain TPH concentrations greater than 1,000 ppm. Groundwater was found to not be affected due to the depth of groundwater (present at 90 to 150 feet bgs), the limited vertical extent of the impacted soil (25 feet bgs) and the presence of multiple, relatively impermeable hardpan layers at shallow depth at one to eight feet bgs and 20 to 25 feet bgs.

In 2016, SGI completed site-assessment activities at seven investigation areas on the CAL Lease in accordance with the *Soil Quality Assessment Work Plan* dated May 19, 2016, which were reported in the *Soil Quality Assessment Report* (SGI, 2016b). The scope of work included further investigation of the Well California 75, Well California 109, Cattleguard (Former SMU 590), A5-01, B6-03, and F4-01/F4-02 areas. The site assessment utilized a series of exploratory trenching and soil borings (shallow hand augers and hollow stem auger) to collect soil samples to evaluate the lateral and vertical extent of impacted soil. Following soil sample collection, samples were chemically analyzed for TPH, VOCs and PAHs. Analytical results of the soil samples were compared to SBCEHS Investigation Levels (ILs; County of Santa Barbara Fire Prevention Division, 2012) and previously established SSCGs and determined the following:

- Concentrations of all analyses of TPH, VOCs and PAHs for soil samples collected at Well California 75, and Cattleguard (Former SMU 590), were found to be non-detect with the exception of one sample (SGISB-15-2) which contained TPH concentrations above SBCEHS ILs but below SSCGs.

- Concentrations of TPH for soil samples exceeding SSCGs and SBCEHS ILs were detected at the Cal Well No. 109, A5-01, B6-03, and F4-01/F4-02 areas.

Based upon the investigation results, SGI recommended closure for the Well California 75, Well California 109, and Cattleguard (Former SMU 590) areas. In a letter dated 31 January 2017, SBCEHS required further assessment data indicating groundwater was not impacted by each feature. SGI prepared a response and submitted a workplan dated 16 March 2017 addressing SBCEHS's comments for Well California 75, Well California 109 and Cattleguard (Former SMU 590). No further investigations were conducted by SGI and, in a letter dated 16 May 2019, SBCEHS provided responses and requests to comments presented in the workplan.

In 2019, Langan performed an environmental investigation of soil and perched groundwater for the CAL Lease in accordance with *Soil Quality Assessment Work Plan* (SGI, 2016a), *California Lease Status Response to Comments* (Langan, 2019), and associated approval letter supplied by SBCEHS dated 18 September 2019. Results of the investigation were presented in the *Site Investigation Report* (Langan, 2020). Soil and perched water conditions were investigated in areas A5-01, B5-02/B5-03, B6-03, Well California 109 (former SMU 602), Cattleguard (Former SMU 590), and Well California 67. Soil and perched groundwater analytical results from the investigation areas were compared to the SSCGs and SBCEHS ILs for COPCs. The Cattleguard (Former SMU 590), Well California 109, and Well California 67 investigation areas contained soil with CPOC concentrations that were below SSCGs and were delineated laterally and vertically to SBCEHS ILs. The A5-01, B5-02/B5-03, and B6-03 investigation areas contained soil with COPC concentrations above SSCGs, and perched groundwater concentrations above SBCEHS ILs. Soil in these areas were delineated laterally and vertically to SBCEHS ILs, with the exception of the western portion of investigation area B5-02/B5-03, where access was limited due to steep terrain and the presence of oak trees. Based on investigation results and observations, Langan recommended further risk evaluation or remediation for A5-01, B5-02/B5-03, B6-03 and F4-01/F4-02, and recommended no further action status for Well California 109, Cattleguard (Former SMU 590), and Well California 67.

In a letter dated 29 May 2020, SBCEHS provided comments and directives to the Site Investigation Report (Langan, 2020). The comments and directives included the following:

- SBCEHS noted several samples collected were analyzed outside of their hold times, but

there were not significant effects to the conclusions drawn in the report. SBCEHS requested future samples are analyzed within hold time;

- Requires any groundwater encountered during future investigation be explored and delineated to determine if this groundwater constitutes a viable aquifer;

- Requests additional information to support the No Further Action (NFA) requests, including proper documentation (plots, figures, tables, disposal manifests) and verification of research of historical aerial photos for Cattleguard (Former SMU 590) release location; and

- Requests a timeline for abandonment of CAL Lease Well No. 31 and F4-01/F4-02.

To date NFA letters have not been issued.

6.0 REMEDIAL PLAN

The proposed remedial action will remove COPC impacted soil exceeding the SSCG. Impacted areas with COPCs concentrations in soil above the TPH SSCG at Areas A5-01, B5-02/B5-03 and B6-03 are shown by the red contours on **Figures 2A, 3A, and 4A**, respectively. Cross-section views of the subsurface and impacted areas are presented in **Figures 2B, 3B through 3E and 4B**. Additional information, including the detected concentrations of COPCs in at each area, are summarized in the *Site Investigation Report* (Langan, 2020) and included in **Appendix A**. In summary, the COPCs identified at these three areas are as follows:

- A5-01
  - 15 of the 20 soil samples are reported with non-detectable concentrations or concentrations below the IL of 100 mg/kg for TPH. Five of the 20 samples are reported with concentrations above the IL of 100 mg/kg. Three of these samples were above the SSCG of 1,800 mg/kg.

  - 18 of the 20 soil samples are reported with non-detectable concentrations or concentrations below the respective ILs for VOCs. One soil sample exceeded the IL for ethylbenzene and two soil samples exceeded the IL for naphthalene. One soil sample also exceeded the IL for naphthalene.

  - 18 of the 20 soil samples are reported with non-detectable concentrations or concentrations below the respective ILs for PAHs. One soil sample exceeded the IL for phenanthrene, and two soil samples exceeded the IL for naphthalene. One soil sample also exceeded the IL for naphthalene.

  - Perched water was encountered in four of nine borings at depths between 10 feet and 33 feet bgs. These varied depths of water, combined with the fact that two deep borings did not encountered groundwater, suggests that there is an isolated perched water lens. All four water samples exceeded ILs for TPH in the diesel range and

aggregate TPH. One water sample exceeded IL for TPH in the gasoline range. One water sample exceeded the IL for benzene. PAHs were not detected in the groundwater samples.

- B5-02/B5-03
  - 19 of the 25 soil samples showed non-detectable concentrations or concentrations below ILs for TPH. Six samples reported TPH concentrations above the ILs and four samples reported TPH concentrations above the SSCG.
  - 21 of the 25 soil samples reported non-detectable concentrations or concentrations below the respective ILs for VOCs. Four samples exceed the IL for naphthalene.
  - 21 of the soil samples showed non-detectable concentrations or concentrations below the respective ILs for PAHs. Four soil samples exceeded the IL for naphthalene. One soil sample also exceeded the IL for naphthalene.
  - Perched groundwater was encountered in one of 13 borings at 14 feet bgs, and appears to be an isolated lens. The perched water sample exceeded the IL for TPH in the diesel range. VOCs and PAHs were not detected in the groundwater sample.
- B6-03
  - Four of the five soil samples showed non-detectable concentrations for TPH, whereas one of the samples was above the IL but below the SSCG.
  - Four of the five soil samples showed non-detectable concentrations or concentrations below the respective ILs for VOCs. One sample exceeded the IL for carbon tetrachloride.
  - The five soil samples reported non-detectable concentrations of PAHs.
  - Perched groundwater was encountered in one of four borings at 7.5 feet bgs. The perched water sample exceeded the IL for TPH in the diesel range. VOCs and PAHs were not detected in the groundwater sample.

The proposed remedy to address the above impacts is targeted mass removal through soil excavation. Excavated material will be disposed of at a State of California licensed disposal facility (Disposal Facility). Dewatering activities may also be conducted if perched groundwater is encountered in the excavations.

7.0 TREE EXCLUSION ZONES AND DEPTH EXCLUSION ZONES

Langan has established tree exclusion zones (TEZ-1, TEZ-2 and TEZ-3) and depth exclusion zones (DEZ-1 and DEZ-2) within the A5-01 and B5-02/B5-03 investigation area (**Figures 2A and 3A**). The TEZs and DEZs are protection areas wherein removal of TPH concentrations above the SSCGs of 1,800 mg/kg is not feasible in order to minimize impacts to affected riparian and oak

tree habitat. Specifically, the exclusion zones will limit impacts to tree critical root zones (CRZ), reduce encroachment on sensitive oak and riparian habitat, and reduce excavation instability at depth.

The DEZs have been established as any excavation limit beyond 25 feet bgs within A5-01 and B5-02/B5-03. The TEZs were calculated as a function of the trees' CRZ. The CRZ is defined as 1-foot radius per 1-inch of diameter at breast height (DBH) and established to reduce likelihood of impacts to the roots and loss of trees while providing for the greatest practicable amount of material removal.

Benefits of establishing TEZs include, but are not limited to, the following:

- Preservation of a protected natural resource in Santa Barbara County;
- Preservation of slope stability on stream banks and hillsides;
- Improved long-term outcomes for ecological health related to not destroying and replacing habitat; and
- Reduction of the potential for streambed erosion by maintaining existing oak tree roots.

Establishment of TEZs and DEZs results in approximately 376 CY of COPC-containing soil left in place in the A5-01 investigation area and 244 CY in the B5-02/B5-03 investigation area. The volume proposed to be left in place comprises of 14.6% of the estimated total volume of 2,572 CY of impacted soil that is present within A5-01 (TEZ-1 and DEZ-1) and 10.4% of the estimated total volume of 2,351 CY of impacted soil that is present within B5-02/B5-03 (TEZ-1, TEZ-2 and DEZ-2; **Tables 1 and 2**).

Area B6-03 does not include a TEZ or DEZ. As a result, none of the impacted material is proposed to remain in-place at area B6-03. Approximately three CY of the COPC-containing soil above SSCG at B6-03 will be excavated.

The planned removal actions at A5-01, B5-02/B5-03 and B6-03 will result in a total removal volume of 4,306 CY. Approximately 87.4% of the total mass of COPC-containing soil above the 1,800 mg/kg SSCGs in the A5-01, B5-02/B5-03 and B6-03 investigation areas will be removed. The remaining volumes of the TEZs and DEZs in A5-02 (376 CY; 14.6%) and B5-02/B5-03 (244 CY; 10.4%) are limited to below sensitive oak and riparian habitat or at depths that will not likley result in exposure to human or ecological receptors. The COPC-impacted soil remaining place has reported cumulative TPH concentrations ranging between 4,300 and 54,400 mg/kg for the A5-01 area and between 38 and 21,200 mg/kg for the B5-02/B5-03. A risk evaluation for the

petroleum and petroleum-related VOCs remaining in soil will be conducted once the remedial action is completed, as discussed in Section 8.0.

7.1 Excavation and Disposal

Prior to commencing earthwork, the required permits and approvals (including land-use permit, grading permit and CDFW permit) will be obtained from the appropriate agencies. Based on existing investigation data and established TEZs and DEZs a total of approximately 4,306 CY of COPC-containing soil is estimated to be removed from the three pipeline areas at the Site. Excavation depths range from 0 to 25 feet bgs at A5-01, B5-02/B5-03 and B6-03. An excavator will be used to remove the impacted soil at areas A5-02 and B5-02/B5-03. In the location of B6-03, manual excavation will be implemented, since the area is located adjacent to a sensitive oak and riparian habitat. During removal actions, excavations will be field screened. Field screening will consist of olfactory observations using a photoionization detector (PID) and visual observations (e.g. staining) to identify potential areas of additional contamination. Field assay tests (e.g. Hanby test kits) will also be used for field estimation of TPH concentrations. Upon completion of the initial excavation, the boundaries of the excavation may be expanded, based on the results of field screening (i.e. PID and visual observations), and field assay tests (e.g. Hanby test kits). Excavation will continue until field screening indicates TPH concentrations are below SSCGs or at the boundary of the TEZs and DEZs, at which time confirmation soil samples will be collected and send to a State-of-California certified laboratory.

Excavated soils from each area will be staged on adjacent, plastic-lined stockpile areas, pending waste characterization and offsite disposal. The stockpiled material will be covered with sheeting or a soil binder at the end of each workday and prior to precipitation events.

Dewatering activities may be conducted if perched groundwater is encountered in the excavations at the three diluent-pipeline areas. Groundwater will be pumped and stored in an onsite storage vessel. Langan understands that the CRC contractor will perform this extraction and storage. The contractor-supplied groundwater dewatering system will consist of at least one sump pump, piping and a power source (i.e. generator). Groundwater dewatering will be conducted via sump pump(s), which will be placed at the bottom of the excavation. Once stored, grab groundwater samples will be collected from the storage vessel. Groundwater samples will be analyzed for COPCs. Groundwater analytical results will be compared to SBCEHS ILs. If analytical results indicate that extracted groundwater meets SBCEHS ILs, water may be reused for Site activities. If analytical results indicate that extracted groundwater does not meet SBCEHS ILs, the water will be off-hauled and disposed at an approved waste disposal site. If the

groundwater replenishes at the bottom of the excavation after dewatering is conducted, a grab groundwater confirmation sample will be collected.

7.2 Confirmation Sampling

As discussed above, once the field screening indicates that TPH concentrations are below respective SSCGs, the excavation will be considered initially complete. After the excavation is complete, sidewall and bottom samples will be collected. Confirmation soil samples will be collected using hand tools (e.g., slide hammer). If it is not safe to enter the excavation as determined by a competent person or collection of soil samples with hand tools is not feasible (e.g. refusal), an excavator will be utilized to assist in sample collection by excavating and removing soils in the excavator bucket. Any confirmation soil samples collected by an excavator will then be collected with the slide hammer directly from the excavator bucket. Once collected, confirmation samples will be placed on ice in a cooler and submitted under chain-of-custody documentation to a State-of-California certified laboratory for the following analyses:

- TPH range C_4-C_{40} by US Environmental Protection Agency (EPA) Method 8015M;
- VOCs by EPA Method 8260B; and
- PAHs by EPA Method 8270C-SIM.

Confirmation sample analytical results will be compared to SSCGs. Once results from confirmation sampling indicates that the remaining soil in the excavation is below applicable SSCGs, the excavation will be backfilled. Backfill will comprise of analytically-verified overburden removed from the excavation and supplemented with analytically-verified imported acceptable fill.

If perched groundwater is encountered in the excavations, a grab groundwater confirmation sample will be collected from within the excavation after dewatering activities are conducted. Groundwater confirmation samples will be collected with a disposable bailer. Groundwater confirmation samples will be placed on ice in a cooler and submitted under chain-of-custody documentation to a State-of-California certified laboratory for the following analyses:

- TPH range C_4-C_{40} by EPA Method 8015M;
- VOCs by EPA Method 8260B; and
- PAHs by EPA Method 8270C-SIM.

7.3 Waste Disposal

A waste profile for the stockpiled material will be established and approved by a licensed disposal facility. Soil stockpile samples will be collected at a frequency requested by the disposal facility. At a minimum, the frequency of stockpile sample collection will be conducted in accordance with DTSC's *Information Advisory Clean Imported Fill Material* dated October 2001. Stockpile samples will be analyzed for constituents specified by the facility's operating permit. Waste off-hauled will be manifested and documented. Triple signed manifests documenting disposal of residual waste will be included the Remedial Action Completion Report.

8.0 SURFACE RECLAMATION

Following completion of the remedial excavations, the disturbed areas at each of the three pipeline areas will be graded for positive surface water drainage. Erosion and sediment controls, including hydromulch and dispersal of native seeds, will be applied to the ground surface.

9.0 GROUNDWATER MONITORING

At the conclusion of backfill activities, one groundwater monitoring well will be installed at each of the former diluent pipeline areas A5-02, B5-02/B5-03 and B6-03, for a total of three monitoring wells. The monitoring wells will be installed in the central portion of each excavation within perched groundwater zones. Wells will be installed at depths with an isolated screened interval based on site conditions observed during excavation and based on previous investigation results. Specifically, groundwater was previously observed to range from 10 to 33 bgs at A5-02, at 14 feet bgs at B5-02/B5-03 and 7.5 feet bgs at B6-03 (Langan, 2020).

9.1 Monitoring Well Installation

Once the appropriate depth and screened interval of each monitoring well has been determined at each excavation area, the monitoring wells will be installed. The monitoring well borings will be advanced by a drilling subcontractor under Langan observation using a drill rig. Soil materials encountered during drilling activities will be continuously logged in the field by a Langan geologist or engineer. If groundwater is not encountered in the boring advanced for the installation of the well, the well will not be installed.

The monitoring wells will be constructed of 2-inch diameter, Schedule-40 PVC casing with flush threads, 0.020-inch-slot well screen casing across the desired screening interval and blank Schedule-40 PVC casing to the surface. A sandpack will be placed around the screened interval and extend approximately two-feet above the top of the well screen. A seal constructed of hydrated bentonite will be installed above the sandpack and will be approximately two-feet thick.

Neat cement grout will be used to seal the monitoring wells between the bentonite seal and the surface. The wells will be finished with a flush-mounted, 12-inch well box at the surface. Langan's standard operating procedure (SOP) for monitoring well installation is included in **Appendix B**.

9.2 Monitoring Well Development and Sampling

The three new groundwater monitoring wells will be developed after installation. Water generated by well development activities will be contained in an aboveground storage vessel or 55-gallon drums. The new monitoring wells will be developed in accordance with our Monitoring Well Development SOP presented in **Appendix B**.

At least 48 hours after well development, the new groundwater monitoring wells will be purged and sampled using 'low-flow' sampling methodologies. The purged groundwater will circulate through a water quality meter fitted with a flow through cell and water quality parameters (i.e. pH, dissolved oxygen, oxidation-reduction potential [ORP], and conductivity) will be recorded until stabilization of parameters is observed, or if sufficient volume has been purged. The monitoring wells will be sampled in general accordance with our Groundwater Monitoring Well Sampling SOP presented in **Appendix B**.

After purging, groundwater samples will be collected into clean, laboratory-supplied containers which will be sealed, labeled, and placed in a chilled cooler with ice. One duplicate groundwater sample will be collected from one of the new monitoring wells. Samples will be transported under chain-of-custody protocol to the project laboratory for chemical analysis.

Three groundwater monitoring well samples will be collected and analyzed by a State-of-California certified laboratory for the following constituents:

- TPH by EPA Method 8015M;
- VOCs by EPA Method 8260B; and
- PAHs by EPA method 8270C SIM.

All non-disposable equipment will be decontaminated and thoroughly rinsed between boring locations.

9.3 Data Evaluation and Reporting

Following all field activities and receipt of analytical results, Langan will document our sampling methods, observations, sampling procedures and an interpretation of the analytical results.

This information will be included in Langan's *Remedial Action Completion Report*, as discussed in Section 8.0 below.

9.4 Semi-Annual Groundwater Monitoring

The three groundwater wells will be monitored for a period of up to two years, on a semi-annual basis. Semi-annual groundwater monitoring activities will start the first quarter following remedial activities are complete and second groundwater monitoring event will continue thereafter (i.e. first quarter 2022 and third quarter 2022). Samples will be collected and analyzed in accordance with the procedures outlined in Section 7.2, above. Sampling methods, procedures, an interpretation of analytical results will be included in an annual groundwater monitoring report. This report will be submitted to SBCEHS.

Once analytical results indicate that constituents in groundwater are stable or decreasing their concentrations (or natural attenuation is occurring), semi-annual groundwater monitoring will no longer be conducted and the monitoring wells will be abandoned. Langan anticipates that this stabilization or decreasing trending COPCs in groundwater will be achieved after two years of semi-annual groundwater monitoring. If this is not achieved after two years, Langan will discuss analytical results and next steps with SBCEHS.

10.0 FINAL DOCUMENTATION AND NO FURTHER ACTION REQUEST

A *Remedial Action Completion Report* (Report) will be provided to SBCEHS approximately 60 days after remedial activities are completed. This report will include figures with excavation removal boundaries, confirmation sampling results, excavated volumes in cubic yards, volumes of materials left in-place, groundwater dewatering volumes (if any), soil disposal manifests, stockpile and overburden and import fill analytical results, field photographs and groundwater monitoring well installation activities. Residual concentrations of COPCs remaining at the Site will be utilized to calculate the mass and volume of COPCs remaining in each feature at the Site (A5-01, B5-02/B5-03 and B6-03). This mass and volume will be compared to the total mass and volume of material excavated. The Report will also include a risk evaluation for the COPC containing soil left in place to assess risks for exposure to human health. This information will be included in the Report. Cross-sections depicting the remaining extent of TPH at each area will also be prepared and included in the Report.

This Report will serve as the final report for the remedial action and will include a request for regulatory acceptance that no NFA, other than continued groundwater monitoring for up to two years, is required for the Site.

REFERENCES

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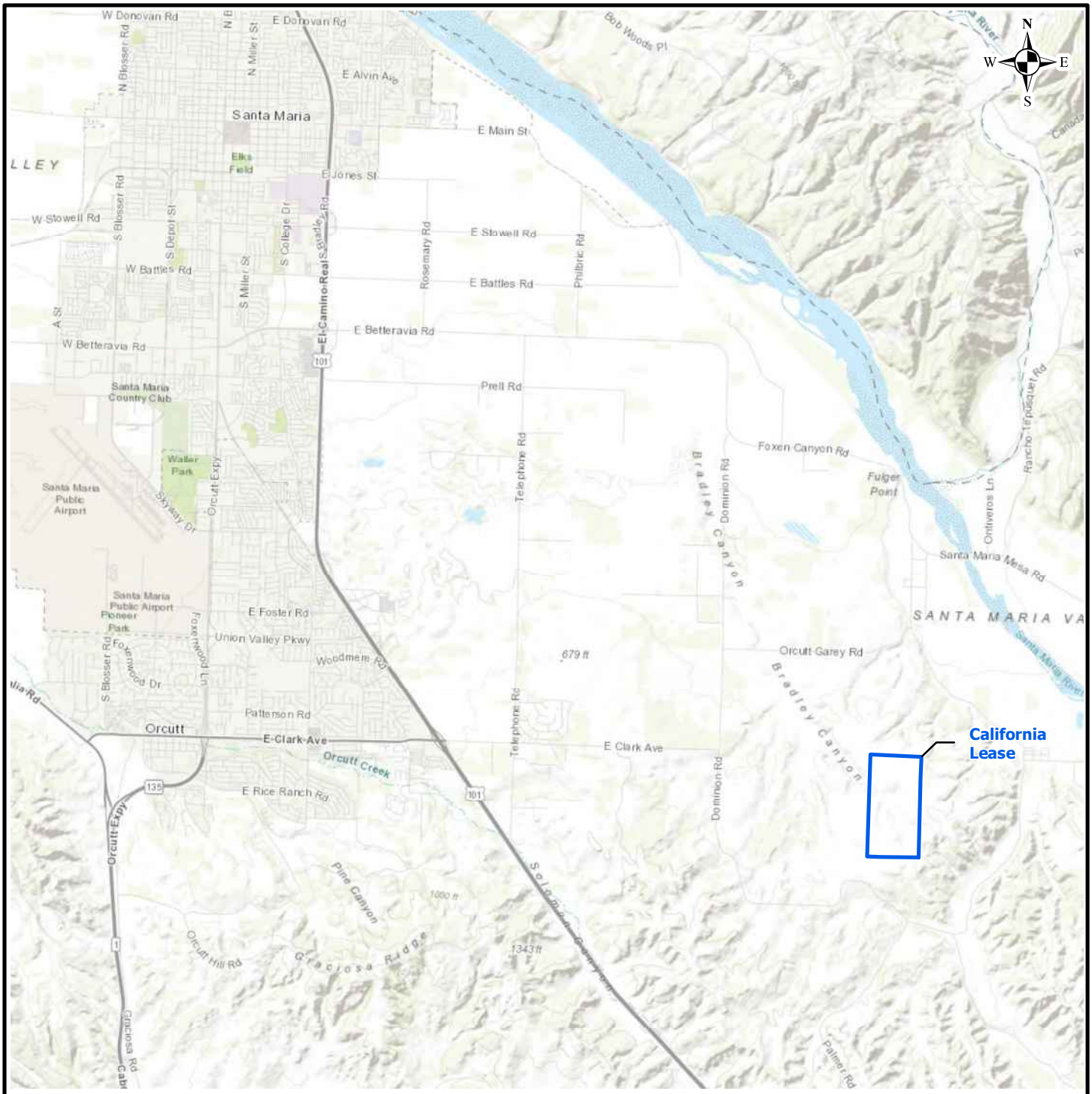
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FIGURES



Legend

Lease Boundaries

Notes:
1. Sisquoc East USGS Quadrangle Map topographic basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online Copyright: © 2011 National Geographic Society, i-cubed.
2. Lease boundaries digitized from "Site Vicinity Map" provided by Apex, dated 2/10/2015.

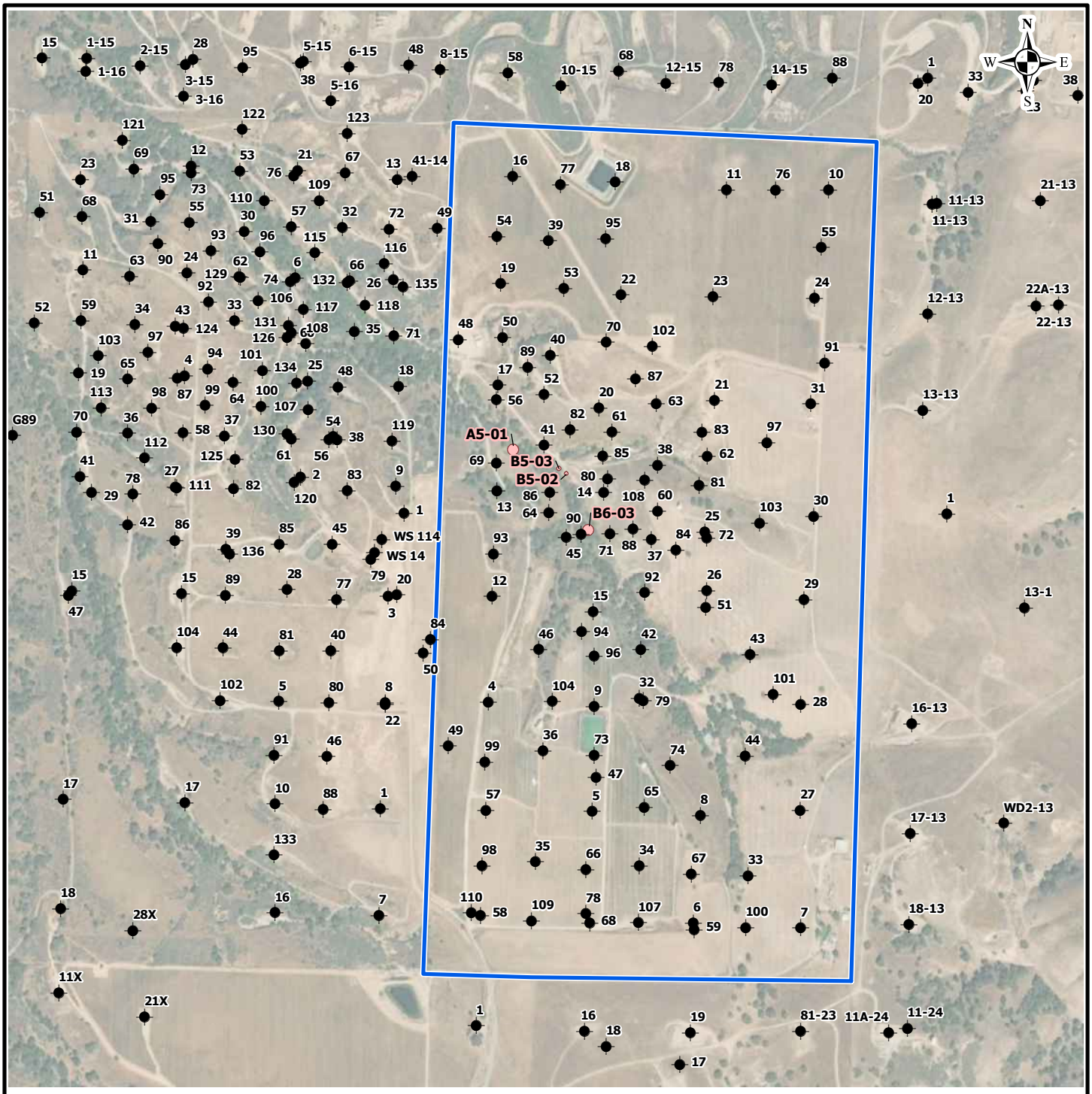
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SCALE IN FEET

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Project	Figure Title	Project No.	Figure
CALIFORNIA LEASE SANTA MARIA SANTA BARBARA COUNTY CALIFORNIA	SITE LOCATION MAP	781010001	1A
		Date: JUNE 2021	
		Scale: 1 " = 7,500 '	
		Drawn By: OG	

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Path: \\langan.com\data\SFO\other\GIS\Projects\CRC CAL UCAL BRADLEY\ArcMap_Documents\Environmental_Figures\2021-06 CAL Work Plan\Figure 1A - Site Location Map.mxd



Legend

- DOGGR Well Location
- Investigation Area
- Lease Boundary

Notes:
1. World Imagery basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online, National Geographic Society, i-cubed.
2. Department of Oil, Gas, and Geothermal Resources (DOGGR) Information from Oil Field Maps.

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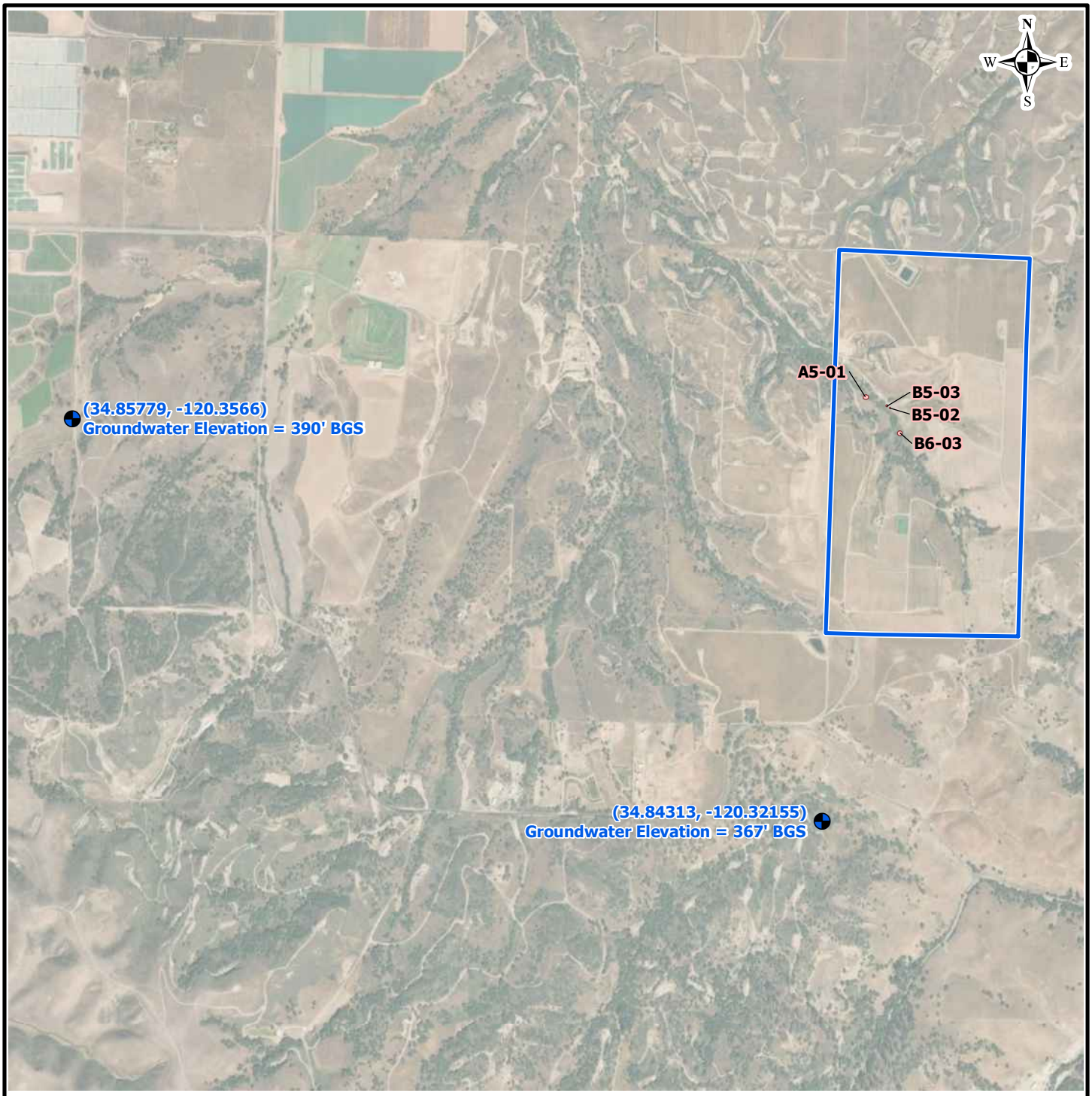
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Langan International LLC

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Project	CALIFORNIA LEASE SANTA MARIA SANTA BARBARA COUNTY CALIFORNIA
Drawing Title	SITE PLAN
Project No.	781010001
Date	DECEMBER 2020
Scale	1 " = 900 '
Drawn By	OG
Figure	1B

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Path: \\pardata\gisdata\Projects\CRC CAL UCAL BRADLEY\ArcMap_Documents\Environmental_Figures\2020-12 RAP\Figure 1B - Site Plan.mxd



Legend

- Irrigation Wells
- Investigation Area
- Lease Boundary

Notes:
1. World Imagery basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online National Geographic Society, i-cubed.
2. Department of Oil, Gas, and Geothermal Resources (DOGGR) Information from Oil Field Maps.
3. BGS = below ground surface

2,000 0 2,000
SCALE IN FEET

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Project	CALIFORNIA LEASE SANTA MARIA SANTA BARBARA COUNTY CALIFORNIA
Drawing Title	GROUNDWATER ELEVATIONS
Project No.	781010001
Date	DECEMBER 2020
Scale	1 " = 2,000 '
Drawn By	OG
Figure	1C

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Path: \\pardata\gisdata\Projects\CRC CAL UCAL BRADLEY\ArcMap_Documents\Environmental_Figures\2020-12 RAP\Figure 1C - Well 89 - Groundwater Elevations.mxd

N
W
E
S

SB03A (25')
SGISB-6
A'
SB04 (10')
A5-01-03
610
SB03 (40')
A5-01-02
SGISB-5
A5-01-01
A5-01-07
TEZ-1
A5-01-04
A5-01-05
A5-01-08
SGISB-4
SGISB-8
SGISB-7
SB05 (25')
615
SB02 (50')
SB01 (60')
SB02A (30')
DEZ-1
620
A
SB02B (25')
SB01A (35')
625
630

Legend

- Below clean-up goals
- Exceeds clean-up goals
- Boring location, Langan
- Step-out boring location, Langan
- Cross section
- Bradley Canyon Creek
- Elevation contour (in feet)
- 100 mg/kg soil TPH isocontour
- 1,800 mg/kg site-specific cleanup goals
- CDFW Jurisdictional Boundary
- Tree exclusion zone
- Tree protection zone
- Depth exclusion zone

Notes:
1. World Imagery basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online, National Geographic Society, i-cubed, 11/13/2020.
2. Elevation contours derived from 2002/2003 IfSAR data for Southern California provided by NOAA. Contours are inferred with an accuracy of 5-10 feet.
3. Langan borings were field-located using a GPS unit.
4. Depth and depth to water are measured in feet below ground surface (bgs).

20 0 20
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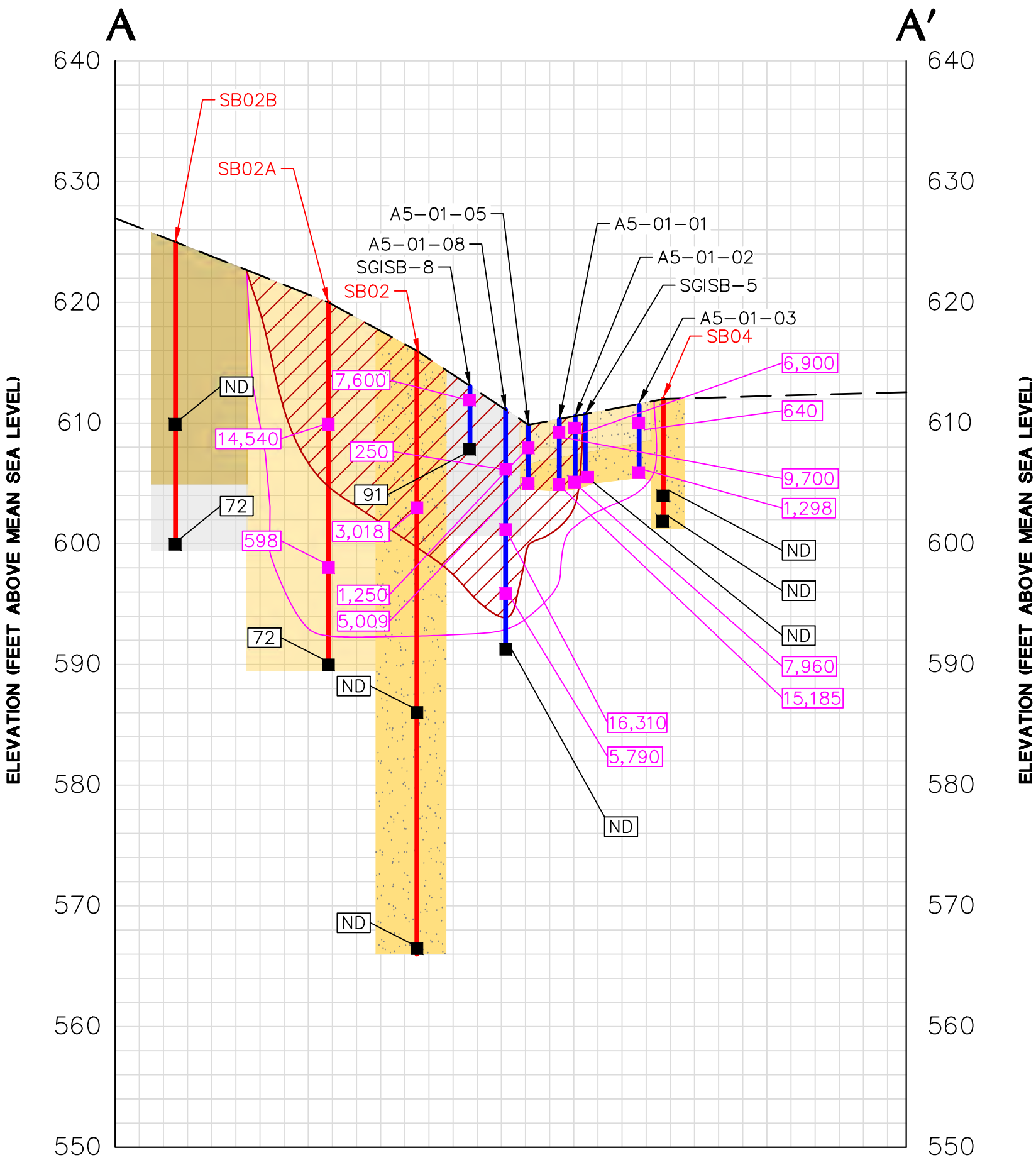
Project
CALIFORNIA LEASE
SANTA MARIA
SANTA BARBARA COUNTY CALIFORNIA

Figure Title
REMEDIAL EXCAVATION PLAN AREA A5-01

Project No. 781010001
Date JUNE 2021
Scale 1 " = 20 '
Drawn By OG
Figure 2A

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30 0 15 30

HORIZONTAL SCALE: 1 INCH = 30 FEET

10 0 5 10

VERTICAL SCALE: 1 INCH = 10 FEET

NOTE:

–LITHOLOGY SHOWN ON THIS SECTION IS APPROXIMATED BASED ON SOIL BORINGS SGISB–4 & SGISB–5 (SGI ENVIRONMENTAL, 2016) AND SB02 & SB04 (LANGAN, 2019)

–ALL CONCENTRATIONS REPORT IN MILLIGRAMS PER KILOGRAMS (MG/KG)
–CONCENTRATIONS IN MAGENTA EXCEED SANTA BARBARA COUNTY ENVIRONMENTAL HEALTH SERVICES INVESTIGATION LEVELS

LEGEND

- SAND WITH SILT
- SAND
- SILTY SAND
- SANDY SILT
- HISTORIC SOIL BORING
- SOIL BORING COMPLETED 10/19 – 11/19
- 1,800 MG/KG SITE–SPECIFIC CLEANUP GOAL
- EXISTING GROUND SURFACE
- ND — CONCENTRATIONS NOT REPORTED AT OR ABOVE THE LABORATORY REPORTING LIMIT
- ■ — SOIL CONFIRMATION SAMPLE AND APPROXIMATE DEPTH IN FEET BELOW GROUND SURFACE
- 8.3 — CONCENTRATION OF TOTAL PETROLEUM HYDROCARBONS (TPH) IN THE C4–C40 HYDROCARBON RANGE REPORTED IN MILLIGRAMS PER KILOGRAM
- APPROXIMATE EXTENT OF SOIL WITH TPH CONCENTRATION ABOVE 100 MG/KG

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Project: CALIFORNIA LEASE

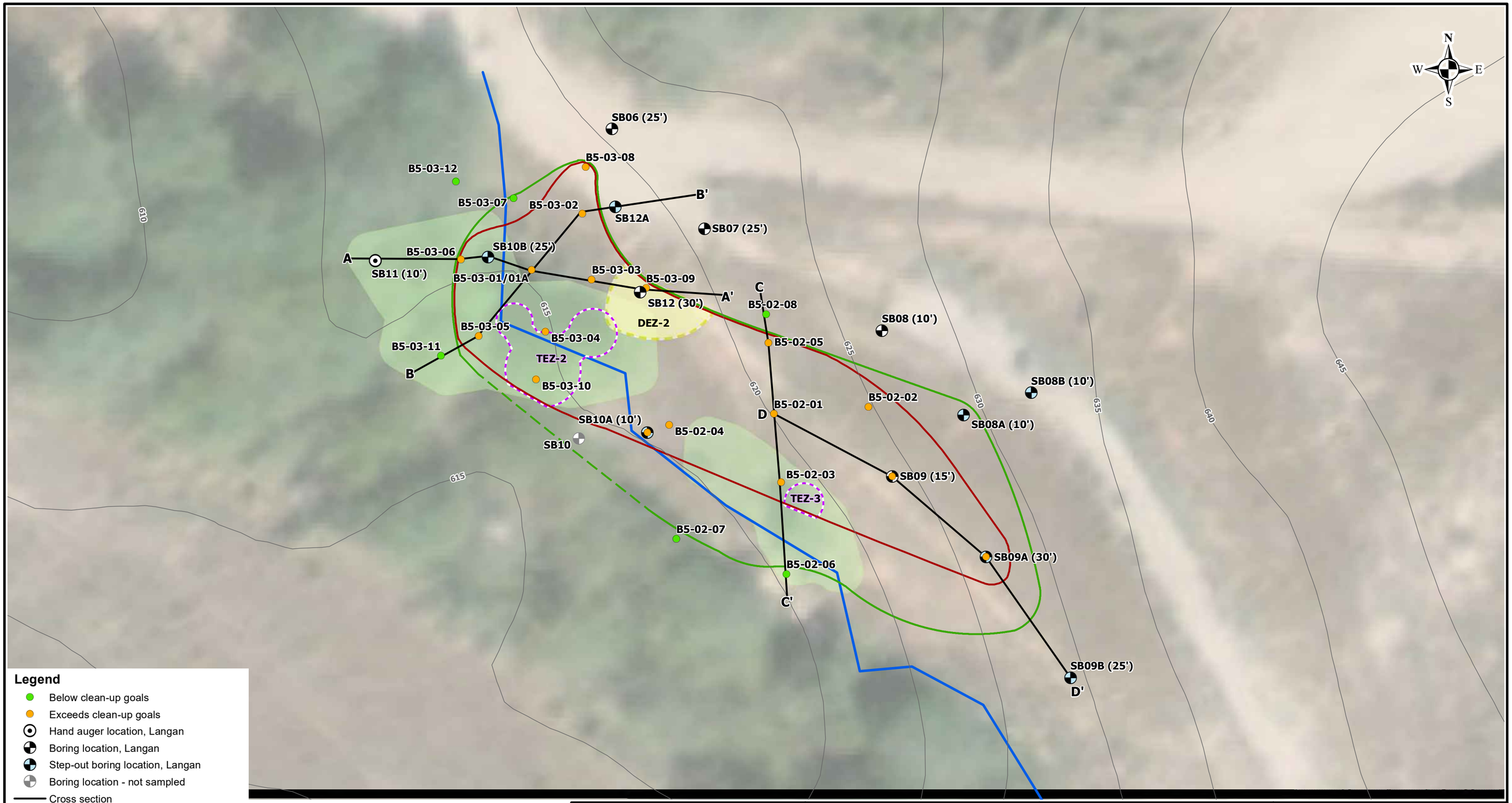
Drawing Title: A5-01 CROSS SECTION A-A′

Project No. 781010001
Date FEBRUARY, 2021
Drawn By AA
Checked By KV

FIGURE 2B

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Filename: \\Langan.com\data\SBA\data0\781010001\Project Data\CAD\01\SheetFiles\2019 Work Plan Figures\Figure 3.dwg Date: 2/24/2021 Time: 10:04 User: jfrank Style Table: Langan.stb Layout: ANSIB-BP



Legend

- Below clean-up goals
- Exceeds clean-up goals
- Hand auger location, Langan
- Boring location, Langan
- Step-out boring location, Langan
- Boring location - not sampled
- Cross section
- Elevation contour (in feet)
- 100 mg/kg soil TPH isocontour (dashed where inferred)
- 1,800 mg/kg site-specific cleanup goals
- CDFW jurisdictional boundary
- Tree exclusion zone
- Tree protection zone
- Depth exclusion zone

Notes:
1. World Imagery basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online, National Geographic Society, i-cubed, 11/13/2020.
2. Elevation contours derived from 2002/2003 IfSAR data for Southern California provided by NOAA. Contours are inferred with an accuracy of 5-10 feet.
3. Langan borings were field-located using a GPS unit.
4. Depth is measured in feet below ground surface (bgs).

25 0 25
Feet

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SANTA BARBARA COUNTY CALIFORNIA

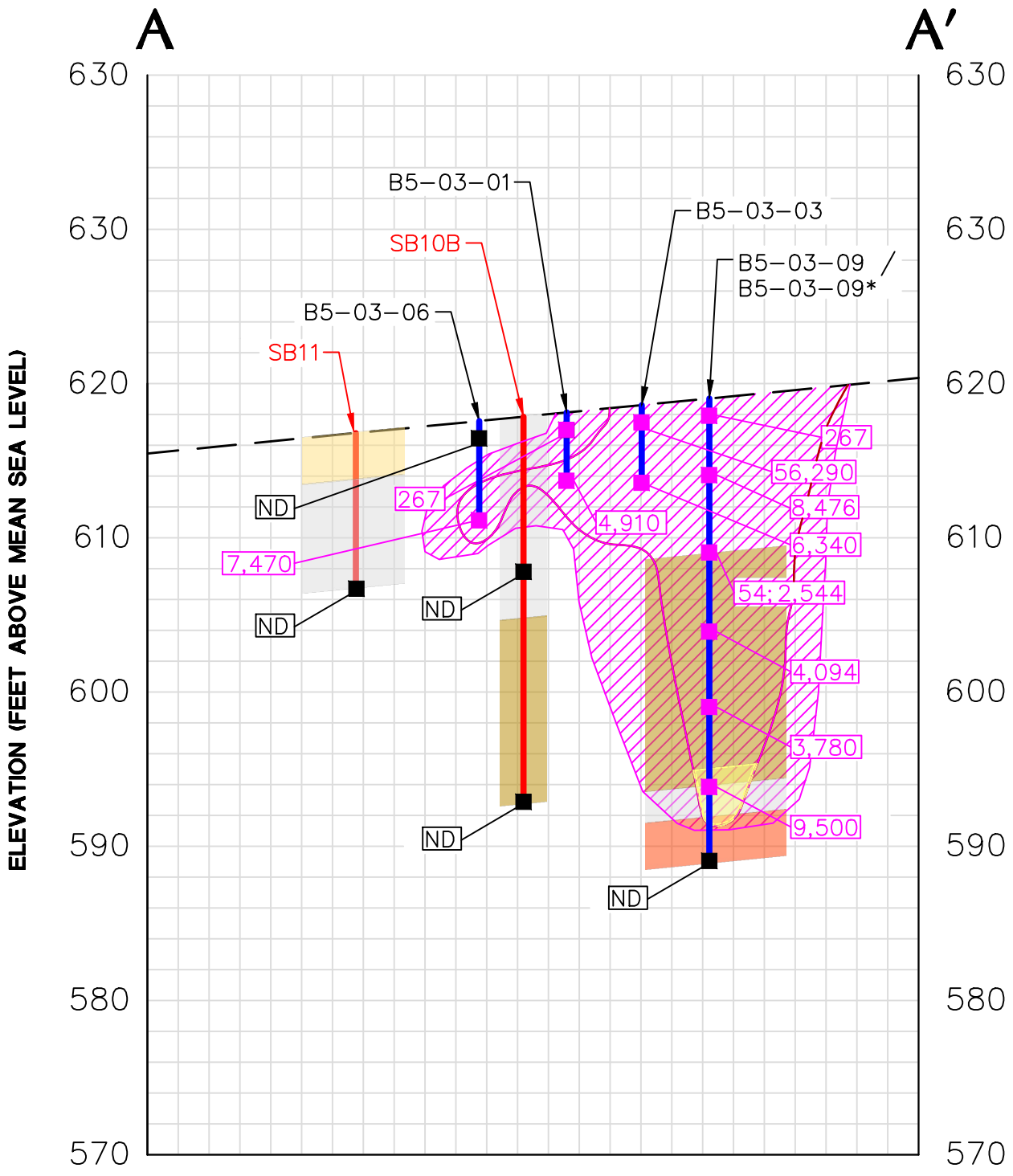
Figure Title
REMEDIAL EXCAVATION PLAN B5-02 AND B5-03

Project No.	781010001
Date	JUNE 2021
Scale	1 " = 25 '
Drawn By	NB

Figure
3A

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Path: \\langan.com\data\SFO\other\GIS\Projects\CRC CAL UCAL BRADLEY\ArcMap_Documents\Environmental_Figures\2021-06 CAL Work Plan\Figure 3A - Investigation Area B5-02 and B5-03.mxd



30 0 15 30

HORIZONTAL SCALE: 1 INCH = 30 FEET

10 0 5 10

VERTICAL SCALE: 1 INCH = 10 FEET

NOTE:

–LITHOLOGY SHOWN ON THIS SECTION IS APPROXIMATED BASED ON SOIL BORING B5–03–09 (WATERSTONE ENVIRONMENTAL, 2003) AND SB11 & SB12 (LANGAN, 2019)

–ALL CONCENTRATIONS REPORT IN MILLIGRAMS PER KILOGRAMS (MG/KG)
–CONCENTRATIONS IN MAGENTA EXCEED SANTA BARBARA COUNTY ENVIRONMENTAL HEALTH SERVICES INVESTIGATION LEVELS

LEGEND

- SANDY SILT
- SAND WITH CLAY AND SILT
- SILTY SAND
- HISTORIC SOIL BORING
- SOIL BORING COMPLETED 10/19–11/19
- 1,800 MG/KG SITE–SPECIFIC CLEANUP GOAL
- EXISTING GROUND SURFACE
- CLAY
- ND — CONCENTRATIONS NOT REPORTED AT OR ABOVE THE LABORATORY REPORTING LIMIT
- ■ — SOIL CONFIRMATION SAMPLE AND APPROXIMATE DEPTH IN FEET BELOW GROUND SURFACE
- 8.3 — CONCENTRATION OF TOTAL PETROLEUM HYDROCARBONS (TPH) IN THE C4–C40 HYDROCARBON RANGE REPORTED IN MILLIGRAMS PER KILOGRAM
- APPROXIMATE EXTENT OF SOIL WITH TPH CONCENTRATION ABOVE 100 MG/KG
- DEPTH EXCLUSION ZONE

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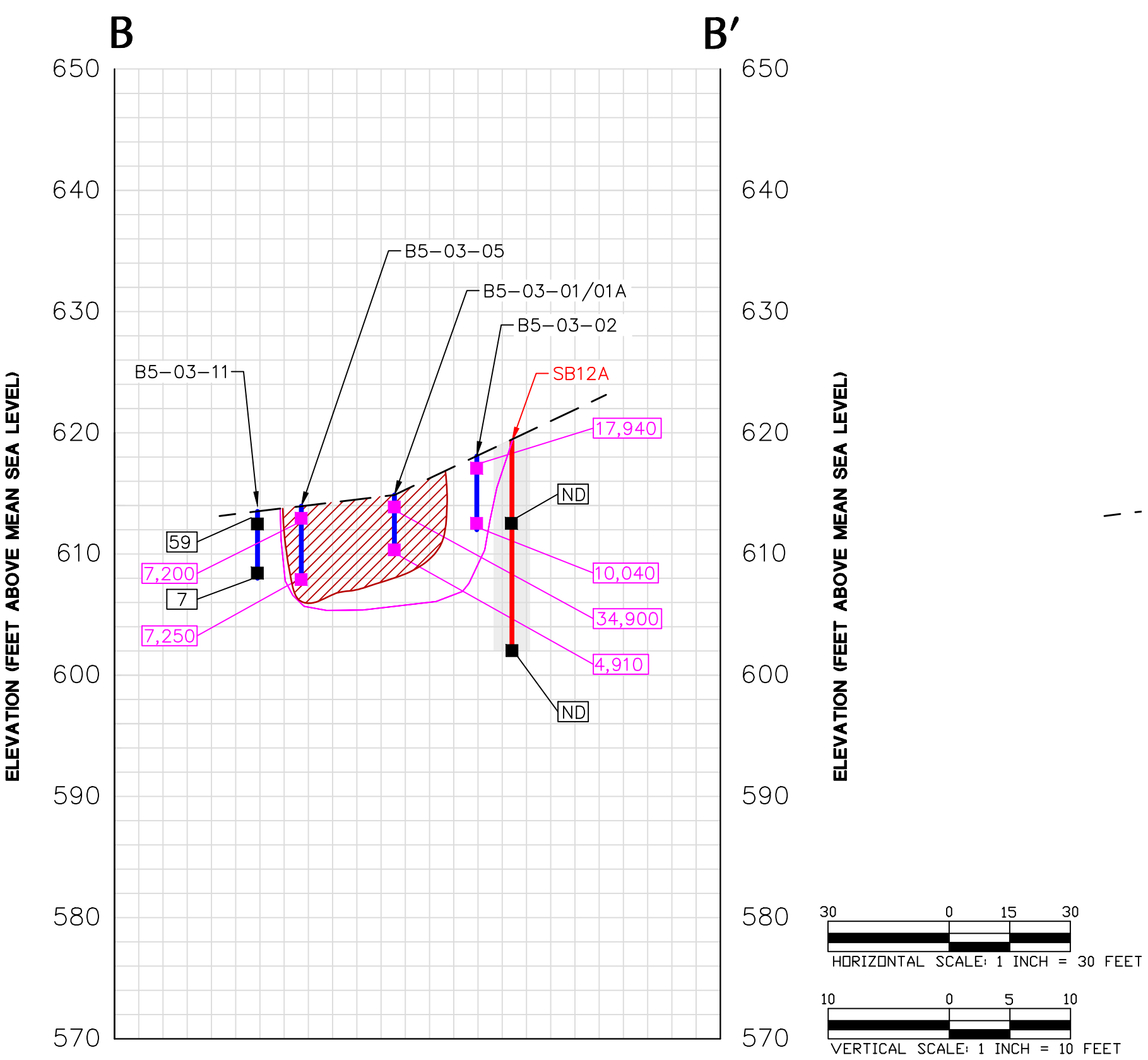
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Project No. 781010001
Date JUNE, 2021
Drawn By AA
Checked By KV

FIGURE 3B

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NOTE:

–ALL CONCENTRATIONS REPORT IN MILLIGRAMS PER KILOGRAMS (MG/KG)
–CONCENTRATIONS IN MAGENTA EXCEED SANTA BARBARA COUNTY ENVIRONMENTAL HEALTH SERVICES INVESTIGATION LEVELS

LEGEND

SILTY SAND	ND — CONCENTRATIONS NOT REPORTED AT OR ABOVE THE LABORATORY REPORTING LIMIT
1,800 MG/KG SITE–SPECIFIC CLEANUP GOAL	■ — SOIL CONFIRMATION SAMPLE AND APPROXIMATE DEPTH IN FEET BELOW GROUND SURFACE
HISTORIC SOIL BORING	8.3 — CONCENTRATION OF TOTAL PETROLEUM HYDROCARBONS (TPH) IN THE C4–C40 HYDROCARBON RANGE REPORTED IN MILLIGRAMS PER KILOGRAM
EXISTING GROUND SURFACE	APPROXIMATE EXTENT OF SOIL WITH TPH CONCENTRATION ABOVE 100 MG/KG

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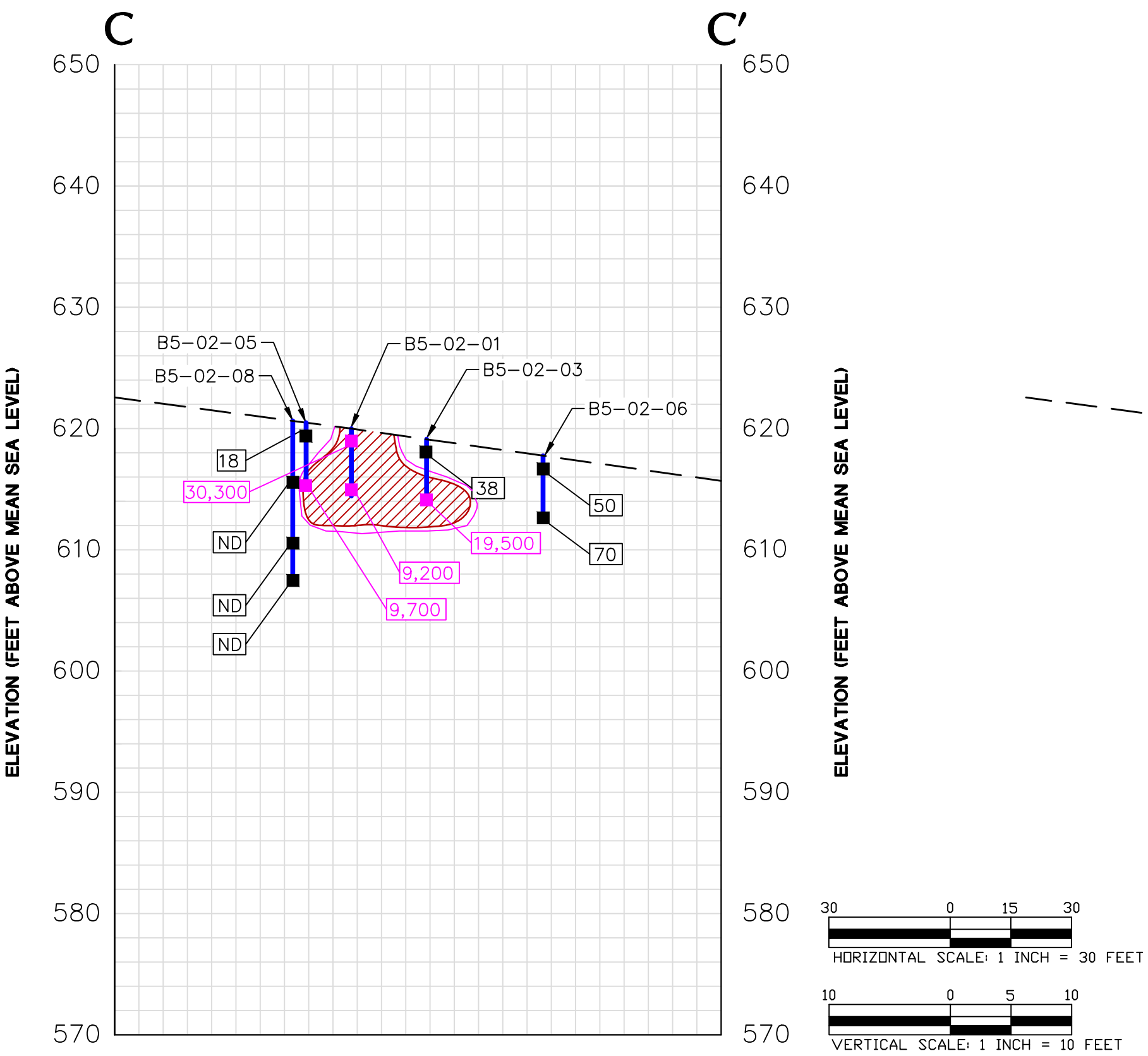
Drawing Title: B5-02 CROSS SECTION B-B′

Project No. 781010001
Date FEBRUARY, 2021
Drawn By AA
Checked By KV

FIGURE 3C

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Filename: C:\Users\jfrank\Desktop\JFRANK WORKING_FEBRUARY\Marco\Figure 6.dwg Date: 2/24/2021 Time: 11:47 User: jfrank Style Table: Langan.stb Layout: ANSIB-BP



NOTE:

–ALL CONCENTRATIONS REPORT IN MILLIGRAMS PER KILOGRAMS (MG/KG)
–CONCENTRATIONS IN MAGENTA EXCEED SANTA BARBARA COUNTY ENVIRONMENTAL HEALTH SERVICES INVESTIGATION LEVELS

LEGEND

HISTORIC SOIL BORING	ND — CONCENTRATIONS NOT REPORTED AT OR ABOVE THE LABORATORY REPORTING LIMIT
EXISTING GROUND SURFACE	■ — SOIL CONFIRMATION SAMPLE AND APPROXIMATE DEPTH IN FEET BELOW GROUND SURFACE
1,800 MG/KG SITE–SPECIFIC CLEANUP GOAL	8.3 — CONCENTRATION OF TOTAL PETROLEUM HYDROCARBONS (TPH) IN THE C4–C40 HYDROCARBON RANGE REPORTED IN MILLIGRAMS PER KILOGRAM
	APPROXIMATE EXTENT OF SOIL WITH TPH CONCENTRATION ABOVE 100 MG/KG

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Project: CALIFORNIA LEASE

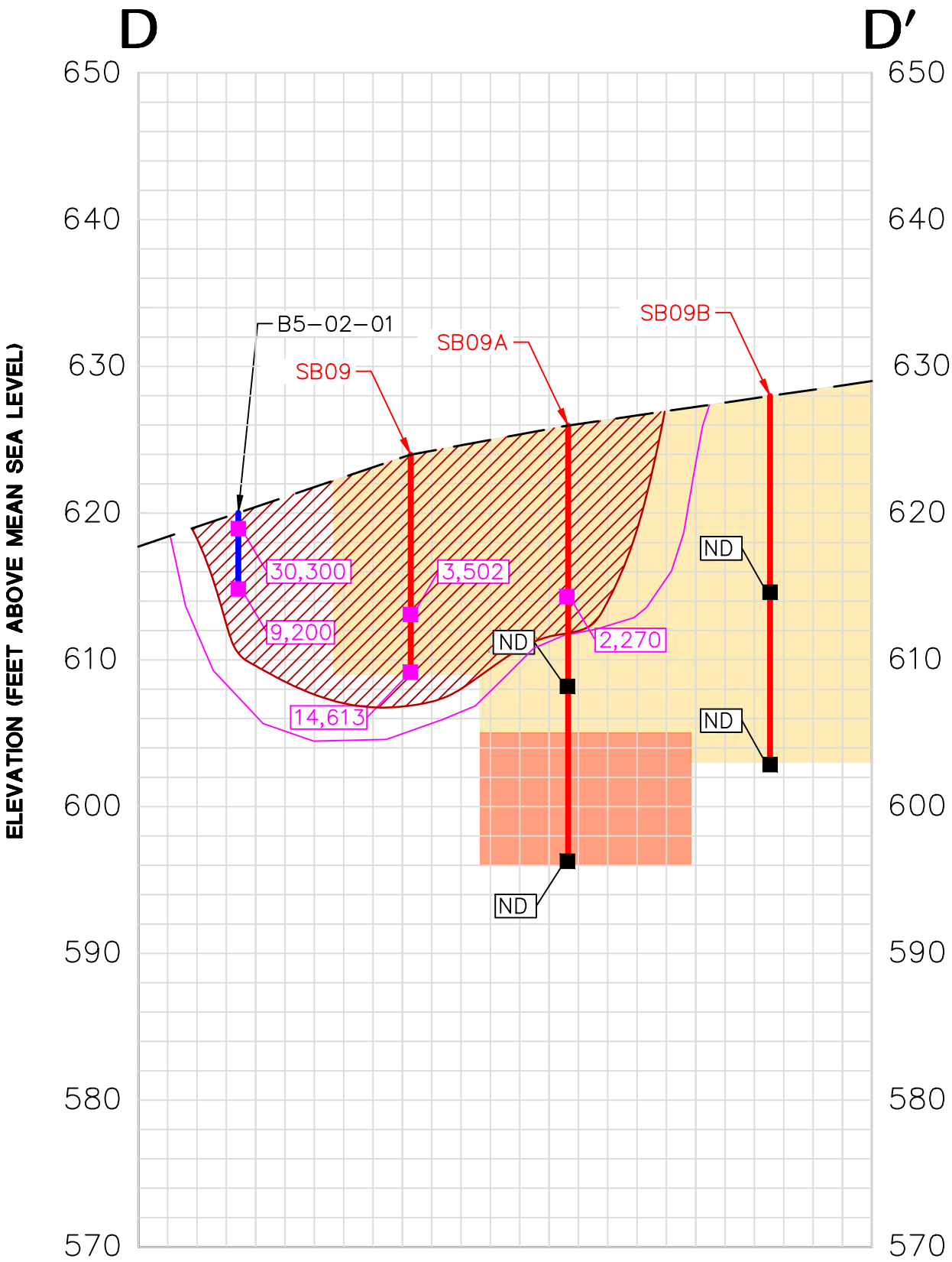
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Project No. 781010001
Date FEBRUARY, 2021
Drawn By AA
Checked By KV

FIGURE 3D

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Filename: C:\Users\jfrank\Desktop\JFRANK WORKING_FEBRUARY\Marco\Figure 7.dwg Date: 2/24/2021 Time: 12:08 User: jfrank Style Table: Langan.stb Layout: ANSIB-BP



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HORIZONTAL SCALE: 1 INCH = 30 FEET

10 0 5 10

VERTICAL SCALE: 1 INCH = 10 FEET

NOTE:

–LITHOLOGY SHOWN ON THIS SECTION IS APPROXIMATED BASED ON SOIL BORING B5–02–01 (WATERSTONE ENVIRONMENTAL, 2003) AND SB09, SB09A & SB09B (LANGAN, 2019)

–ALL CONCENTRATIONS REPORT IN MILLIGRAMS PER KILOGRAMS (MG/KG)
–CONCENTRATIONS IN MAGENTA EXCEED SANTA BARBARA COUNTY ENVIRONMENTAL HEALTH SERVICES INVESTIGATION LEVELS

LEGEND

- SAND
- CLAY
- HISTORIC SOIL BORING
- SOIL BORING COMPLETED 10/19–11/19
- EXISTING GRADE
- 1,800 MG/KG SITE–SPECIFIC CLEANUP GOAL
- ND — CONCENTRATIONS NOT REPORTED AT OR ABOVE THE LABORATORY REPORTING LIMIT
- ■ — SOIL CONFIRMATION SAMPLE AND APPROXIMATE DEPTH IN FEET BELOW GROUND SURFACE
- 8.3 — CONCENTRATION OF TOTAL PETROLEUM HYDROCARBONS (TPH) IN THE C4–C40 HYDROCARBON RANGE REPORTED IN MILLIGRAMS PER KILOGRAM
- APPROXIMATE EXTENT OF SOIL WITH TPH CONCENTRATION ABOVE 100 MG/KG

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Project: CALIFORNIA LEASE

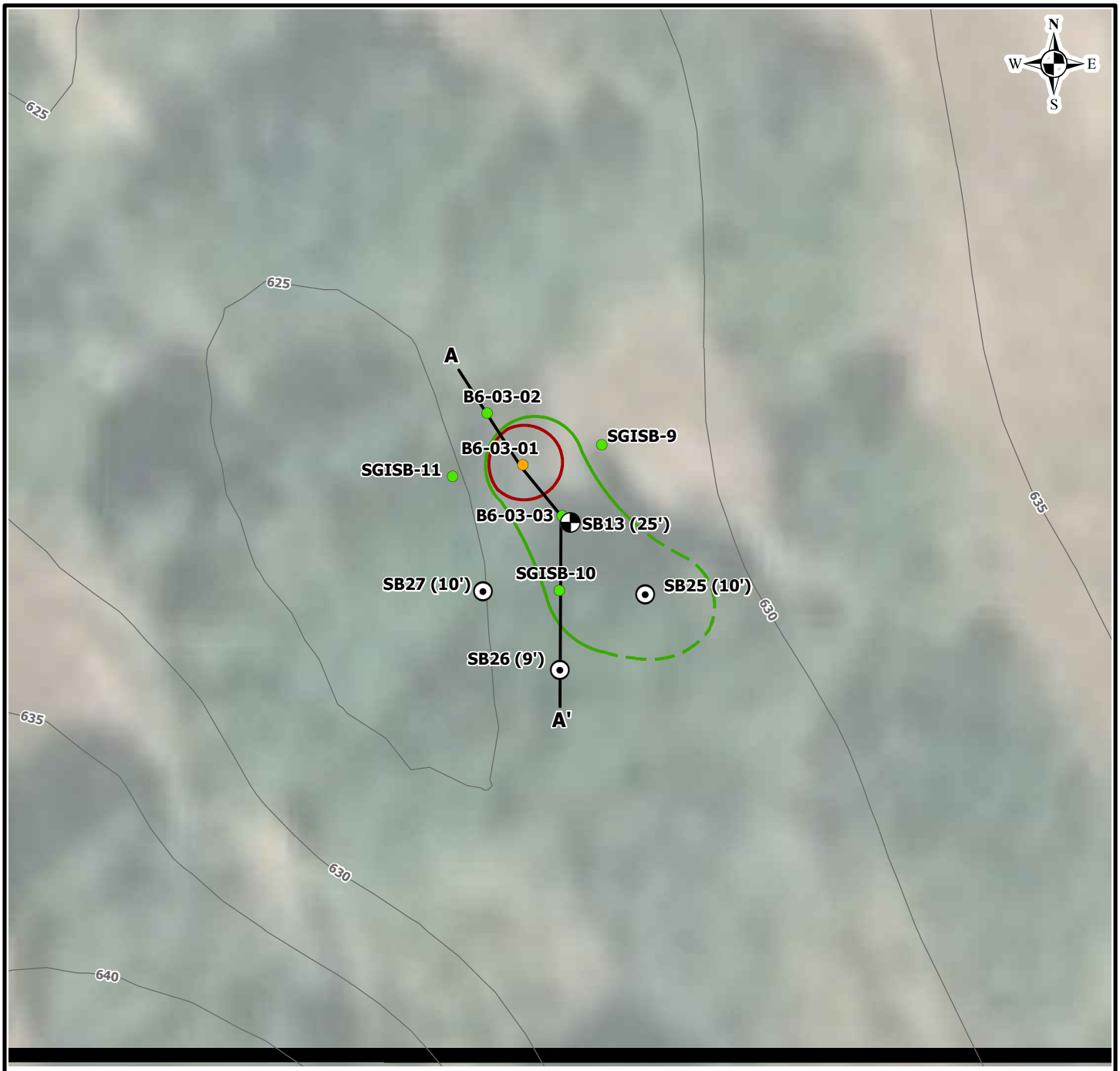
Drawing Title: AREA B5-03 SECTION D-D′

Project No. 78101001
Date FEBRUARY, 2021
Drawn By AA
Checked By KV

FIGURE 3E

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Legend

- Below clean-up goals
- Exceeds clean-up goals
- Hand auger location, Langan
- Boring location, Langan
- 100 mg/kg soil TPH isocontour (dashed where inferred)
- 1,800 mg/kg site-specific cleanup goals
- Elevation contour (in feet)
- Cross section

Notes:
1. World Imagery basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online, National Geographic Society, i-cubed, 9/1/2018.
2. Elevation contours derived from 2002/2003 IfSAR data for Southern California provided by NOAA. Contours are inferred with an accuracy of 5-10 feet.
3. Langan borings were field-located using a GPS unit.
4. Depth and depth to water are measured in feet below ground surface (bgs).

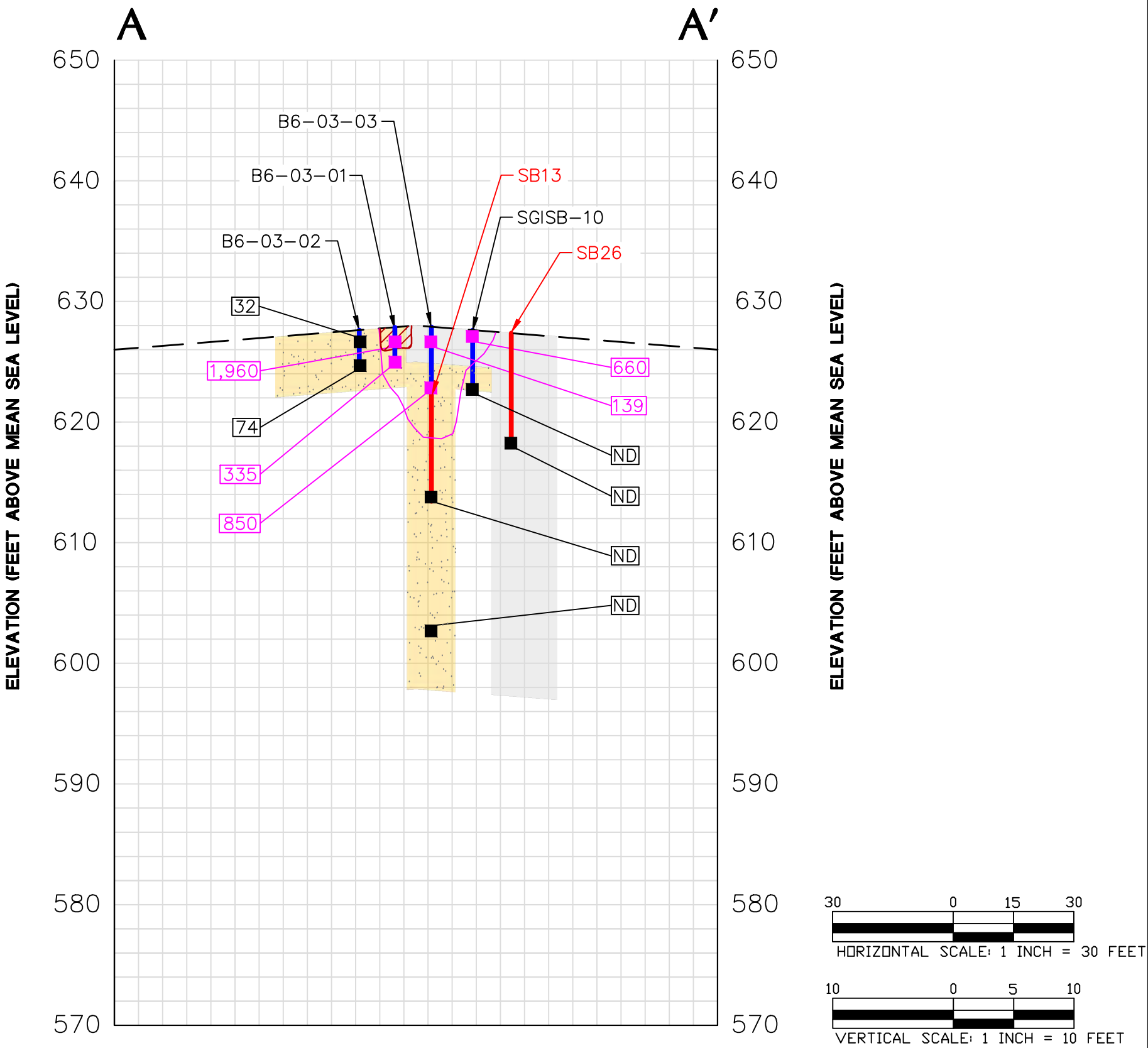
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Project	CALIFORNIA LEASE SANTA MARIA SANTA BARBARA COUNTY CALIFORNIA
Figure Title	REMEDIAL EXCAVATION PLAN AREA B6-03
Project No.	781010001
Date	FEBRUARY 2021
Scale	1 " = 20 '
Drawn By	NB
Figure	4A

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NOTE:

–LITHOLOGY SHOWN ON THIS SECTION IS APPROXIMATED BASED ON SOIL BORINGS SGISB–9 & SGISB–10 (SGI ENVIRONMENTAL, 2016) AND SB13 & SB26 (LANGAN, 2019)

–ALL CONCENTRATIONS REPORT IN MILLIGRAMS PER KILOGRAMS (MG/KG)

–CONCENTRATIONS IN MAGENTA EXCEED SANTA BARBARA COUNTY ENVIRONMENTAL HEALTH SERVICES INVESTIGATION LEVELS

LEGEND

SILTY SAND	ND — CONCENTRATIONS NOT REPORTED AT OR ABOVE THE LABORATORY REPORTING LIMIT
SAND	■ — SOIL CONFIRMATION SAMPLE AND APPROXIMATE DEPTH IN FEET BELOW GROUND SURFACE
HISTORIC SOIL BORING	8.3 — CONCENTRATION OF TOTAL PETROLEUM HYDROCARBONS (TPH) IN THE C4–C40 HYDROCARBON RANGE REPORTED IN MILLIGRAMS PER KILOGRAM
SOIL BORING COMPLETED 10/19 – 11/19	APPROXIMATE EXTENT OF SOIL WITH TPH CONCENTRATION ABOVE 100 MG/KG
EXISTING GROUND SURFACE	
1,800 MG/KG SITE–SPECIFIC CLEANUP GOAL	

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Project: CALIFORNIA LEASE

Drawing Title: B6-03 CROSS SECTION A-A′

Project No. 781010001
Date FEBRUARY, 2021
Drawn By AA
Checked By KV

FIGURE 4B

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Filename: C:\Users\jfrank\Desktop\JFRANK WORKING_FEBRUARY\Marco\Figure 10.dwg Date: 2/24/2021 Time: 11:53 User: jfrank Style Table: Langan.stb Layout: ANSIB-BP

TABLES

TABLE 1
Remedial Excavation Summary
California Lease - Remedial Action Workplan

Excavation Area	Areal Extent (Square Feet) [(1)]	Excavation Height (Feet) [(1)]	Volume (Cubic Yard) [(1)]
Total A5-01 Volumes	3,378	--	2,572
A5-01	2,249	14.72	1,226
A5-01 (TEZ-01)	83	9	**28**
A5-01 (DEZ-1 upper 25')	1,046	25	969
A5-01 (DEZ-1 25'-34')	1,046	9	**349**
Total B5-02/B5-03 Volumes	6,389	--	2,351
B5-02/B5-03	5,478	8.85	1,796
B5-02/B5-03 (TEZ-2)	522	10	**193**
B5-02/B5-03 (TEZ-3)	52	7	**13**
B5-02/B5-03 (DEZ-2 upper 25')	337	25	312
B5-02/B5-03 (DEZ-2)	337	3	**37**
B6-03	79	1	3
Total	9,846	--	4,926
Note(s):			
(1) Estimated value based on existing investigation data; values may vary based on site conditions			

TABLE 2
Exclusion Zone Volume Analysis
California Lease - Remedial Action Workplan

Work Area	Size of Work Area (SF)	Total Impacted Soil Volume (CY)	EZ ID	Observed Area (SF)	Observed Depth Interval of Remaining Impacts (feet)	Observed thickness of impacts remaining in place (feet)	Adjusted volume of impacts within EZ (CY)	Impacts Remaining as Percentage of Total Volume
A5-01	3,378	2,572	TEZ-1	83	0-9	9	28	1.1%
			DEZ-1	1046	25-34	9	349	13.6%
TOTALS: A5-01	--	--	--	**83**	--	--	**376**	**14.6%**
B5-02/B5-03	6,389	2,351	TEZ-2	522	0-10	10	193	8.2%
			TEZ-3	52	0-7	7	13	0.6%
			DEZ-2	337	25-28	3	37	1.6%
TOTALS: B5-02/B5-03	--	--	--	**522**	--	--	**244**	**10.4%**
B6-03	79	3	N/A	N/A	N/A	N/A	N/A	N/A
B6-03	--	--	--	--	--	--	--	--
Excavation TOTAL	**9,846**	**4,926**	--	**605**	--	--	**621**	**12.6%**

Notes:
SF = square feet
CY = cubic yards
EZ = Exclusion Zone
TEZ = Tree Excluzion Zone
DEZ = Depth Exclusion Zone
N/A = not applicable

APPENDIX A

Table 1
Summary of Soil Sample Analytical Results
California Lease Remediation
Santa Maria, California

Analyte	SBCEHS ILs	Site-Specific Cleanup Goal	Area	A5-01																	
			Sample ID	SB01			SB01			SB01			SB01A			SB01A			SB02		
			Depth (feet bgs)	33-34			39-40			59-60			9-10			30-31			12-13		
			Date Sampled	43752			43752			43752			43753			43753			43752		
			Units	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL
TPH - EPA 8015M																					
TPH Gasoline (C4-C12)	NS	NS	mg/kg	400	D-04	-	ND	HT-03	0.5	ND	-	0.5	ND	-	0.49	ND	-	0.5	38	D-04, S-02	-
TPH Diesel (C13-C22)	NS	NS	mg/kg	41000	-	-	ND	HT-03	9.9	ND	-	10	ND	-	10	27	D-04	-	2200	D-04	-
TPH Motor Oil (C23-C40)	NS	NS	mg/kg	13000	-	-	ND	HT-03	50	ND	-	50	ND	-	50	85	D-04	-	780	D-04	-
TPH (C4-C40)	100	1800	mg/kg	**54,400**	-	-	ND	-	-	ND	-	-	ND	-	-	112	-	-	**3,018**	-	-
VOCs - EPA 8260B																					
Benzene	0.025	0.13	mg/kg	ND	R-06	0.25	ND	HT-03	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	R-05	0.047
n-Butylbenzene	3900	3900	mg/kg	1.9	R-06	-	ND	HT-03	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	0.13	R-05	-
sec-Butylbenzene	7800	7800	mg/kg	1.1	R-06	-	ND	HT-03	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	0.086	R-05	-
Carbon tetrachloride	0.011	NS	mg/kg	ND	R-06	0.25	ND	HT-03	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	R-05	0.047
Chlorobenzene	1.4	NS	mg/kg	ND	R-06	0.25	ND	HT-03	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	R-05	0.047
Ethylbenzene	0.43	2.4	mg/kg	2	R-06	-	ND	HT-03	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	R-05	0.047
4-Isopropyl Toluene	NS	550	mg/kg	1.2	R-06	-	ND	HT-03	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	R-05	0.047
Isopropylbenzene	NS	1000	mg/kg	0.8	R-06	-	ND	HT-03	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	0.072	R-05	-
Naphthalene	0.042	1.5	mg/kg	**15**	R-06	-	ND	HT-03	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	0.15	R-05	-
n-Propylbenzene	NS	26	mg/kg	2.4	R-06	-	ND	HT-03	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	0.22	R-05	-
Toluene	3.2	550	mg/kg	ND	R-06	0.25	ND	HT-03	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	R-05	0.047
1,2,4-Trimethylbenzene	NS	NS	mg/kg	5.9	R-06	-	ND	HT-03	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	R-05	0.047
1,3,5-Trimethylbenzene	NS	NS	mg/kg	1.1	R-06	-	ND	HT-03	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	R-05	0.047
Xylenes (total)	2.1	270	mg/kg	1.7	R-06	-	ND	HT-03	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	R-05	0.047
PAHs - EPA 8270C-SIM																					
Acenaphthene	12	3300	mg/kg	3.9	R-01, S-01	-	ND	HT-04	0.005	ND	-	0.005	ND	-	0.005	ND	R-05	0.02	ND	R-05, S-04	0.5
Acenaphthylene	6.4	3300	mg/kg	ND	R-01, S-01	1	ND	HT-04	0.005	ND	-	0.005	ND	-	0.005	ND	R-05	0.02	ND	R-05, S-04	0.5
Fluorene	6	2200	mg/kg	5.3	R-01, S-01	-	ND	HT-04	0.005	ND	-	0.005	ND	-	0.005	ND	R-05	0.02	ND	R-05, S-04	0.5
Naphthalene	0.042	1.5	mg/kg	**10**	R-01, S-01	-	ND	HT-04	0.01	ND	-	0.01	ND	-	0.01	ND	R-05	0.04	ND	R-05, S-04	1
Phenanthrene	7.8	16000	mg/kg	10	R-01, S-01	-	ND	HT-04	0.005	ND	-	0.005	ND	-	0.005	ND	R-05	0.02	1.2	R-05, S-04	-

Analyte	SBCEHS ILs	Site-Specific Cleanup Goal	Area	A5-01																	
			Sample ID	SB02			SB02			SB02A			SB02A			SB02A			SB02B		
			Depth (feet bgs)	29-30			49-50			9-10			21-22			29-30			14-15		
			Date Sampled	43752			43752			43753			43753			43753			43753		
			Units	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL
TPH - EPA 8015M																					
TPH Gasoline (C4-C12)	NS	NS	mg/kg	ND	HT-03	0.5	ND	-	0.48	240	D-04	-	ND	-	0.49	ND	HT-03	0.5	ND	-	0.5
TPH Diesel (C13-C22)	NS	NS	mg/kg	ND	HT-03	10	ND	-	10	9800	-	-	ND	-	10	ND	HT-04	10	ND	-	9.9
TPH Motor Oil (C23-C40)	NS	NS	mg/kg	ND	HT-03	50	ND	-	50	4500	-	-	ND	-	50	ND	HT-04	50	ND	-	50
TPH (C4-C40)	100	1800	mg/kg	ND	-	-	ND	-	-	**14,540**	-	-	ND	-	-	ND	-	-	ND	-	-
VOCs - EPA 8260B																					
Benzene	0.025	0.13	mg/kg	ND	-	0.005	ND	-	0.005	ND	R-06	0.047	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
n-Butylbenzene	3900	3900	mg/kg	ND	-	0.005	ND	-	0.005	0.86	R-06	-	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
sec-Butylbenzene	7800	7800	mg/kg	ND	-	0.005	ND	-	0.005	0.48	R-06	-	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
Carbon tetrachloride	0.011	NS	mg/kg	ND	-	0.005	ND	-	0.005	ND	R-06	0.047	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
Chlorobenzene	1.4	NS	mg/kg	ND	-	0.005	ND	-	0.005	ND	R-06	0.047	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
Ethylbenzene	0.43	2.4	mg/kg	ND	-	0.005	ND	-	0.005	0.12	R-06	-	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
4-Isopropyl Toluene	NS	550	mg/kg	ND	-	0.005	ND	-	0.005	0.054	R-06	-	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
Isopropylbenzene	NS	1000	mg/kg	ND	-	0.005	ND	-	0.005	0.22	R-06	-	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
Naphthalene	0.042	1.5	mg/kg	ND	-	0.005	ND	-	0.005	ND	R-06	0.047	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
n-Propylbenzene	NS	26	mg/kg	ND	-	0.005	ND	-	0.005	0.93	R-06	-	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
Toluene	3.2	550	mg/kg	ND	-	0.005	ND	-	0.005	ND	R-06	0.047	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
1,2,4-Trimethylbenzene	NS	NS	mg/kg	ND	-	0.005	ND	-	0.005	ND	R-06	0.047	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
1,3,5-Trimethylbenzene	NS	NS	mg/kg	ND	-	0.005	ND	-	0.005	ND	R-06	0.047	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
Xylenes (total)	2.1	270	mg/kg	ND	-	0.005	ND	-	0.005	0.12	R-06	-	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
PAHs - EPA 8270C-SIM																					
Acenaphthene	12	3300	mg/kg	ND	HT-04	0.005	ND	-	0.005	ND	R-05	0.5	ND	-	0.005	ND	HT-04	0.005	ND	-	0.005
Acenaphthylene	6.4	3300	mg/kg	ND	HT-04	0.005	ND	-	0.005	ND	R-05	0.5	ND	-	0.005	ND	HT-04	0.005	ND	-	0.005
Fluorene	6	2200	mg/kg	ND	HT-04	0.005	ND	-	0.005	0.6	R-05	-	ND	-	0.005	ND	HT-04	0.005	ND	-	0.005
Naphthalene	0.042	1.5	mg/kg	ND	HT-04	0.01	ND	-	0.01	1.3	R-05	-	ND	-	0.01	ND	HT-04	0.01	ND	-	0.01
Phenanthrene	7.8	16000	mg/kg	ND	HT-04	0.005	ND	-	0.005	1.4	R-05	-	ND	-	0.005	ND	HT-04	0.005	ND	-	0.005

Table 1
Summary of Soil Sample Analytical Results
California Lease Remediation
Santa Maria, California

Analyte	SBCEHS ILs	Site-Specific Cleanup Goal	Area	A5-01																	
			Sample ID	SB02B			SB03			SB03			SB03A			SB04			SB04		
			Depth (feet bgs)	24-25			30-31			39-40			24-25			7-8			9-10		
			Date Sampled	43753			43752			43752			43756			43753			43753		
			Units	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL
TPH - EPA 8015M																					
TPH Gasoline (C4-C12)	NS	NS	mg/kg	ND	-	0.49	0.51	D-04	-	ND	-	0.5	ND	-	0.5	ND	HT-03	0.5	ND	-	0.5
TPH Diesel (C13-C22)	NS	NS	mg/kg	15	-	-	100	-	-	ND	-	10	ND	-	9.9	ND	HT-04	9.9	ND	-	10
TPH Motor Oil (C23-C40)	NS	NS	mg/kg	57	-	-	ND	-	50	ND	-	50	ND	-	50	ND	HT-04	50	ND	-	50
TPH (C4-C40)	100	1800	mg/kg	72	-	-	100.51	-	-	ND	-	-	ND	-	-	ND	-	-	ND	-	-
VOCs - EPA 8260B																					
Benzene	0.025	0.13	mg/kg	ND	-	0.005	ND	R-01	0.025	ND	-	0.005	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
n-Butylbenzene	3900	3900	mg/kg	ND	-	0.005	ND	R-01	0.025	ND	-	0.005	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
sec-Butylbenzene	7800	7800	mg/kg	ND	-	0.005	ND	R-01	0.025	ND	-	0.005	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
Carbon tetrachloride	0.011	NS	mg/kg	ND	-	0.005	ND	R-01	0.025	ND	-	0.005	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
Chlorobenzene	1.4	NS	mg/kg	ND	-	0.005	ND	R-01	0.025	ND	-	0.005	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
Ethylbenzene	0.43	2.4	mg/kg	ND	-	0.005	ND	R-01	0.025	ND	-	0.005	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
4-Isopropyl Toluene	NS	550	mg/kg	ND	-	0.005	ND	R-01	0.025	ND	-	0.005	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
Isopropylbenzene	NS	1000	mg/kg	ND	-	0.005	ND	R-01	0.025	ND	-	0.005	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
Naphthalene	0.042	1.5	mg/kg	ND	-	0.005	ND	R-01	0.025	ND	-	0.005	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
n-Propylbenzene	NS	26	mg/kg	ND	-	0.005	ND	R-01	0.025	ND	-	0.005	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
Toluene	3.2	550	mg/kg	ND	-	0.005	ND	R-01	0.025	ND	-	0.005	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
1,2,4-Trimethylbenzene	NS	NS	mg/kg	ND	-	0.005	ND	R-01	0.025	ND	-	0.005	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
1,3,5-Trimethylbenzene	NS	NS	mg/kg	ND	-	0.005	ND	R-01	0.025	ND	-	0.005	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
Xylenes (total)	2.1	270	mg/kg	ND	-	0.005	ND	R-01	0.025	ND	-	0.005	ND	-	0.005	ND	HT-03	0.005	ND	-	0.005
PAHs - EPA 8270C-SIM																					
Acenaphthene	12	3300	mg/kg	ND	R-05	0.01	0.025	-	-	ND	-	0.005	ND	-	0.005	ND	HT-04	0.005	ND	-	0.005
Acenaphthylene	6.4	3300	mg/kg	ND	R-05	0.01	0.009	-	-	ND	-	0.005	ND	-	0.005	ND	HT-04	0.005	ND	-	0.005
Fluorene	6	2200	mg/kg	ND	R-05	0.01	0.058	-	-	ND	-	0.005	ND	-	0.005	ND	HT-04	0.005	ND	-	0.005
Naphthalene	0.042	1.5	mg/kg	ND	R-05	0.02	0.018	-	-	ND	-	0.01	ND	-	0.01	ND	HT-04	0.01	ND	-	0.01
Phenanthrene	7.8	16000	mg/kg	ND	R-05	0.01	0.2	-	-	ND	-	0.005	ND	-	0.005	ND	HT-04	0.005	ND	-	0.005

Analyte	SBCEHS ILs	Site-Specific Cleanup Goal	Area	A5-01						B5-02/B5-03											
			Sample ID	SB05			SB05			SB06			SB06			SB06			SB07		
			Depth (feet bgs)	14-15			24-25			3-4			19-20			24-25			4-5		
			Date Sampled	43753			43753			43754			43754			43754			43755		
			Units	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL
TPH - EPA 8015M																					
TPH Gasoline (C4-C12)	NS	NS	mg/kg	ND	-	0.5	ND	-	0.5	ND	-	0.49	ND	-	0.5	ND	-	0.5	ND	-	0.49
TPH Diesel (C13-C22)	NS	NS	mg/kg	ND	-	10	ND	-	9.9	ND	-	10	ND	-	10	ND	-	9.9	ND	-	9.9
TPH Motor Oil (C23-C40)	NS	NS	mg/kg	ND	-	50	ND	-	50	ND	-	50	ND	-	50	ND	-	50	ND	-	50
TPH (C4-C40)	100	1800	mg/kg	ND	-	-	ND	-	-	ND	-	-	ND	-	-	ND	-	-	ND	-	-
VOCs - EPA 8260B																					
Benzene	0.025	0.13	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
n-Butylbenzene	3900	3900	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
sec-Butylbenzene	7800	7800	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Carbon tetrachloride	0.011	NS	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Chlorobenzene	1.4	NS	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Ethylbenzene	0.43	2.4	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
4-Isopropyl Toluene	NS	550	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Isopropylbenzene	NS	1000	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Naphthalene	0.042	1.5	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
n-Propylbenzene	NS	26	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Toluene	3.2	550	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
1,2,4-Trimethylbenzene	NS	NS	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
1,3,5-Trimethylbenzene	NS	NS	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Xylenes (total)	2.1	270	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
PAHs - EPA 8270C-SIM																					
Acenaphthene	12	3300	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Acenaphthylene	6.4	3300	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Fluorene	6	2200	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Naphthalene	0.042	1.5	mg/kg	ND	-	0.01	ND	-	0.01	ND	-	0.01	ND	-	0.01	ND	-	0.01	ND	-	0.01
Phenanthrene	7.8	16000	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005

Table 1
Summary of Soil Sample Analytical Results
California Lease Remediation
Santa Maria, California

Analyte	SBCEHS ILs	Site-Specific Cleanup Goal	Area	B5-02/B5-03																	
			Sample ID	SB07			SB08			SB08A			SB08A			SB08B			SB09		
			Depth (feet bgs)	19-20			4-5			4-5			9-10			9-10			10-10.5		
			Date Sampled	43755			43755			43755			43755			43755			43754		
			Units	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL
TPH - EPA 8015M																					
TPH Gasoline (C4-C12)	NS	NS	mg/kg	ND	-	0.51	ND	-	0.5	ND	-	0.5	13	D-04	-	ND	-	0.51	12	D-04	-
TPH Diesel (C13-C22)	NS	NS	mg/kg	ND	-	9.9	ND	-	10	110	-	-	16	-	-	ND	-	10	2600	-	-
TPH Motor Oil (C23-C40)	NS	NS	mg/kg	ND	-	50	ND	-	50	ND	-	50	ND	-	50	ND	-	50	890	-	-
TPH (C4-C40)	100	1800	mg/kg	ND	-	-	ND	-	-	110	-	-	29	-	-	ND	-	-	**3,502**	-	-
VOCs - EPA 8260B																					
Benzene	0.025	0.13	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0049	ND	R-06	0.047	ND	-	0.005	ND	R-06	0.048
n-Butylbenzene	3900	3900	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0049	0.061	R-06	-	ND	-	0.005	0.19	R-06	-
sec-Butylbenzene	7800	7800	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0049	ND	R-06	0.047	ND	-	0.005	0.11	R-06	-
Carbon tetrachloride	0.011	NS	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0049	ND	R-06	0.047	ND	-	0.005	ND	R-06	0.048
Chlorobenzene	1.4	NS	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0049	ND	R-06	0.047	ND	-	0.005	ND	R-06	0.048
Ethylbenzene	0.43	2.4	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0049	ND	R-06	0.047	ND	-	0.005	0.22	R-06	-
4-Isopropyl Toluene	NS	550	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0049	ND	R-06	0.047	ND	-	0.005	0.12	R-06	-
Isopropylbenzene	NS	1000	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0049	ND	R-06	0.047	ND	-	0.005	0.08	R-06	-
Naphthalene	0.042	1.5	mg/kg	ND	-	0.005	ND	-	0.005	0.013	-	-	0.48	R-06	-	ND	-	0.005	0.76	R-06	-
n-Propylbenzene	NS	26	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0049	ND	R-06	0.047	ND	-	0.005	0.25	R-06	-
Toluene	3.2	550	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0049	ND	R-06	0.047	ND	-	0.005	ND	R-06	0.048
1,2,4-Trimethylbenzene	NS	NS	mg/kg	ND	-	0.005	ND	-	0.005	0.0094	-	-	0.14	R-06	-	ND	-	0.005	0.61	R-06	-
1,3,5-Trimethylbenzene	NS	NS	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0049	ND	R-06	-	ND	-	0.005	0.13	R-06	-
Xylenes (total)	2.1	270	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0049	ND	R-06	0.047	ND	-	0.005	0.1	R-06	-
PAHs - EPA 8270C-SIM																					
Acenaphthene	12	3300	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	0.27	R-05	-	ND	-	0.005	0.3	R-05	-
Acenaphthylene	6.4	3300	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	R-05	0.1	ND	-	0.005	ND	R-05	0.25
Fluorene	6	2200	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	0.38	R-05	-	ND	-	0.005	0.57	R-05	-
Naphthalene	0.042	1.5	mg/kg	ND	-	0.01	ND	-	0.01	ND	-	0.01	0.97	R-05	-	ND	-	0.01	0.68	R-05	-
Phenanthrene	7.8	16000	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	0.95	R-05	-	ND	-	0.005	1.3	R-05	-

Analyte	SBCEHS ILs	Site-Specific Cleanup Goal	Area	B5-02/B5-03																	
			Sample ID	SB09			SB09A			SB09A			SB09A			SB09B			SB09B		
			Depth (feet bgs)	14-15			13-14			17-18			29-30			13-14			24-25		
			Date Sampled	43754			43754			43754			43754			43755			43755		
			Units	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL
TPH - EPA 8015M																					
TPH Gasoline (C4-C12)	NS	NS	mg/kg	13	D-04	-	ND	-	0.49	1.7	D-04, S-02	-	ND	-	0.49	ND	-	0.51	ND	-	0.5
TPH Diesel (C13-C22)	NS	NS	mg/kg	11000	-	-	2000	-	-	ND	-	10	ND	-	10	ND	-	10	ND	-	10
TPH Motor Oil (C23-C40)	NS	NS	mg/kg	3600	-	-	270	-	-	ND	-	50	ND	-	50	ND	-	50	ND	-	50
TPH (C4-C40)	100	1800	mg/kg	**14,613**	-	-	**2,270**	-	-	1.7	-	-	ND	-	-	ND	-	-	ND	-	-
VOCs - EPA 8260B																					
Benzene	0.025	0.13	mg/kg	ND	R-06	0.051	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
n-Butylbenzene	3900	3900	mg/kg	0.089	R-06	-	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
sec-Butylbenzene	7800	7800	mg/kg	ND	R-06	0.051	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Carbon tetrachloride	0.011	NS	mg/kg	ND	R-06	0.051	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Chlorobenzene	1.4	NS	mg/kg	ND	R-06	0.051	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Ethylbenzene	0.43	2.4	mg/kg	0.083	R-06	-	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
4-Isopropyl Toluene	NS	550	mg/kg	0.052	R-06	-	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Isopropylbenzene	NS	1000	mg/kg	ND	R-06	0.051	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Naphthalene	0.042	1.5	mg/kg	0.74	R-06	-	ND	-	0.005	0.0094	-	-	ND	-	0.005	ND	-	0.005	ND	-	0.005
n-Propylbenzene	NS	26	mg/kg	0.093	R-06	-	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Toluene	3.2	550	mg/kg	ND	R-06	0.051	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
1,2,4-Trimethylbenzene	NS	NS	mg/kg	0.25	R-06	-	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
1,3,5-Trimethylbenzene	NS	NS	mg/kg	ND	R-06	0.051	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Xylenes (total)	2.1	270	mg/kg	0.087	R-06	-	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
PAHs - EPA 8270C-SIM																					
Acenaphthene	12	3300	mg/kg	1.2	R-05	-	0.22	R-05	-	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Acenaphthylene	6.4	3300	mg/kg	ND	R-05	0.25	ND	R-05	0.1	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Fluorene	6	2200	mg/kg	1.5	R-05	-	0.29	R-05	-	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Naphthalene	0.042	1.5	mg/kg	**4.1**	R-05	-	**2**	R-05	-	ND	-	0.01	ND	-	0.01	ND	-	0.01	ND	-	0.01
Phenanthrene	7.8	16000	mg/kg	3.4	R-05	-	0.76	R-05	-	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005

Table 1
Summary of Soil Sample Analytical Results
California Lease Remediation
Santa Maria, California

Analyte	SBCEHS ILs	Site-Specific Cleanup Goal	Area	B5-02/B5-03																	
			Sample ID	SB10A			SB10A			SB10B			SB10B			SB11			SB12		
			Depth (feet bgs)	4-5			9-10			9-10			24-25			9.5-10			2-3		
			Date Sampled	43755			43755			43755			43755			43759			43754		
			Units	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL
TPH - EPA 8015M																					
TPH Gasoline (C4-C12)	NS	NS	mg/kg	ND	-	0.5	32	D-04, S-02	-	ND	-	0.5	ND	-	0.51	ND	-	0.39	ND	-	0.5
TPH Diesel (C13-C22)	NS	NS	mg/kg	ND	-	9.9	3800	D-04	-	ND	-	9.9	ND	-	9.9	ND	-	10	11	-	-
TPH Motor Oil (C23-C40)	NS	NS	mg/kg	ND	-	50	1000	D-04	-	ND	-	50	ND	-	50	ND	-	50	140	-	-
TPH (C4-C40)	100	1800	mg/kg	ND	-	-	**4,832**	-	-	ND	-	-	ND	-	-	ND	-	-	151	-	-
VOCs - EPA 8260B																					
Benzene	0.025	0.13	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.0039	ND	-	0.005
n-Butylbenzene	3900	3900	mg/kg	ND	-	0.005	0.044	-	-	ND	-	0.005	ND	-	0.005	ND	-	0.0039	ND	-	0.005
sec-Butylbenzene	7800	7800	mg/kg	ND	-	0.005	0.033	-	-	ND	-	0.005	ND	-	0.005	ND	-	0.0039	ND	-	0.005
Carbon tetrachloride	0.011	NS	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	0.0084	-	-	ND	-	0.005
Chlorobenzene	1.4	NS	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.0039	ND	-	0.005
Ethylbenzene	0.43	2.4	mg/kg	ND	-	0.005	0.02	-	-	ND	-	0.005	ND	-	0.005	ND	-	0.0039	ND	-	0.005
4-Isopropyl Toluene	NS	550	mg/kg	ND	-	0.005	0.045	-	-	ND	-	0.005	ND	-	0.005	ND	-	0.0039	ND	-	0.005
Isopropylbenzene	NS	1000	mg/kg	ND	-	0.005	0.019	-	-	ND	-	0.005	ND	-	0.005	ND	-	0.0039	ND	-	0.005
Naphthalene	0.042	1.5	mg/kg	ND	-	0.005	0.16	-	-	ND	-	0.005	ND	-	0.005	ND	-	0.0039	ND	-	0.005
n-Propylbenzene	NS	26	mg/kg	ND	-	0.005	0.058	-	-	ND	-	0.005	ND	-	0.005	ND	-	0.0039	ND	-	0.005
Toluene	3.2	550	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.0039	ND	-	0.005
1,2,4-Trimethylbenzene	NS	NS	mg/kg	ND	-	0.005	0.12	-	-	ND	-	0.005	ND	-	0.005	ND	-	0.0039	ND	-	0.005
1,3,5-Trimethylbenzene	NS	NS	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.0039	ND	-	0.005
Xylenes (total)	2.1	270	mg/kg	ND	-	0.005	0.011	-	-	ND	-	0.005	ND	-	0.005	ND	-	0.0039	ND	-	0.005
PAHs - EPA 8270C-SIM																					
Acenaphthene	12	3300	mg/kg	ND	-	0.005	0.57	R-05	-	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	R-05	0.02
Acenaphthylene	6.4	3300	mg/kg	ND	-	0.005	ND	R-05	0.25	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	R-05	0.02
Fluorene	6	2200	mg/kg	ND	-	0.005	ND	R-05	0.25	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	R-05	0.02
Naphthalene	0.042	1.5	mg/kg	ND	-	0.01	ND	R-05	0.5	ND	-	0.01	ND	-	0.01	ND	-	0.01	ND	R-05	0.04
Phenanthrene	7.8	16000	mg/kg	ND	-	0.005	ND	R-05	0.25	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	R-05	0.02

Analyte	SBCEHS ILs	Site-Specific Cleanup Goal	Area	B5-02/B5-03									B6-03								
			Sample ID	SB12			SB12A			SB12A			SB13			SB13			SB25		
			Depth (feet bgs)	29-30			6-6.5			15-15.5			13-14			24-25			9.5-10		
			Date Sampled	43754			43784			43784			43755			43755			43756		
			Units	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL
TPH - EPA 8015M																					
TPH Gasoline (C4-C12)	NS	NS	mg/kg	ND	-	0.49	ND	-	0.51	ND	-	0.5	ND	-	0.5	ND	-	0.49	ND	-	0.51
TPH Diesel (C13-C22)	NS	NS	mg/kg	ND	-	10	ND	-	9.9	ND	-	10	ND	-	9.9	ND	-	10	180	-	-
TPH Motor Oil (C23-C40)	NS	NS	mg/kg	ND	-	50	ND	-	50	ND	-	50	ND	-	50	ND	-	50	220	-	-
TPH (C4-C40)	100	1800	mg/kg	ND	-	-	ND	-	-	ND	-	-	ND	-	-	ND	-	-	400	-	-
VOCs - EPA 8260B																					
Benzene	0.025	0.13	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.0051
n-Butylbenzene	3900	3900	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.0051
sec-Butylbenzene	7800	7800	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.0051
Carbon tetrachloride	0.011	NS	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	0.012	-	-
Chlorobenzene	1.4	NS	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.0051
Ethylbenzene	0.43	2.4	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.0051
4-Isopropyl Toluene	NS	550	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.0051
Isopropylbenzene	NS	1000	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.0051
Naphthalene	0.042	1.5	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.0051
n-Propylbenzene	NS	26	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.0051
Toluene	3.2	550	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.0051
1,2,4-Trimethylbenzene	NS	NS	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.0051
1,3,5-Trimethylbenzene	NS	NS	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.0051
Xylenes (total)	2.1	270	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.0051
PAHs - EPA 8270C-SIM																					
Acenaphthene	12	3300	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Acenaphthylene	6.4	3300	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Fluorene	6	2200	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Naphthalene	0.042	1.5	mg/kg	ND	-	0.01	ND	-	0.01	ND	-	0.01	ND	-	0.01	ND	-	0.01	ND	-	0.01
Phenanthrene	7.8	16000	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005

Table 1
Summary of Soil Sample Analytical Results
California Lease Remediation
Santa Maria, California

Analyte	SBCEHS ILs	Site-Specific Cleanup Goal	Area	B6-03						Well 67									Cattleguard		
			Sample ID	SB26			SB27			SB30A			SB30C			SB30C			SB31B		
			Depth (feet bgs)	8.5-9			9.5-10			13-14			6-6.5			21-21.5			5-6		
			Date Sampled	43756			43759			43762			43785			43785			43761		
			Units	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL
TPH - EPA 8015M																					
TPH Gasoline (C4-C12)	NS	NS	mg/kg	ND	-	0.4	ND	-	0.57	ND	-	0.5	ND	-	0.5	ND	-	0.51	ND	CCHI	0.49
TPH Diesel (C13-C22)	NS	NS	mg/kg	ND	-	10	ND	-	10	ND	-	10	ND	-	10	ND	-	9.9	ND	-	9.9
TPH Motor Oil (C23-C40)	NS	NS	mg/kg	ND	-	50	ND	-	50	ND	-	50	ND	-	50	ND	-	50	ND	-	50
TPH (C4-C40)	100	1800	mg/kg	ND	-	-	ND	-	-	ND	-	-	ND	-	-	ND	-	-	ND	-	-
VOCs - EPA 8260B																					
Benzene	0.025	0.13	mg/kg	ND	-	0.004	ND	-	0.0057	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005
n-Butylbenzene	3900	3900	mg/kg	ND	-	0.004	ND	-	0.0057	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005
sec-Butylbenzene	7800	7800	mg/kg	ND	-	0.004	ND	-	0.0057	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005
Carbon tetrachloride	0.011	NS	mg/kg	ND	-	0.004	ND	-	0.0057	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005
Chlorobenzene	1.4	NS	mg/kg	ND	-	0.004	ND	-	0.0057	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005
Ethylbenzene	0.43	2.4	mg/kg	ND	-	0.004	ND	-	0.0057	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005
4-Isopropyl Toluene	NS	550	mg/kg	ND	-	0.004	ND	-	0.0057	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005
Isopropylbenzene	NS	1000	mg/kg	ND	-	0.004	ND	-	0.0057	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005
Naphthalene	0.042	1.5	mg/kg	ND	-	0.004	ND	-	0.0057	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005
n-Propylbenzene	NS	26	mg/kg	ND	-	0.004	ND	-	0.0057	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005
Toluene	3.2	550	mg/kg	ND	-	0.004	ND	-	0.0057	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005
1,2,4-Trimethylbenzene	NS	NS	mg/kg	ND	-	0.004	ND	-	0.0057	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005
1,3,5-Trimethylbenzene	NS	NS	mg/kg	ND	-	0.004	ND	-	0.0057	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005
Xylenes (total)	2.1	270	mg/kg	ND	-	0.004	ND	-	0.0057	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005
PAHs - EPA 8270C-SIM																					
Acenaphthene	12	3300	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.01
Acenaphthylene	6.4	3300	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.01
Fluorene	6	2200	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.01
Naphthalene	0.042	1.5	mg/kg	ND	-	0.01	ND	-	0.01	ND	-	0.01	ND	-	0.01	ND	-	0.01	ND	-	0.02
Phenanthrene	7.8	16000	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.01

Analyte	SBCEHS ILs	Site-Specific Cleanup Goal	Area	Cattleguard												Well 109					
			Sample ID	SB31C			SB31D			SB31D			SB31D			SB22B			SB22C		
			Depth (feet bgs)	5-5.5			5.5-6			11-11.5			31-31.5			4-4.5			5-5.5		
			Date Sampled	43761			43784			43784			43784			43761			43785		
			Units	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL
TPH - EPA 8015M																					
TPH Gasoline (C4-C12)	NS	NS	mg/kg	ND	CCHI	0.5	27	O-04, S-02	-	ND	-	0.49	ND	-	0.5	ND	CCHI	0.5	ND	-	0.5
TPH Diesel (C13-C22)	NS	NS	mg/kg	ND	-	9.9	31	-	-	ND	-	10	ND	-	9.9	ND	-	10	ND	-	10
TPH Motor Oil (C23-C40)	NS	NS	mg/kg	ND	-	50	71	-	-	ND	-	50	ND	-	50	ND	-	50	ND	-	50
TPH (C4-C40)	100	1800	mg/kg	ND	-	-	129	-	-	ND	-	-	ND	-	-	ND	-	-	ND	-	-
VOCs - EPA 8260B																					
Benzene	0.025	0.13	mg/kg	ND	HT-06	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005	ND	-	0.005
n-Butylbenzene	3900	3900	mg/kg	ND	HT-06	0.005	0.005	O-05	-	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005	ND	-	0.005
sec-Butylbenzene	7800	7800	mg/kg	ND	HT-06	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005	ND	-	0.005
Carbon tetrachloride	0.011	NS	mg/kg	ND	HT-06	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005	ND	-	0.005
Chlorobenzene	1.4	NS	mg/kg	ND	HT-06	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005	ND	-	0.005
Ethylbenzene	0.43	2.4	mg/kg	ND	HT-06	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005	ND	-	0.005
4-Isopropyl Toluene	NS	550	mg/kg	ND	HT-06	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005	ND	-	0.005
Isopropylbenzene	NS	1000	mg/kg	ND	HT-06	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005	ND	-	0.005
Naphthalene	0.042	1.5	mg/kg	ND	HT-06	0.005	0.061	-	-	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005	ND	-	0.005
n-Propylbenzene	NS	26	mg/kg	ND	HT-06	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005	ND	-	0.005
Toluene	3.2	550	mg/kg	ND	HT-06	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005	ND	-	0.005
1,2,4-Trimethylbenzene	NS	NS	mg/kg	ND	HT-06	0.005	0.018	-	-	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005	ND	-	0.005
1,3,5-Trimethylbenzene	NS	NS	mg/kg	ND	HT-06	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005	ND	-	0.005
Xylenes (total)	2.1	270	mg/kg	ND	HT-06	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	HT-06	0.005	ND	-	0.005
PAHs - EPA 8270C-SIM																					
Acenaphthene	12	3300	mg/kg	ND	-	0.01	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Acenaphthylene	6.4	3300	mg/kg	ND	-	0.01	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Fluorene	6	2200	mg/kg	ND	-	0.01	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005
Naphthalene	0.042	1.5	mg/kg	ND	-	0.02	ND	-	0.01	ND	-	0.01	ND	-	0.01	ND	-	0.01	ND	-	0.01
Phenanthrene	7.8	16000	mg/kg	ND	-	0.01	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	-	0.005

Table 1
Summary of Soil Sample Analytical Results
California Lease Remediation
Santa Maria, California

Analyte	SBCEHS ILs	Site-Specific Cleanup Goal	Area	Well 109											
			Sample ID	SB22C			SB22C			SB28			SB32		
			Depth (feet bgs)	16-16.5			21-21.5			4.5-5			4.5-5		
			Date Sampled	43785			43785			43762			43762		
			Units	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL
TPH - EPA 8015M															
TPH Gasoline (C4-C12)	NS	NS	mg/kg	ND	-	0.5	ND	-	0.5	ND	-	0.49	ND	-	0.55
TPH Diesel (C13-C22)	NS	NS	mg/kg	ND	-	10	ND	-	10	ND	-	9.9	16	-	-
TPH Motor Oil (C23-C40)	NS	NS	mg/kg	ND	-	50	ND	-	50	ND	-	50	96	-	-
TPH (C4-C40)	100	1800	mg/kg	ND	-	-	ND	-	-	ND	-	-	112	-	-
VOCs - EPA 8260B															
Benzene	0.025	0.13	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0061	ND	-	0.0063
n-Butylbenzene	3900	3900	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0061	ND	-	0.0063
sec-Butylbenzene	7800	7800	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0061	ND	-	0.0063
Carbon tetrachloride	0.011	NS	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0061	ND	-	0.0063
Chlorobenzene	1.4	NS	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0061	ND	-	0.0063
Ethylbenzene	0.43	2.4	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0061	ND	-	0.0063
4-Isopropyl Toluene	NS	550	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0061	ND	-	0.0063
Isopropylbenzene	NS	1000	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0061	ND	-	0.0063
Naphthalene	0.042	1.5	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0061	ND	-	0.0063
n-Propylbenzene	NS	26	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0061	ND	-	0.0063
Toluene	3.2	550	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0061	ND	-	0.0063
1,2,4-Trimethylbenzene	NS	NS	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0061	ND	-	0.0063
1,3,5-Trimethylbenzene	NS	NS	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0061	ND	-	0.0063
Xylenes (total)	2.1	270	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.0061	ND	-	0.0063
PAHs - EPA 8270C-SIM															
Acenaphthene	12	3300	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	R-05	0.01
Acenaphthylene	6.4	3300	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	R-05	0.01
Fluorene	6	2200	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	R-05	0.01
Naphthalene	0.042	1.5	mg/kg	ND	-	0.01	ND	-	0.01	ND	-	0.01	ND	R-05	0.02
Phenanthrene	7.8	16000	mg/kg	ND	-	0.005	ND	-	0.005	ND	-	0.005	ND	R-05	0.01

Analyte	SBCEHS ILs	Site-Specific Cleanup Goal	Area	Well 109								
			Sample ID	SB33			SB33A			SB34		
			Depth (feet bgs)	4-4.5			3-3.5			5-5.5		
			Date Sampled	43762			43762			43762		
			Units	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL
TPH - EPA 8015M												
TPH Gasoline (C4-C12)	NS	NS	mg/kg	ND	-	0.48	ND	-	0.67	ND	-	0.57
TPH Diesel (C13-C22)	NS	NS	mg/kg	ND	-	10	ND	-	10	17	-	-
TPH Motor Oil (C23-C40)	NS	NS	mg/kg	ND	-	50	ND	-	50	110	-	-
TPH (C4-C40)	100	1800	mg/kg	ND	-	-	ND	-	-	127	-	-
VOCs - EPA 8260B												
Benzene	0.025	0.13	mg/kg	ND	-	0.0048	ND	-	0.0062	ND	-	0.0052
n-Butylbenzene	3900	3900	mg/kg	ND	-	0.0048	ND	-	0.0062	ND	-	0.0052
sec-Butylbenzene	7800	7800	mg/kg	ND	-	0.0048	ND	-	0.0062	ND	-	0.0052
Carbon tetrachloride	0.011	NS	mg/kg	ND	-	0.0048	ND	-	0.0062	ND	-	0.0052
Chlorobenzene	1.4	NS	mg/kg	ND	-	0.0048	ND	-	0.0062	ND	-	0.0052
Ethylbenzene	0.43	2.4	mg/kg	ND	-	0.0048	ND	-	0.0062	ND	-	0.0052
4-Isopropyl Toluene	NS	550	mg/kg	ND	-	0.0048	ND	-	0.0062	ND	-	0.0052
Isopropylbenzene	NS	1000	mg/kg	ND	-	0.0048	ND	-	0.0062	ND	-	0.0052
Naphthalene	0.042	1.5	mg/kg	ND	-	0.0048	ND	-	0.0062	ND	-	0.0052
n-Propylbenzene	NS	26	mg/kg	ND	-	0.0048	ND	-	0.0062	ND	-	0.0052
Toluene	3.2	550	mg/kg	ND	-	0.0048	ND	-	0.0062	ND	-	0.0052
1,2,4-Trimethylbenzene	NS	NS	mg/kg	ND	-	0.0048	ND	-	0.0062	ND	-	0.0052
1,3,5-Trimethylbenzene	NS	NS	mg/kg	ND	-	0.0048	ND	-	0.0062	ND	-	0.0052
Xylenes (total)	2.1	270	mg/kg	ND	-	0.0048	ND	-	0.0062	ND	-	0.0052
PAHs - EPA 8270C-SIM												
Acenaphthene	12	3300	mg/kg	ND	-	0.005	ND	-	0.005	ND	R-05	0.01
Acenaphthylene	6.4	3300	mg/kg	ND	-	0.005	ND	-	0.005	ND	R-05	0.01
Fluorene	6	2200	mg/kg	ND	-	0.005	ND	-	0.005	ND	R-05	0.01
Naphthalene	0.042	1.5	mg/kg	ND	-	0.01	ND	-	0.01	ND	R-05	0.02
Phenanthrene	7.8	16000	mg/kg	ND	-	0.005	ND	-	0.005	ND	R-05	0.01

Table 1
Summary of Soil Sample Analytical Results
California Lease Remediation
Santa Maria, California

Notes:
SBCEHS ILs - Santa Barbara County Environmental Health Services Investigation Levels. When a specific SBCEHS IL is not available, SBCEHS defers to the January 2019 San Francisco Bay Regional Water Quality Control Board's Tier I Environmental Screening Levels for Soils.
Site-specific cleanup goals (SSCG) - Established in *Proposed Cleanup Goals, Oil Processing Area and Adjacent Areas, United California Lease, North Cat Canyon Oilfield*, dated August 14, 2014
RL - Reporting limit
ND - Non-detect
NS - No standard

##	Value exceeds the SBCEHS IL.
##	Value exceeds the Site-Specific Cleanup Goal

Qualifiers:

R-01	The Reporting Limit has been raised to account for matrix interference.
R-05	The sample was diluted due to the presence of high levels of non-target analytes resulting in elevated reporting limits
R-06	The Reporting Limit has been raised to account for the presence of high levels of analytes.
S-01	The surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interference(s).
S-02	The surrogate recovery for this sample cannot be accurately quantified due to interference from cocluting organic compounds present in the sample extract
S-04	The recovery of this surrogate is outside control limits due to samplie dilution required from high analyte concentration and/or matrix interference(s).
D-04	The sample chromatographic pattern does not resemble the fuel standard used for quantiation.
HT-03	This sample was analyzed outside of the EPA recommended holding time per the client's request.
HT-04	This sample was extracted outside of the EPA recommended holding time per the client's request.
HT-06	Original analysis done in hold time. Re-analysis done out of hold time.
CCHI	The CCV for this analyte failed high. Analyte result is ND. Data is not impacted.
O-05	An unknown compound is coeluting with the target analyte. Probably resulting in an artificially high value of the target analyte.

Table 2
Summary of Groundwater Sample Analytical Results
California Lease Remediation
Santa Maria, California

Analyte	SBCEHS ILs	Area	A5-01												B5-02/B5-03			B6-03		
		Sample ID	SB01A-101819			SB03-101619			SB04-101719			SB05-101719			SB12A-111919			SB26-102119		
		Depth (feet bgs)	18			25.5			5			9.5			10			8.5		
		Date Sampled	10/18/2019			10/16/2019			10/17/2019			10/17/2019			11/19/2019			10/21/2019		
		Units	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL	Result	Qualifier	RL
TPH - EPA Method 8015M																				
TPH Gasoline (C4-C12)	0.1	mg/L	ND	-	0.5	0.21	D-04	-	ND	-	0.05	0.093	D-04	-	0.056	-	-	ND	-	0.5
TPH Diesel (C13-C22)	0.1	mg/L	0.59	D-04	-	0.75	D-04	-	0.64	D-04	-	1.3	D-04	-	1.2	-	-	0.21	D-04	-
TPH Motor Oil (C23-C40)	NS	mg/L	0.46	D-04	-	0.26	D-04	-	1.5	D-04	-	0.86	D-04	-	2.2	-	-	0.63	D-04	-
TPH (C4-C40)	0.1	mg/L	1.05	-	-	1.22	-	-	2.14	-	-	2.253	-	-	3.456	-	-	0.84	-	-
VOCs - EPA Method 8260B																				
Benzene	0.00042	mg/L	ND	-	0.0005	0.0011	-	-	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005
n-Butylbenzene	NS	mg/L	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005
sec-Butylbenzene	NS	mg/L	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005
Carbon tetrachloride	0.000061	mg/L	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005
Chlorobenzene	0.025	mg/L	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005
Ethylbenzene	0.0035	mg/L	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005
4-Isopropyl Toluene	NS	mg/L	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005
Isopropylbenzene	NS	mg/L	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005
Naphthalene	0.0002	mg/L	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005
n-Propylbenzene	NS	mg/L	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005
Toluene	0.04	mg/L	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005
1,2,4-Trimethylbenzene	NS	mg/L	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005
1,3,5-Trimethylbenzene	NS	mg/L	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005
Xylenes (total)	0.02	mg/L	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005	ND	-	0.0005
PAHs - EPA Method 8270C-SIM																				
Acenaphthene	0.015	mg/L	ND	R-05	0.00026	ND	-	0.00011	ND	-	0.00011	ND	-	0.00011	ND	R-05	0.000095	ND	-	0.00011
Acenaphthylene	0.015	mg/L	ND	R-05	0.00026	ND	-	0.00011	ND	-	0.00011	ND	-	0.00011	ND	R-05	0.000095	ND	-	0.00011
Fluorene	0.0039	mg/L	ND	R-05	0.00026	ND	-	0.00011	ND	-	0.00011	ND	-	0.00011	ND	R-05	0.000095	ND	-	0.00011
Naphthalene	0.00017	mg/L	ND	R-05	0.00026	ND	-	0.00011	ND	-	0.00011	ND	-	0.00011	ND	R-05	0.000095	ND	-	0.00011
Phenanthrene	0.0046	mg/L	ND	R-05	0.00026	ND	-	0.00011	ND	-	0.00011	ND	-	0.00011	ND	R-05	0.000095	ND	-	0.00011

Notes:
SBCEHS ILs - Santa Barbara County Environmental Health Services Investigation Levels. When a specific SBCEHS IL is not available, SBCEHS defers to the January 2019 San Francisco Bay Regional Water Quality Control Board's Tier I Environmental Screening Levels.
Site-Specific Cleanup Goals were not established for groundwater.
RL - Reporting limit
ND - Non-detect
NS - No standard
Value exceeds the SBCEHS IL.

Qualifiers:
R-05 The sample was diluted due to the presence of high levels of non-target analytes resulting in elevated reporting limits
D-04 The sample chromatographic pattern does not resemble the fuel standard used for quantiation.

APPENDIX B

STANDARD OPERATING PROCEDURE FOR MONITORING WELL INSTALLATION/ WELL DEVELOPMENT

MONITORING WELL INSTALLATION AND DEVELOPMENT PROCEDURES

Monitoring wells are installed to provide access to groundwater for collecting samples, as well as for obtaining water-level and other field data. Because monitoring wells are used to collect samples, it is important that construction materials not interfere with sample quality either by contributing contaminants. Construction materials must be compatible with (i.e., not degraded by) contaminants present in soils or groundwater.

Monitoring wells are potential contaminant migration routes between aquifers or from the surface to the subsurface. Construction procedures and standards must ensure that introduction of contaminants will not occur. Properly installed seals and locking well covers reduce the potential for cross-contamination of monitoring wells.

Equipment needed:

- Drilling or auguring equipment appropriate to site conditions, drilling depth, and other project requirements.
- Drill bits appropriate for the expected soil and rock type(s) to be encountered.
- Sufficient threaded flush-joint riser pipe of an approved material [stainless steel, polyvinyl chloride (PVC), Teflon] in convenient lengths.
- Sufficient threaded flush-joint slotted screen of an approved material (stainless steel, PVC, Teflon) to meet design criteria.
- Properly sized and washed filter pack material (quartz sand) in sufficient volume to meet well design criteria.
- Bentonite.
- Photoionization detector.
- Protective casing with locking cap.
- PPE as required.
- Weighted measuring tape.

The following steps will be followed when installing monitor wells:

1. Advance the borehole to the required depth.

2. Make up the screen for installation. The casing and screen must be decontaminated.

3. Lower the casing string into the drill casing.

4. Install the filter pack. Six inches or more of filter pack material should be spotted at the bottom of the hole, under the screen. Filter pack will be installed to 2 to 3 feet above the top of the screen.

5. Check the depth to the top of the filter pack with a weighted tape.

6. Feed bentonite onto the top of the filter pack.

7. Pure bentonite grout will be used as the annular seal, grout will be mechanically mixed with the appropriate amount of water.

8. Finish the concrete pad so that it slopes away from the wellhead. If weather conditions warrant, cover the concrete until cured. Lock the well cover.

9. Record the appropriate construction/completion information in the field logbook and on the appropriate monitoring well installation.

10. The well identification should be marked on the protective casing and PVC cap.

WELL DEVELOPMENT

Monitoring wells are developed to settle and remove fines from the filter pack. Wells should not be developed for 24 hours after completion when a bentonite grout is used to seal the annular space. Wells are purged immediately before groundwater sampling to remove stagnant water and a sample representative of groundwater conditions. Wells should be sampled within 3 hours of purging (optimum) to 24 hours after purging (maximum, for low recharge conditions).

Equipment needed:

- Pump, pump tubing, or bailer and rope or wire line.
- Water-level meter.
- Temperature, conductivity, DO, ORP, TDS, turbidity, and pH meters.
- Personnel protective equipment as specified in the site-specific HASP.
- Decontamination supplies.
- Disposal drums, if required.
- Photoionization Detector

Procedures. The following steps will be followed when developing wells:

1. Put on personnel protective clothing and equipment as specified in the site-specific HASP.

2. Open and check the condition of the wellhead, including the condition of the surveyed reference mark, if any. Use photoionization detector at wellhead to determine the presence of VOCs (if applicable).

3. Determine the depth to static water level and depth to bottom of the casing.

4. Prepare the necessary equipment for developing the well. There are a number of techniques that can be used to develop a well. Some of the more common methods are bailing and low-flow pumping.

5. Continue well development until produced water is clear and free of suspended solids.

6. Remove the pump assembly or bailers from the well, decontaminate, and cleanup the site.

7. Lock the well cover before leaving. Dispose of produced water as required by the project work plan.

SOP #08 – MONITORING WELL DEVELOPMENT

INTRODUCTION

Monitoring wells are integral to assessing groundwater conditions. View individually or as part of a well field, monitoring wells provide important data defining the quantity and quality of a groundwater aquifer. However, to provide this critical data they need to be installed and then developed correctly. Well development serves a dual purpose: it removes the residual materials remaining in the monitoring well after construction and reestablishes the natural hydraulic flow conditions of the formation that has been disturbed by the well construction. Ultimately through well development, the monitoring well becomes a transparent window into the aquifer such that the groundwater samples collected are truly representative of the quality of groundwater of the aquifer at that location.

SCOPE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to provide guidance and a methodology for Langan staff to follow when undertaking well development. As the field staffer, you may be called upon to either supervise the drilling subcontractor in meeting the well development task outline in their contract or directly charged to develop groundwater monitoring wells. Site-specific conditions may warrant modifying field practices performed in accordance with this SOP. Therefore, guidance provided in this SOP is presented in terms of general steps and strategies that should be applied when developing a well.

Developing monitoring wells follows procedures devised for the petroleum and potable well drilling industries. Both of these industries have a multitude of tools they can use for well development. However, the application envisioned in this SOP only discusses surging and pumping (overpumping) which applies directly to the development of monitoring wells typically encountered by the Langan environmental group in New York City; specifically, relatively shallow monitoring well on the order of 20 feet deep with saturated screen thicknesses between 5 and 7 feet[1].

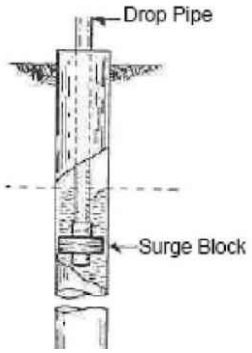
While all monitoring wells benefit from some degree of well development (removing of fines within the well itself), there isn't a large discussion in the literature of developing narrow gauge wells (less than 2 inches inside diameter). This is due in part to the origins of well development being in the petroleum and potable well drilling industries where well diameters are on the order of more than 4 inches wide and having saturated zones thicknesses extending for tens of feet. It is also due to the dearth of both the equipment and experience in developing narrow gauge wells. The smallest commercially available surge blocks are on the order of slightly less than 2 inches in diameter and there are limited options for pumping one inch diameter wells.

Surging a well entails forcing groundwater from the monitoring well across the screen back into the well pack[2] through the downstroke of the surge block and then pulling water back into the monitoring well in

[1] In selected areas of Brooklyn, depth to the groundwater table is on the order of 130 feet; nevertheless the proposed method of well development is applicable but will need to be done with a driller provided wireline rig.
[2] Sand filled zone between the well screen and the borehole, this space is commonly referred to as the well annulus and when filled with sand, the sand packed annulus is commonly referred to as the well pack.

the upstroke of the surge block. Ideally the diameter of the surge block (pictured below, left) should not be more than a ¼ inch less than the inside diameter of the monitoring well.





The surging disrupts sand bridges (voids created because the sand settles unevenly) facilitating a more uniformly compacted well pack. Surging also pull fines into the well (upstroke) which can subsequently be pumped from the well itself. On the cartoon above (right), the surge block is connected to a tremie pipe ("drop pipe") running to the surface where the driller can manually or by using the wireline on a rig, push down and pull up on the surge block.

Surging a well without a driller uses a surge block (left picture below) coupled to a foot valve (pictured on the right) connected to the surface through semi-rigid high density polyethylene tubing (HDPT). Since there is no overwork rig, surging the well is done by pulling up and pushing down on the tubing (either manually or using an inertial type pump).





Pumping (overpumping) removes sediments that have accumulated in the monitoring well. Overpumping is defined as a rate greatly in excess of what would normally be assigned for collecting groundwater samples for laboratory analysis. Recall from the Low Flow Groundwater Sampling SOP, low flow groundwater sampling attempts to maintain the groundwater level in the well within about 1/3 of a foot of the undisturbed groundwater table. Overpumping by definition is drawdowns in excess of this, the goal of which is to induce a faster rate of groundwater inflow through the screen thereby driving fines out of the well pack and clearing the screen itself.

The timing for well development and subsequent sampling is not well documented. Rather there are "rules of thumb" that have arisen within the drilling industry:

- There are a couple of items to consider when determining a wait period:

    - Wells completed in the overburden or fill with direct push technologies can be developed immediately after completion;
    - Wells completed in the clay rich unconsolidated stratigraphy using a hollow stem auger (HSA) or mud rotary may require a rest period to allow the clays some degree of relaxation before development; and
    - Wells completed in boreholes advanced using air (rotary or percussion) should be allowed to rest up to a week to allow entrapped air to be absorb into the groundwater or escape through natural buoyancy.
- Groundwater sampling should be initiated post development after a wait period of 1 to 14[3] days.

As stated earlier, developing groundwater monitoring wells is influenced by site specific conditions. Successfully developing a well can depend on how one defines development, a topic that needs to be clearly discussed and agree upon with the project manager (PM). Successfully developed monitoring wells can be defined as:

- Pumped groundwater discharge is consistently visually clear;
- Pumped groundwater discharge is demonstrably stable with respect to some or all of the water quality parameters defined by the Low Flow Groundwater Sampling SOP; or
- Achieving a certain volume of groundwater discharge.

In certain environments, groundwater is naturally stained by organic or inorganic dyes. Conventional well packing is too coarse to filter natural dye out of the groundwater. Groundwater pumped during development remains tainted or too turbid to achieve the clarity defined by conventional well development criteria. In such cases, groundwater development may be defined by either a subset of stable water quality parameters or by purged volume alone.

REQUIREMENTS FROM CONTRACTORS AND SUPPLIERS

Well development requires that materials and services be provided by outside contractors and suppliers. Conventional shallow wells can be developed without the assistance of a well driller. An exception is for deep monitoring wells where a hoist is necessary to manipulate the long tremie tube. A drilling contractor may be convenient if well development is concurrent with well installation. This should be discussed with the PM in the planning stage.

An environmental equipment rental company is required to provide the necessary equipment and disposables for Langan staff to surge and overpump the monitoring well[4]. They will also provide the water quality measuring devices if such data is required by the scope of work. Groundwater sampling is not envisioned as a part of well development; therefore, there is no laboratory requirement. This section outlines the requirements from the drillers (if used) and the environmental equipment rental company.

From the driller:
The drilling contractor can implement more traditional well development (2 inches inside diameter or greater) because they either have in their inventory the correct diameter surge block and tremie tube or have easy access to these items. Since tremie tubes are rigid, there is no need for stiff tubing to insure a sufficient downward thrust of the surge block. On the downside, unless instructed otherwise they will develop the well with worn downhole equipment (surge block, tremie tube, and plastic submersible

[3] NJDEP Field Sampling Procedures Manual, (August 2005), page 136
[4] Langan NYC uses Pine Environmental Services (Pine) for nearly all of its field environmental equipment and disposable needs

pump). These tools cannot be decontaminated and should be used with caution. Perhaps their greatest drawback is that most New York City environmental drillers use a version of the 12 volt plastic Monsoon pumps (Cyclone®, pictured below).



In addition to being plastic and nearly impossible to decontaminate, this type of pump may not be capable of creating the magnitude of drawdown sufficient to meet the overpumping requirements:

- The pump is rated at a maximum pumping rate of 1 gallon per minute (gpm) at 10 feet (depth to water [DTW]) which decreases to 0.35 gpm at 20 feet DTW; and
- Is not recommended by most resellers for well development due to their increased inefficiency when applied to wells with highly turbid water.

If the driller is contracted to develop monitoring wells, discuss with the PM whether the drillers are to use disposable equipment (or stainless steel equipment that can be decontaminated) for each well to be developed. In addition, have the drillers bring to the site the required pump (discussed below) or indicate to them that Langan will provide the pumping equipment.

From the environmental equipment rental company:

- Pump – Generally, there are three styles of pumps that can be used for well development: 1) vacuum pump (Peristaltic); 2) submersible (Monsoon, Grundfos, or Geotech); or 3) inertial (Waterra™ Hydro Lift). As a rule of thumb, pumps are not ideal for developing monitoring wells with limited recharge.[5]
    - Vacuum Pumps – The standard vacuum pump used in the environmental industry is the peristaltic pump. In general, the rental company will deliver either the Geotech Easy Load II or the Solinst 410 models (shown below left and right respectively).





The advantage of the peristaltic pump is its simple controls and ease of set up and use in the field. In addition, the pump itself does not come in contact with groundwater so there is no requirement to decontaminate. The Geotech requires 1 foot of disposable silicon tubing having an outside diameter (OD) of 3/8-inch and an inside diameter (ID) of 3/16-inch. The Solinst peristaltic pump requires 1.5 feet of silicon tubing have an OD of 5/8-inch and an ID of 3/8-inch. A new length of silicon tubing is required for each monitoring well to be developed.

The disadvantage of a peristaltic pump is its rather low pumping rate. The peristaltic pumps optimum pumping rate is between 1 and 3.5 Liters per minute (L/m) (equivalent

[5] For low recharge monitoring wells, disposable bailer to evacuate fines from the well remains an option.

to 0.26 and 0.94 gallons per minute [gpm], respectively). While peristaltic pumps are defined as constant rate, maintaining a constant discharge rate at increasing depth requires increased the rotational rate. If the groundwater is turbid, the high suspended sediment load adversely affects the silicon tubing flexibility thereby decreasing the sustained flow rate. In addition, the intake depth for the peristaltic pump is limited. Manufacturer suggests that the maximum depth ranges from 27 feet to 33 feet at sea level.

Unfortunately, there are few options for developing narrow gauged monitoring wells (1-inch diameter or less) so peristaltic pumps are generally considered the default for developing these wells. If using a peristaltic pump, order low density polyethylene tubing (LDPT). Since there is no groundwater sampled to be collected and analyzed, you need not use the more expensive LDPT Teflon™-lined tubing.

If using a Geotech peristaltic pump, order either 3/8-inch OD by ¼-inch ID LDPT or ¼-inch OD by 0.17-inch ID LDPT. If using the Solinst peristaltic pump, order ½-inch OD by 3/8-inch ID LDPT.

- Submersible Pumps – The submersible pump has been the standard for developing monitoring wells having inside diameters greater than 2 inches. While they have the capacity to initially pump at rates to meet the goal of overpumping, submersible pumps do have significant disadvantages which decrease their applicability to well development and indirectly increase the project cost to develop the monitoring wells.
    - As stated above, plastic submersible pumps are questionable to use because they usually have low discharge rates and cannot be decontaminated;
    - Pumping rates are highly dependent on groundwater head. As drawdown increases, pumping rates drop relatively quickly.
    - Most submersible pumps must be cooled by water in the monitoring well. When used to overpump the well there is the tendency for for the electric motors to burn out. The time cost to repair or change out a pump can be significant. This can be especially prevalent in turbid groundwater.
    - Sediments on the bottom of the well can clog or even jam the pump's internal impellor assembly. Again, the time to clean or repair the pump can be significant.
- Inertial Pumps – The inertial pump (Waterra™, photographed below) is ideally suited for removing both suspended and settled sediments in a monitoring well. In addition, they can be easily equipped to develop narrow gauged wells (1-inch diameter).



    - The pump requires a foot valve (shown below and equipped with a surge block) which essentially serves as a check valve connected to high density polyethylene tubing (HDPT).[6]

[6] For 1-inch ID wells, use the stainless steel foot valve #GW14008 without a surge block



On the downward thrust, the check valve opens allowing water to be pushed into the tubing while on the upward thrust, the check valve closes securing the water in place. Repeating the downward thrust force more water into the tubing pushing the water column through the tubing to the surface. Under most suspended sediment conditions the check valve will successfully close.

- The cycling up and down movement keeps sediments in suspension.
- When used with a surge block the combination can surge and pump the well simultaneously.

The disadvantages of the Waterra pumps are that they run on alternating current requiring either an outlet or generator and that they are also relatively heavy and clumsy to position over a well. Although not usually a problem for job sites in New York City, the Waterra set-up is not ideal for deep wells as the long HDPT, by virtue of its length, will retain too much flexible to efficiently pump the well.

- High Density Polyethylene Tubing (HDPT) – High density insures a suitable level of rigidity for shallow wells necessary for pushing the tubing down during the downstroke of well development. The diameter selected is based on anticipated volume of flow and the diameter of the well. Larger diameters will deliver higher flow rates but may not be suitable for anticipated low recharge wells.
- Check Valves – Constructed of either acetal thermoplastic or stainless steel. The thermoplastic valves cannot be decontaminated and are designed for single use when used in contaminated wells. The stainless steel valves can be decontaminated but require additional effort to properly decontaminate the interior portion housing the check valve mechanism. They are sized to fit the tubing selected.
- Surge Blocks – Constructed of acetal thermoplastic, the check valve fits snuggly into the center opening. However, their thermoplastic construction limits them to single use in contaminated wells.
- 5-gallon plastic buckets, at a minimum order six (6).
    - Three (3) for collecting and transporting development groundwater to drums; and
    - Three (3) for proper decontamination of field equipment.
- Distilled Water for Decontamination – Usually five (5) 2.5-gallon jugs per day.
- Decontamination cleaning agent –Alconox® is usually delivered in 4- pound (1/2-gallon) cartons, sufficient to make 52 gallons of cleaner. Check to see if there is Alconox in the environmental closet before ordering.
- 55-gallon drums – Generally, a 2-inch ID monitoring well will meet the development criteria after overpumping approximately 10 gallons. Then again, a poorly completed well or one completed in an unconsolidated fine stratigraphy may not meet the development criteria even after overpumping 25 gallons. Order drums accordingly.
- Interface probe
- PID – MiniRAE 3000 (Confirm with PM whether head space surveying is necessary)
- Multi-Parameter Water Quality Monitoring System (YSI, Horiba or equivalent) - Specify to the environmental rental company that this tool should be equipped with sensors for pH,

temperature, turbidity, dissolved oxygen, specific conductance, and ORP/Eh. (Confirm with the PM whether one is required for determining stability.)
- Bailers – Monitoring wells with poor recharge may require manually bailing.
- Nylon String – String is necessary when using bailers.

EQUIPMENT AND OTHER ITEMS NECESSARY TO BRING TO THE SITE:

- Site-specific HASP
- Site Map with well locations
- Personal Protection Equipment
    - Hard Hat
    - Safety Glasses
    - Safety Shoes
    - Reflective Vest
    - Latex/Nitrile gloves
    - Work gloves for handling drums
- Project Dedicated Field Book, if one exists
- Personal field book (if not using a project-dedicated field book)
- 9/16th ratchet for removing bolts for flush mounted road boxes
- 15/16th wrench for loosing bolt on 55-gallon drum
- Field equipment:
    - Leatherman® type multitool, or
        - Sharp Knife
        - Flat Head Screwdriver
        - Phillips Head Screwdriver
        - Pliers
    - Small hammer
- Drum labels (green Non-Hazardous) and indelible-ink pens
- Alconox (check the environmental closet)
- Clean rags for washing equipment during decontamination (environmental closet)
- Large diameter funnel for controlled pours of development water into 55-gallon drums (you can convert the 2.5 gallon DI water containers to a funnel, refer to the appendix at the end of this document).
- Absorbent Pads in the event product is encountered (environmental closet).
- Plastic sheeting (environmental closet or purchase a drop sheet from a local hardware store)
- Garbage bags (environmental closet)
- Camera

ON-SITE ACTIVITIES:

On-Site Preparation:
- Sign the HASP; have the sub-contractor sign the HASP if they are hired by Langan.
- Turn on and calibrate the MultiRAE PID and the Multi-Parameter Water Quality Monitoring tool; record calibration data in the field book.

Set Up Equipment Decontamination Wash:
- Prepare the three bucket decontamination station: wash, rinse and final rinse. If development does not include a submersible pump and all downhole equipment is disposable, you will only need to set up a wash and rinse bucket for the interface probe.

  - Prepare a 3±-gallon solution of decontamination fluid in a 5-gallon bucket. Alconox is concentrated, use the minimum amount in accordance with the manufacturer's instructions and mix with the DI water provided by the equipment supplier.
  - Pour 3± DI water into a second 5-gallon bucket "Rinse Bucket"
  - Pour 3± DI water into a third 5-gallon bucket "Final Rinse Bucket"
- Immerse the interface probe and pump into decontamination solution. Use a clean rag to wipe down the equipment with decontamination solution.
- The submersible pump must pump decontamination fluid through its interior during decontamination. Connect the pump to the controller and the controller to the battery (REMEMBER **RED** IS **POSITIVE** AND **BLACK** IS **NEGATIVE**) and start the pump at a low setting. Allow decontamination fluid to circulate through the pump for a minute or so.
- Complete a rinse and final rinse using the appropriately identified buckets. Again you must run the both solutions through the submersible pump.
- Place decontaminated equipment on a clean sheet of plastic.

Gauge Depth to Water:

- Remove the covers from each well box and inspect the well box condition. Note in the field book the road box's overall condition, whether it was correctly bolted down when you arrived and whether it had debris or water collecting around the well riser. Remove any debris or water that may slip into the well prior to removing the well cap. Have an absorbent pad handy (photographed below).



- If headspace data is required, remove the well cap, insert PID tip into well and record PID reading. Note that the PID reading might drift somewhat because of the well's interior high humidity.
- Insert interface probe and record depth to water. Depth to water should be recorded from the survey mark at top of casing. If the well has not been surveyed, record depth to water from the top of casing at the north direction point of the casing. Mark that point on the casing and record the depth in the field book. Whenever possible, record depth to water for all wells specified in the work plan for gauging prior to developing.

Surging the Well:

If the drillers are surging the well, they should attach a surge block to tremie pipe; otherwise:

- Couple the surge block and check valve assembly. Connect the surge valve assembly to the HDPT and insert into the well.
- The following is the recommended procedure for surging the well:
  - If the thickness of the saturated zone is less than 5 feet, gently lower and raise the surge block through the saturated zone.
  - If the thickness of the saturated zone is greater than 10 feet, gently lower and raise the surge valve through 5 feet intervals starting on from the top segment of the saturated zone working your way to the bottom.
  - You will notice a decrease in the resistance to the downward and upward motion of the surge block. As the resistance decreases, increase the frequency of the surging motion.

If developing in sections, move down to the next section after the resistance to surging minimizes to a constant.

Pumping the Well:

- If using the surge block coupled with the check valve proceed to the subsection below for using the Waterra™ pump.
- Submersible Pump
    - Attached tubing to the hose barb at the top of the pump.
    - Carefully lower pump into well. When lowering pump, feed the tubing and electrical line as a unit. Do not handle either separately as you might disconnect the tubing or short the electrical line, see below:



    - Set pump approximately 2-feet off bottom. Secure pump.
    - Cut the tubing about 3 feet above the road box.
- Peristaltic Pump
    - Insert the silicon tubing into the roller pump driver (refer to manufacturer's instructions).
    - Lower the tubing to within 2 feet of the wells total depth.
    - Secure tubing using twist ties to the rabbit ears on the well box or other secure surface item. Cut the tubing about 3 feet above grade. Clear burrs from the cut tubing end and secure to one side of the silicon tubing you connect to the pump in the previous step.
- Waterra™ Pump
  Having used the surge block-check valve assembly to surge the well, attach the HDPT to the lever of the Waterra™ pump. Refer to the owner's manual for instructions.
- Initiate Pumping
    - Peristaltic and Submersible Pump
        - Connect either pump to their battery source. The submersible pump has a control box that links to the 12 volt marine battery. When connecting the 12 volt battery to the control box connect positive to positive and negative to negative (recall: **RED** is **POSITIVE** and **BLACK** is **NEGATIVE)**
        - Check that the control box reads zero volts and then connect the control box to the pump.
        - The peristaltic pump uses a cigarette type junction for connecting the battery to the pump. Inspect the connectors to see that they are dry and free of debris and then join the connectors.
        - The submersible pump is controlled by increasing or decreasing voltage. The peristaltic pump has a dial that controls both the rotation direction and speed of the rollers.
    - The Waterra™ pump connects directly to the generator (or standard 120 volt outlet). Before connecting to the generator, start the generator following the manufacturer's instructions. Prior to connecting the Waterra™ power cord to the generator, check that

the pump power switch is off, and then plug into the generator's standard 120 volt outlet.

- Adjust the pump controls to induce significant drawdown in the well (approximately ¼ the saturated depth). If using a submersible pump, it is recommended that you chase the falling water level with the interface probe. Do not allow the water level to fall within a foot of the submersible pump to prevent overheating. When there is a layer of sediments on the bottom of the well, the sediments need to be agitated to disperse into the water column to avoid blocking the pump intake or impellor. Too high a turbidity can cause the pump to overheat and burn out, so agitate in short discrete intervals.
- Pump the well until the discharge water runs clear.
- Record total water volume pumped from monitoring well during each cycle of development.

Repeat Surging and Pumping the Well:

- Pull the submersible or peristaltic pump and reinsert the HDPT/surge block into the well and repeat the surging motion.
- This process of surging and pumping should continue until initial water quality after surging is clear.

Collect Water Quality Data (If Required):

- If collecting water quality data is required by the scope of work, after the final surging cycle is completed, collect the pump discharge into the calibration cup of the Water Quality Indicator.
- Insert water quality tool into the calibration cup and allow the temperature to equalize.
- Record data

Proceed to Next Monitoring Well to be Develop

- Upon completing well development reinstall well cap. Be sure that the lip onto which the road box lid sits is clean of dirt and debris. Place the lid on the road box and bolt it to hand tight level. Please do not torque it down as this will make the next person's job that much harder and will damage the rabbit ears. Prior to developing the next monitoring well, the pump, interface probe and stainless steel check valve (if used) must be decontaminated following the procedure specified earlier.
- Repeat set up, well development and decontamination procedures for each monitoring well development location.

Well Completion Summary

This SOP incorporates a modified Well Construction Log Form titled Well Completion Summary (WCS). In addition to the information required on the well completion form, the WCS has a section summarizing the well development completed. The form in located on the server under Well Completion Summary. The first plate is the form and the second plate is a brief set of instructions. Complete a WCS for each well developed.

Post Well Development:

- All used tubing, gloves and assorted disposables should be packaged in doubled lined plastic garbage bags and disposed of in the nearest sanitary waste receptacle.
- Seal drums and check that all drums are properly labeled
- End of Day Actions
    - Complete the daily report with attached site photographs and forward to PM.
    - Transfer all environmental rental equipment back to office, log into return inventory and email environmental rental agency to end contract and notify of pick-up. Unopened materials obtained from environmental rental agency should be returned to them, log in each and note this on email. Your account will be credited.
    - Scan field notes to the project folder

APPENDIX

Create a Funnel Using the 2.5 gallon DI Water Container

All development purge water needs to be transported to a 55-gallon drum and the drum must be labeled with a green Non-Hazardous Waste label in accordance with the Drum Label SOP. If the 55-gallon drum has a bung fitting on the top lid, it is best to pour water into the bung opening. You can create a funnel from the Distilled/DI water box provided by the environmental rental company.

1) Open the bottom of the DI cardboard container.
2) Cut off the bottom of the plastic liner.
3) Fold the flabs from the bottom of the DI container inside to hold the sides of the plastic liner in place.
4) Place the spout opening of the DI container (the top) on the bund opening of the drum and pour the development purge water into the box opening.
5)



REFERENCES AND ADDITIONAL MATERIALS

A list of links discussed in this SOP and links for owner's manuals for equipment specified is provided below:

MultiRAE Owner's Manual

The RAE PID Handbook

Geotech Easy Load II Peristaltic Pump Manual

Solinst 410 Peristaltic Pump Manual

U-50 Manual – Water Quality Meter Probe

Waterra™ Hydrolift Manual

Waterra™ Hydrolift Tear Sheet

Waterra™ Lever Pump Tear Sheet

Well Development Checklist

Drum Label SOP

SOP #12 – LOW FLOW GROUNDWATER SAMPLING

INTRODUCTION

Groundwater sample collection can be a source of analyte concentration variability through differences in sample personnel and their individual sampling procedures, the equipment used, and variability in ambient subsurface and environmental conditions. Properly trained sampling personnel and an awareness of the proper sampling collection procedures assures a high level of confidence in the analytical data. The purpose of this standard operating procedure (SOP) is to provide a low flow groundwater sample methodology which minimizes the amount of impact the purging process has on the groundwater chemistry during sample collection and to minimize the volume of water that is being purged and disposed. Low flow purging and sampling (LFPS) refers to groundwater sampling method that reduces the velocity with which water enters the pump intake from the surrounding formation through the well screen.

SCOPE AND APPLICATION

This SOP is applicable to the general framework for collecting groundwater samples that are representative of the saturated zone ambient conditions. This SOP emphasizes the need to minimize stress by low water-level drawdowns (<0.33 feet [U.S. EPA, Region 9, undated]) and low pumping rates (less than 1/2 liter per minute [U.S. EPA Region 9, undated]). However, site-specific conditions may warrant modifying field practices performed in accordance with this SOP. Therefore, guidance provided in this SOP is presented in terms of general steps and strategies that should be applied when sampling a well.

This SOP does not address the collection of samples from wells containing light or dense non-aqueous phase liquids (LNAPLS and DNAPLs, respectively). If LNAPL or DNAPL is observed or suspected in the monitoring well, contact the Project Manager (PM) for further instructions.

Water quality indicator parameters and water levels must be measured during purging. Water quality parameters include specific electrical conductance, dissolved oxygen, turbidity, oxidation-reduction potential (ORP), pH, and temperature. Stabilization of these water quality parameters as well as monitoring well level is a prerequisite to sample collection. Stability is defined by an observed minimum variance in these parameters during three consecutive reading. The stabilization criteria are outlined below. It should be noted that pH and temperature are generally insensitive as purging parameters and ORP may not always be appropriate stabilization parameter and will depend on site-specific conditions. As such, if unable to achieve the stability criteria after an hour of purging, contact the PM for further instructions.

REQUIREMENTS FROM CONTRACTORS AND SUPPLIERS

LFPS is the method of choice for sampling both permanent and temporary monitoring wells. When applied to permanent monitoring wells, the sampling event post-dates well completion and development; therefore, there may not be a drilling contractor on-site. Temporary wells are sampled while the driller is on-site as they are responsible to insure the temporary well is properly plugged and abandoned after

sampling[1]. While the driller may provide you with 55-gallon drums for disposal, sampling equipment and sample bottleware require the services of an environmental equipment provider and a certified laboratory.

From the driller:
If sampling temporary wells, the driller will generally set a 1-inch inside diameter screen in the saturated zone. Unless specified by the scope of work, the driller will not add sand to create a well pack nor will the driller develop the well. If the driller is on-site, they should be contracted to provide the drums for collecting purge water.

From the environmental equipment rental company:
The environmental rental equipment company (i.e. Pine Environmental Services [Pine]) will provide both the equipment and the disposable materials you will require to complete low flow groundwater sampling activities. They will drop off the equipment at the site but you will be required to bring the equipment back to the office and notify them the equipment is ready to return. When contacting the environmental rental equipment company, have ready: Site Name and full address for delivery; on-site contact name and cell number for the driver to call; and expected time of delivery (give a ½ hour window) (SOP3). The following is a discussion of the equipment to consider when ordering:

- Pump – A rule of thumb is to use a single type of pump for all the monitoring wells to be sampled during a sampling event. This will standardize the pump's influence on the groundwater data results. Generally, there are four styles of pumps that can be used for low flow groundwater sampling: Vacuum pump (peristaltic); submersible (Monsoon™, Grundfos™, or Geotech™); bladder pumps (SamplePro™); or inertial pumps (Waterra™ Hydro Lift).
    - Bladder Pump – Suitable for wells of any depth and diameter but ideal for sampling 1-inch diameter temporary wells. The bladder pump requires a compressor/controller, battery, bladder kits (one per monitoring well) and bonded dual tubing.
    - Vacuum Pumps – The standard vacuum pump used in the environmental industry is the peristaltic pump. In general, the rental company will deliver either the Geotech™ Easy Load II or the Solinst™ 410 models (shown below left and right respectively).





The advantage of the peristaltic pump is its simple controls and ease of set up and use in the field. In addition, the pump itself does not come in contact with groundwater so there is no requirement to decontaminate. The Geotech™ requires 1 foot of disposable silicon tubing having an outside diameter (OD) of 3/8-inch and an inside diameter (ID) of 3/16-inch. The Solinst™ peristaltic pump requires 1.5 feet of silicon tubing having an OD of 5/8-inch and an ID of 3/8-inch. A new length of silicon tubing is required for each monitoring well to be sampled.

The disadvantage of vacuum pumps is that their use may unintentionally alter dissolved phase volatile organic carbon (VOCs) concentrations. In addition, the depth to water for the peristaltic pump is limited. Manufacturer suggests that the maximum depth ranges from 27 feet to 33 feet at sea level. At greater depths approaching the maximum

[1] If sampling a temporary well, coordinate with the drillers to insure they are available to plug and abandon the wells within the timeframe required by the regulatory authority.

operational depth to water, the pump needs to run faster to maintain even a minimum flow rate, when this occurs, groundwater jets from the discharge tubing increasing the likelihood of altering dissolved-phase VOCs concentrations.

If using a Geotech™ peristaltic pump, order either 3/8-inch OD by ¼-inch ID Teflon™ lined low density polyethylene tubing (LDPT) or ¼-inch OD by 0.17-inch ID Teflon™ lined LDPT. If using the Solinst™ peristaltic pump, order ½-inch OD by 3/8-inch ID Teflon™ LDPT.

- Submersible Pumps – The submersible pump has been the standard for sampling monitoring wells having inside diameters greater than 2 inches. But they do have their drawbacks:
  - Plastic submersible pumps should not be used because they cannot be decontaminated;
  - Pumping rates are highly dependent on groundwater head. As drawdown increases, pumping rates drop relatively quickly.
  - Most submersible pumps must be cooled by water in the monitoring well. In monitoring wells with very low recharge, the pump motors tend to overheat and burn out. The time cost to repair or change out a pump can be significant.



  - Sediments on the bottom of the well can clog or even jam the pump's internal impellor assembly.
- Inertial Pumps – The inertial pump (Waterra™, photographed below) are not appropriate for low flow sampling because their cyclic method of pumping water agitates the water column potentially altering the concentration of dissolved-phase VOCs. However, they are ideal for deep wells or open bedrock wells where initial purge water is expected to have a high suspended load that can possible damage a submersible pump. They are also a good alternative to submersible wells when sampling wells of questionable mechanical integrity. An inertial pump requires a direct link to a 120-volt 60-cyle outlet. Consider how you are going to power the unit (wall outlet or generator) and the distance between to power source. In addition, Langan Health and Safety policy requires that the electrical source be equipped with a Ground Fault Circuit Interrupter.



- Interface Probe – For 1-inch wells, you will need to rent a narrow gauge water meter (Heron Skinny Dipper or equivalent) to monitor depth to water. The traditional interface probe is too wide for a 1 inch diameter well when simultaneously low flow sampling. Unfortunately, the narrow gauge water meters do not detect free product so if you suspect product in any on-site monitoring well, you should rent both types of probes.



- Photoionization Detector (PID) – MiniRAE 3000
- Multi-Parameter Water Quality Monitoring System and Flow-Through Cell (YSI, Horiba or equivalent) - Specify to the supplier that this tool should be equipped with sensors for pH, temperature, turbidity, dissolved oxygen, specific conductance, and ORP/Eh.
- Polyethylene tubing – Unless Teflon™ tubing is requested, Teflon™-lined polyethylene tubing is suitable for LFPS, please discuss with the project manager prior to ordering. When ordering, provide the environmental equipment rental company the number of wells to be sampled and their presumed depths. This will insure you have the proper length of tubing. Special considerations based on pumping mechanism to be used:
    - Bladder pumps require specialized bonded dual tubing (shown below):



    - Peristaltic pumps require a length of silicon tubing for each well to be samples (see discussion above) in addition to the Teflon™-lined LDPT to lower into the well.
    - Submersible pumps require only the Teflon™-lined LDPT.
    - Inertial pumps require Teflon™-lined high density polyethylene tubing (HDPT) and a check valve. Check valves can be either polyethylene or stainless steel. Polyethylene check valves are less expensive but are single well use only. Stainless steel check valves are considerably more expensive but can be reused if properly decontaminated.
- 5-gallon plastic buckets, at a minimum order six (6).
    - Three (3) for collecting purge groundwater and carrying purge water to drums for disposal.
    - Three (3) for proper decontamination of field equipment including interface probe and the submersible or bladder pump (or check valve, if using the inertial pump).
- Distilled Water for decontamination – Usually six (6) 2.5 gallon jugs per day of sampling.
- Decontamination cleaning agent –Alconox® is usually delivered in 4 pound (1/2 gallon) cartons, sufficient to make 52 gallons of cleaner. Check to see if there is Alconox® in the environmental closet before ordering.
- 55-gallon drums – Generally, a 2-inch ID monitoring well can achieve stability after pumping approximately 10 gallons. Then again, a poorly completed or developed well or one completed in an unconsolidated fine stratigraphy may not meet the stability criteria even after pumping 15 or more gallons. Order drums accordingly.
- Bailers – Monitoring wells with poor recharge may require manually sampling.
- Nylon String – String is necessary when using bailers. In addition, tie off the bladder pump with nylon string before lowering it into the monitoring wells. Pulling a bladder pump out of a well by the tubing is unreliable.

- Field Filters for Dissolved Phase Metals – In general, groundwater is sampled for total and dissolved-phase metals. When sampling for dissolved-phase metals, this SOP requires field filtering. A field filter is order from the environmental equipment supplier and not the laboratory, order one for each monitoring well to be sampled.

From the selected laboratory contractor:
Low flow groundwater samples must be submitted to an accredited laboratory for analysis. Usually, the lab has been previously selected as part of the project bidding process. Your responsibility is to contact the lab and provide them with the number and type of groundwater analysis that will be completed. When contacting the lab have ready: Site Name and full address for delivery; on-site contact name and cell number for the driver to call; the expected time of delivery (give a ½ hour window); and the frequency, time and location for sample pick-up. In addition, you will need to order from the lab the number and type of quality assurance quality control samples (SOP4).

EQUIPMENT AND OTHER ITEMS NECESSARY TO BRING TO THE SITE:

- Site-specific health and safety plan (HASP)
- Site Map with well locations
- Scope of Work spreadsheet outlining monitoring wells to be gauged and sampled
- Personal Protection Equipment
    - Hard Hat
    - Safety Glasses
    - Safety Shoes
    - Reflective Vest
    - Latex/Nitrile gloves
    - Work gloves for handling drums
- Project Dedicated Field Book, if one exists
- Personal field book (if not using a project-dedicated field book)
- 9/16th ratchet for removing bolts for flush mounted road boxes
- 15/16th wrench for loosing bolt on 55-gallon drum
- Field equipment:
    - Leatherman® type multitool, or
        - Sharp Knife
        - Flat Head Screwdriver
        - Phillips Head Screwdriver
        - Pliers
    - Small hammer
    - Small hand brush
- Drum labels (green Non-Hazardous) and indelible-ink pens
- Alconox® if not being directly ordered from the equipment provider (environmental closet)
- Clean rags for cleaning or wiping equipment during decontamination (environmental closet)
- Large diameter funnel for controlled pours of purge water into 55-gallon drums (you can convert the 2.5 gallon DI water containers to a funnel, refer to the appendix at the end of this document).
- Absorbent Pads in the event product is encountered (environmental closet).
- 2 gallon zip lock plastic bags (environmental closet)
- 1 gallon zip lock plastic bags (environmental closet)
- Low Flow Sampling Spreadsheet (also available for the tablet)
- Plastic sheeting (environmental closet or purchase a drop sheet from a local hardware store)
- Garbage bags (environmental closet)
- Camera

ON-SITE ACTIVITIES:

On-Site Preparation:

- Sign the HASP; have the sub-contractor sign the HASP if they are hired by Langan.
- Turn on and calibrate the MiniRAE PID and the Multi-Parameter Water Quality Monitoring tool; record calibration data in the field book.
- Retain the calibration record (per SOP3) for scanning to the server.

Set Up Equipment Decontamination Wash:

- If using either a submersible, bladder or inertial pump to sample groundwater, prepare the three bucket decontamination station: wash, rinse and final rinse; otherwise, you will only need to set up a wash and rinse bucket for the interface probe[2].
    - Prepare a 3±-gallon solution of decontamination fluid in a 5-gallon bucket. Alconox® is concentrated, use the minimum amount in accordance with the manufacturer's instructions and mix with the DI water provided by the equipment supplier.
    - Pour 3± DI water into a second 5-gallon bucket "Rinse Bucket"
    - Pour 3± DI water into a third 5-gallon bucket "Final Rinse Bucket"
- Immerse the interface probe and pump (submersible or the bladder pump housing or inertial check valve) into decontamination solution. Use a clean rag to wipe down the equipment with decontamination solution.
- The submersible pump must pump decontamination fluid through its interior during decontamination. Connect the pump to the controller and the controller to the battery (REMEMBER **RED** IS **POSITIVE** AND **BLACK** IS **NEGATIVE**) and start the pump at a low setting. Allow decontamination fluid to circulate through the pump for a minute or so.
- Complete a rinse and final rinse using the appropriately identified buckets. Again you must run the both solutions through the submersible pump.
- Place decontaminated equipment on a clean sheet of plastic.

Gauge Depth to Water:

- Remove the covers from each well box and inspect the well box condition. Note in the field book the road box's overall condition, whether it was correctly bolted down when you arrived and whether it had debris or water collecting around the well riser. Remove any debris or water that may slip into the well prior to removing the well cap. Have an absorbent pad handy (photographed below).



- If headspace data is required, remove the well cap, insert PID tip into well and record PID reading. Note that the PID reading might drift somewhat because of the well's interior high humidity.

[2] At sites where multiday sampling events are planned, you must change out the decontamination buckets each morning.

- Insert the interface probe and record depth to water. Depth to water should be recorded from the survey mark at top of casing. If the well has not been surveyed, record depth to water from the top of casing at the north direction point of the casing and mark that point on the casing. Record the depth in the field book. Whenever possible, record depth to water for all wells specified in the work plan for gauging before sampling.

Pumping the Well:

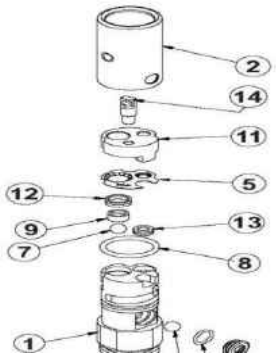
- Submersible Pump
  - Attached tubing to the hose barb at the top of the pump.
  - Carefully lower pump into well. When lowering pump, feed the tubing and electrical line as a unit. Do not handle either separately as you might disconnect the tubing or short the electrical line, see below:



  - If the saturated portion of the screen is less than 8 feet thick, set the submersible pump approximately 2-feet off bottom. If the saturated thickness is greater than 8 feet, set the submersible pump mid saturated screen depth. Lower the submersible pump first to the approximate positon and then use the interface probe to modify the depth rather than putting the pump on the bottom of the well and lifting it to the intended positon. Record the depth of the pump intake on the low flow sampling spreadsheet.
  - Secure tubing and electrical line using twist ties to the rabbit ears on the well box or other secure surface hitch (see photograph below). You can also place the 12-volt marine battery on the pump electrical lines to further secure the pump.



  - Cut the tubing about 3 feet above the road box.
- Bladder Pump
  - Insert the bladder into the pump and secure the crown with the grab plate (#5 in the schematic diagram below left and pictured below right):





- Attach the bonded dual tubing to the grab plate by cutting the ¼" and 1/8" coupled tubing at about a 30° angle and insert through the top of the bladder pump. If the tubing secures to the grab plate, you should be able to give the tubing a tug without it slipping out.
- Attach the nylon string to the eyehook in the crown fitting at the top of the pump. The tubing connection is weak and may not hold when lowering or raising the pump in the well.
- If the saturated portion of the screen is less than 8 feet thick, set the bladder pump approximately 2-feet off bottom. If the saturated thickness is greater than 8 feet, set the pump mid saturated screen depth. Lower the bladder pump first to the approximate positon and then use the interface probe to modify the depth rather than putting the pump on the bottom of the well and lifting it to the intended positon. Record the depth of the pump intake on the low flow sampling spreadsheet.
- Cut the tubing about 3 feet above the road box using twist ties to secure the tubing to the rabbit ears on the well box or other secure surface hitch.

- Peristaltic Pump
  - Insert the silicon tubing into the roller pump driver (refer to manufacturer's instructions)
  - If the saturated portion of the screen is less than 8 feet thick, set peristaltic pump intake approximately 2-feet off bottom. If the saturated thickness is greater than 8 feet, set the pump mid saturated screen depth. To insure correct depth of the intake, lower the intake to the approximate positon jointly with the interface probe. Record the depth of the pump intake on the low flow sampling spreadsheet.
  - Secure tubing using twist ties to the rabbit ears on the well box or other secure surface item. Cut the tubing about 3 feet above grade. Clear burrs from the cut tubing end and secure to one side of the silicon tubing you connect to the pump in the previous step.
- Inertial Pump
  - Attached the check valve to the HDPT
  - With the check valve as the leading edge, insert the tubing into the well. Ideally the check valve should be placed at the approximate midpoint of the saturated screen; however, an inertial pump requires the up-and-down-cycling of the tubing. Thus the check valve should be placed within the saturated part of the screen such that its rest position is midpoint within a 4-feet saturated zone insuring the check valve is never out of the saturated zone during the pumping cycle.
  - Follow the manufacturer's instructions for securing the tubing to the tubing clamp and adjusting the clevis pin on the clamp arm.
  - Connect the power cord to the inertial pump and 120-volt 60-cycle ground Fault Circuit Interrupter (FGI) outlet using a ground interrupter circuit or use a FGI equipped extension cord.

- If using a generator as the power source, start the generated first and adjust the throttle, then connect the pump power cord.

- Initiate Pumping
  - Peristaltic and Submersible Pump
    - Connect either pump to their battery source. The submersible pump has a control box that links the 12-volt marine battery. When connecting the 12-volt battery to the control box connect positive to positive and negative to negative (recall: **RED** is **POSITIVE** and **BLACK** is **NEGATIVE)**.
    - Check that the control box read zero, then connect the control box to the pump.
    - The peristaltic pump uses a cigarette lighter type junction for connecting the battery to the pump. Inspect the connectors to see that they are dry and free of debris, and then connect.
    - The submersible pump is controlled by increasing or decreasing voltage. The peristaltic pump has a dial that controls both the rotation direction and speed of the rollers.
  - Bladder Pump
    - The bladder pump uses dual boned tubing where the smaller diameter tubing connects to the compressor control unit and the wider diameter tubing is the groundwater discharge line.
    - The airline tubing connects through an adapter to the compressor (refer to the owner's manual).
    - Connect compressor control unit to the 12-volt marine battery. When connecting the 12-volt battery to the compressor control connect positive to positive and negative to negative (recall: **RED** is **POSITIVE** and **BLACK** is **NEGATIVE)**.
  - Adjust the pump controls to start flow from the well. If you initially observe bubbles being produced by the pump discharge line in a container of water, the pump is working
    - If using a submersible pump, it is recommended that you chase the falling water level with the interface probe. Do not allow the water level to fall within a foot of the submersible pump to prevent overheating. The submersible pump is controlled by increasing or decreasing voltage. If the head drops, you'll need to adjust the voltage to achieve a steady flow.
    - The peristaltic pump has a dial that controls both the rotation direction and speed of the rollers. .
    - The bladder pump MP-10 Controller has two input settings:
      - Flow throttle for controlling the air pressure to the bladder pump (for most NYC locations, set 4-8 psi above the product of the pump depth (feet) multiplied by 0.5 psi;
      - Cycles per minute – set to at least 4 for shallow wells (refer to the manual for further guidance).
    - The inertial pump can be adjusted by the throttle that controls the clamp arm cycle speed.
  - Allow initial Groundwater discharge from the tubing. Usually the initial flow is turbid thus it's advisable to allow the flow to clarify.

Monitor Water Quality Parameters

- After the discharge groundwater clarifies, connect pump discharge to flow through cell (lower port) and monitor Water Quality Indicator Parameters (WQIPs).



- Record pH, specific electrical conductance, temperature, dissolved oxygen, turbidity and ORP/Eh readings as well as flow rate and depth to water approximately every five minutes (the duration calculate to replace 1 volume of groundwater in the flow through cell) on the Low Flow Sampling Spreadsheet. The goal is to achieve stabilization which is defined when parameter value between three consecutive readings is within the following guidelines:

pH	± 0.1 unit
Specific Conductance	± 3%
Temperature	± 3%
Dissolved Oxygen	± 10% for values greater than 0.5 mg/L[3]
Turbidity	± 10% for values greater than 5 NTU[4]
ORP/Eh	± 10 millivolts
Drawdown	<0.33 feet
Maximum Pumping Rate	<0.5 L/m or 0.13 gallons per minute (gpm)

- If you observed air bubbles in the discharge tubing from the well the pump intake is probably at or just below the water table and is sucking in air as well as groundwater. YOU MUST LOWER the pump intake. If you note air bubbles from the flow through cell top discharge line but not on inflow line, then one of the ports is not properly seated to the flow through cell; while attempting to tighten the connection is a first step, the inherent weakness of the nylons threads may make any correction impossible.
- PERIODICALLY, TILT THE FLOW THROUGH CELL 45° OPPOSITE THE BARB FITTINGS TO ALLOW COLLECTED AIR TO ESCAPE.
- If you are unable to achieve stability after 1 hour, contact the PM. You may be able to sample the monitoring well but you will need document the variance in your field notes. Also, if you are unable to achieve steady state drawdown or the pump goes dry, contact your project manager. The well has insufficient recharge to maintain continuous flow. You may be instructed to use an alternative sampling methodology (volume purge and sample using a bailer).
- Upon achieving stability as defined above, you can start sampling.

Sample Groundwater:

- After achieving stability you can proceed to sample. Remember dissolved metal samples must be field filtered unless otherwise specified by the PM. To field filter, attach the field filter to the end of the pump discharge tubing such that groundwater flow follows the inscribed arrow and continue pumping. After the filter has become fully saturated, you can commence collecting the dissolved metals sample. Field filtering is limited to dissolve metals only. Once the dissolved

[3] If three Dissolved Oxygen values are less than 0.5 mg/L, the values are considered stabilized.
[4] If three Turbidity values are less than 5 NTU, the values are considered stabilized

metal sample is collected, remove the filter and dispose of it appropriately. Photograph of a field filter is included below:



- If collecting duplicate samples, alternate between primary and duplicate samples by category. For example, sample the well for the first vial of VOCs then sample the duplicate for the first vial of VOCs. This assures a better representative duplicate sample result.
- After collecting all the samples from the current monitoring well, pull out the pump and dispose of the tubing. Unless specifically instructed by the Project Manager, NY Langan policy is not to reuse tubing. If so instructed, please discuss with the PM regarding anchoring the tubing in the monitoring well to prevent it from sliding down the casing. Bending tubing to create an anchor is not an appropriate method as it will compromise the integrity of the tubing at the crease.
- If you are having difficulties disconnecting the tubing from the submersible pump's barb fittings, carefully scar the tubing covering the barb fittings with a sharp knife until it barely penetrates through the entire tubing encountering the hose barb; then gently wiggle the tubing from the hose barb.
- Prior to sampling the next monitoring well, the pump (or stainless steel foot valve) and interface probe must be decontaminated following the procedure specified earlier.
- Repeat set up, stability, sampling and decontamination procedures for each monitoring well location.

After Sample Collection:

- Place samples in a cooler on ice. Complete the chain of custody and contact the driver for expected time of pick-up.
- All used tubing, gloves and assorted disposables (if not impacted with product) should be packaged in a doubled garbage bag and disposed of in the nearest sanitary waste receptacle. If impacted with product, dispose of in a separate 55-gallon drum in accordance with SOP9.
- End of Day Actions
    - Complete the daily report with attached site photographs and forward to PM.
    - Transfer all environmental rental equipment back to office, log into return inventory and email environmental rental agency to end contract and notify of pick-up. Unopened materials obtained from environmental rental agency should be returned to them, log in each and note this on email. Your account will be credited (refer to SOP3).
    - Scan field notes to the project folder

APPENDIX

Create a Funnel Using the 2.5 gallon DI Water Container

All purge water needs to be transported to a 55-gallon drum and the drum must be labeled with a green Non-Hazardous Waste label in accordance with SOP9. If the 55-gallon drum has a bung fitting on the top lid, it is best to pour water into the bung opening. You can create a funnel from the distilled water box provided by the environmental rental company.

- Open the bottom of the DI cardboard container.
- Cut off the bottom of the plastic liner.
- Fold the flabs from the bottom of the DI container inside to hold the sides of the plastic liner in place.
- Place the spout opening of the DI container (the top) on the bund opening of the drum and pour the purge water into the box opening.





Collecting Field Blank

- Field blanks may be required during low flow sampling activities. Field Blanks are part of the QA/QC regulatory requirements when projects are being conducted as part of a regulatory program or the data is subject to regulatory review. Refer to the scope of work and confirm requirements with the PM.
- When using a peristaltic pump, field blanks can be collected by simply pouring in the DI water from the reservoir provided by the laboratory into the sample glassware.
- However there is an added level of difficulty when using a submersible pump or bladder pump. As stated earlier, these pumps require decontamination cleaning between each sampling location (monitoring well). As part of the QA/QC plan, you may be required to collect a rinse sample that demonstrates the sufficiency of the decontamination procedure. State regulatory authorities have allowed consultants to combine the field blank with the rinse blank. To accomplish this, the following additional procedure is recommended.
    - After the final DI rinse (see above), modify an unopened 2.5 gallon DI water container provided by Pine by extracting the spout using a sharp clean knife. Be careful not to allow the knife to come in contact with the DI water in the container.
    - The resulting opening should be wide enough to place the pump into the DI water container. Set the pump to a low flow rate, discard the initial flow and then proceed with filling the field blank containers. Use the lab provided DI water to replenish the water in the DI water container until all the field blank samples are collected.
    - Pictured below is the DI container with the submersible pump.



- For the bladder pump housing, gently pour the DI water through the housing into a clean dry 1 liter amber jar.
- Use the 1 liter amber jar to fill the 40- ml vials and other containers. There is no need to field filter for metals.

REFERENCES AND ADDITIONAL MATERIALS

A list of links discussed in this SOP and links for owner's manuals for equipment specified is provided below:

MultiRAE Owner's Manual

The RAE PID Handbook

Geotech Easy Load II Peristaltic Pump Manual

Solinst 410 Peristaltic Pump Manual

Low Flow Sampling Checklist

Drum Label SOP

Sample Nomenclature SOP

Low Flow Sampling Spreadsheet

Sample Pro 0.75 inch Pump Manual

Sample Pro 1.75 inch Pump Manual

MP-10 Controller Manual

U-50 Flow Cell Instruction Manual

U-50 Manual – Water Quality Meter Probe

Santa Barbara County
PUBLIC Health
DEPARTMENT

Environmental Health Services

225 Camino del Remedio ◆ Santa Barbara, CA 93110
805/681-4900 ◆ FAX 805/681-4901

2125 S. Centerpointe Pkwy. #333 ◆ Santa Maria, CA 93455-1340
805/346-8460 ◆ FAX 805/346-8485

Van Do-Reynoso, MPH, PhD *Director*
Suzanne Jacobson, CPA *Chief Financial Officer*
Paige Batson, MA, PHN, RN *Deputy Director*
Darrin Eisenbarth *Deputy Director*
Dana Gamble, LCSW *Deputy Director*
Henning Ansorg, MD *Health Officer*

Lars Seifert *Director of Environmental Health*

December 17, 2021

Mr. Zachary Dransoff
California Resources Corporation
11109 River Run Blvd.
Bakersfield, CA 93311

Subject California Lease Remedial Action Workplan
6525 Dominion Road
Santa Maria, California
SMU Site #20059
APN 129-180-038
Geotracker Global ID #T10000001823

Dear Mr. Dransoff:

The Santa Barbara County Public Health Department, Environmental Health Services (EHS), Site Mitigation Unit (SMU) has concluded the public comment period for the July 2021 document prepared by Langan Engineering and Environmental Services, Inc. (Langan) titled *Remedial Action Workplan, California Lease, Santa Barbara County, California (RAP).* The public comment period concluded on December 13, 2021 with no significant comments received. This letter serves as final approval of the *RAP*, with the conditions as outlined in EHS' September 21, 2021 letter. It is your responsibility to obtain all required permits, permit waivers, access and clearances from other agencies prior to initiating fieldwork.

If you have any questions regarding the aforementioned, please do not hesitate to call me at (805) 346-8345. Written correspondence regarding this matter should be sent to EHS at 2125 S. Centerpointe Parkway, Suite 333, Santa Maria, CA 93455, via facsimile to (805) 346-8485, or email to Marissa.censullo@sbcphd.org.

Sincerely,

Marissa Censullo

Marissa Censullo
Hazardous Materials Specialist

Ec: Mr. Cory Lavoie, Langan Engineering and Environmental Services, Inc. (clavoie@langan.com)
Mr. Mike Glavin, Californa Resources Corporation (Mike.glavin@crc.com)
Ms. Katie Nall, Planning and Development (nallk@countyofsb.org)
Mr. Greg Bishop, Central Coast Regional Water Quality Control Board (greg.bishop@waterboards.ca.gov)
Ms. Pam McNulty, Santa Barbara County Petroleum Division (pmcnult@co.santa-barbara.ca.us)
Geotracker Database

Mlc;tmr 20059_20211217

apcd air pollution control district
SANTA BARBARA COUNTY

March 17, 2023

Katie Nall
Santa Barbara County
Planning and Development
123 E. Anapamu Street
Santa Barbara, CA 93101

Sent Via Email: nallk@countyofsb.org

Re: Santa Barbara County Air Pollution Control District Suggested Conditions for Cal Lease Soil Remediation Project, 22LUP-00000-00516

Dear Ms. Nall:

The Santa Barbara County Air Pollution Control District (District) has reviewed the referenced project, which consists of the excavation of approximately 4,306 cubic yards (CY) of contaminated soil from three areas (A5-01, B5-02/B5-03, and B6-03), removal and restoration of the sites as well as regrading of three existing abandoned well pads (40, 50, and 89). Waste soil will be disposed of as Non-Hazardous Hydrocarbon Impacted Soil (NHIS) at the Santa Maria Regional Landfill at 2065 East Main Street in Santa Maria. Once excavation confirmation sample results confirm that the site-specific cleanup goals are met, excavations will be backfilled with approximately 4,306 CY of imported clean fill consisting of virgin material obtained from a commercial quarry in Santa Barbara County. The project is anticipated to require about 200 truck trips for export soil and 200 truck trips for import soil, with an average of about 10 truck trips per day and a daily maximum of about 50 truck trips. Remediation will take place over a period of approximately six months and will be followed by vegetation restoration. The subject property, identified in the Assessor Parcel Map Book as APN 129-180-038, is located at 6525 Dominion Road in the North Cat Canyon Oil Field in the unincorporated Santa Maria area.

The proposed project is subject to the following **regulatory requirements** that should be included as conditions of approval in the applicable land use permit:

1. Prior to grading/building permit issuance, **District Authority to Construct and/or Permit to Operate permits** will be required for the excavation ("dig-and-haul") of contaminated soil. Proof of receipt of the required District permits shall be submitted by the applicant to planning staff. See www.ourair.org/permit-applications to download the necessary permit application(s).

2. All portable diesel-fired construction engines rated at 50 brake horsepower or greater must have either statewide Portable Equipment Registration Program (PERP) certificates or District permits prior to grading/building permit issuance. Construction engines with PERP certificates are exempt from the District permit, provided they will be on-site for less than 12 months.

3. Construction/demolition activities are subject to District Rule 345, *Control of Fugitive Dust from Construction and Demolition Activities*. This rule establishes limits on the generation of visible fugitive dust emissions at demolition and construction sites, includes measures for minimizing fugitive dust from on-site activities, and from trucks moving on- and off-site. Please see www.ourair.org/wp-content/uploads/rule345.pdf. Activities subject to Rule 345 are also subject to Rule 302 (*Visible Emissions*) and Rule 303 (*Nuisance*).

4. At all times, idling of heavy-duty diesel trucks should be minimized; auxiliary power units should be used whenever possible. State law requires that:
    - Drivers of diesel-fueled commercial vehicles shall not idle the vehicle's primary diesel engine for greater than 5 minutes at any location.
    - Drivers of diesel-fueled commercial vehicles shall not idle a diesel-fueled auxiliary power system (APS) for more than 5 minutes to power a heater, air conditioner, or any ancillary equipment on the vehicle. Trucks with 2007 or newer model year engines must meet additional requirements (verified clean APS label required).
    - See www.arb.ca.gov/noidle for more information.

In addition, the District recommends that the following **best practices** be considered for inclusion as conditions of approval, in the interest of reducing emissions of criteria air pollutants, toxic air contaminants, dust and odors:

5. To reduce the potential for violations of District Rule 345 *(Control of Fugitive Dust from Construction and Demolition Activities)*, Rule 302 *(Visible Emissions)*, and Rule 303 *(Nuisance)*, standard dust mitigations (**Attachment A**) are recommended for all construction and/or grading activities. The name and telephone number of an on-site contact person must be provided to the District prior to grading/building permit issuance.

6. The State of California considers particulate matter emitted by diesel engines carcinogenic. Therefore, during project grading, construction, and hauling, construction contracts must specify that contractors shall adhere to the requirements listed in **Attachment B** to reduce emissions of particulate matter (as well as of ozone precursors) from diesel equipment. Recommended measures should be implemented to the maximum extent feasible. Prior to grading/building permit issuance and/or map recordation, all requirements shall be shown as conditions of approval on grading/building plans, and/or on a separate sheet to be recorded with the map. Conditions shall be adhered to throughout all grading and construction periods. The contractor shall retain the Certificate of Compliance for CARB's In-Use Regulation for Off-Road Diesel Vehicles onsite and have it available for inspection.

If you or the project applicant have any questions regarding these comments, please feel free to contact me at (805) 979-8337 or via email at BarhamC@sbcapcd.org.

Sincerely,

Carly Barham

Carly Barham,
Planning Division

Attachments: Fugitive Dust Control Measures
Diesel Particulate and NO_x Emission Measures

cc: William Sarraf, Supervisor, District Engineering Division
Planning Chron File

air pollution control district
SANTA BARBARA COUNTY

ATTACHMENT A
FUGITIVE DUST CONTROL MEASURES

These measures should be required for all projects involving earthmoving activities regardless of the project size or duration. Projects are expected to manage fugitive dust emissions such that emissions do not exceed APCD's visible emissions limit (APCD Rule 302), create a public nuisance (APCD Rule 303), and are in compliance with the APCD's requirements and standards for visible dust (APCD Rule 345).

- During construction, use water trucks, sprinkler systems, or dust suppressants in all areas of vehicle movement to prevent dust from leaving the site and from exceeding the APCD's limit of 20% opacity for greater than 3 minutes in any 60 minute period. When using water, this includes wetting down areas as needed but at least once in the late morning and after work is completed for the day. Increased watering frequency should be required when sustained wind speed exceeds 15 mph. Reclaimed water should be used whenever possible. However, reclaimed water should not be used in or around crops for human consumption.
- Onsite vehicle speeds shall be no greater than 15 miles per hour when traveling on unpaved surfaces.
- Install and operate a track-out prevention device where vehicles enter and exit unpaved roads onto paved streets. The track-out prevention device can include any device or combination of devices that are effective at preventing track out of dirt such as gravel pads, pipe-grid track-out control devices, rumble strips, or wheel-washing systems.
- If importation, exportation, and stockpiling of fill material is involved, soil stockpiled for more than one day shall be covered, kept moist, or treated with soil binders to prevent dust generation. Trucks transporting fill material to and from the site shall be tarped from the point of origin.
- Minimize the amount of disturbed area. After clearing, grading, earthmoving, or excavation is completed, treat the disturbed area by watering, OR using roll-compaction, OR revegetating, OR by spreading soil binders until the area is paved or otherwise developed so that dust generation will not occur. All roadways, driveways, sidewalks etc. to be paved should be completed as soon as possible.
- Schedule clearing, grading, earthmoving, and excavation activities during periods of low wind speed to the extent feasible. During periods of high winds (>25 mph) clearing, grading, earthmoving, and excavation operations shall be minimized to prevent fugitive dust created by onsite operations from becoming a nuisance or hazard.
- The contractor or builder shall designate a person or persons to monitor and document the dust control program requirements to ensure any fugitive dust emissions do not result in a nuisance and to enhance the implementation of the mitigation measures as necessary to prevent transport of dust offsite. Their duties shall include holiday and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the Air Pollution Control District prior to grading/building permit issuance and/or map clearance.

PLAN REQUIREMENTS: All requirements shall be shown on grading and building plans and/or as a separate information sheet listing the conditions of approval to be recorded with the map. **Timing**: Requirements shall be shown on plans prior to grading/building permit issuance and/or recorded with the map during map recordation. Conditions shall be adhered to throughout all grading and construction periods.

MONITORING: The Lead Agency shall ensure measures are on project plans and/or recorded with maps. The Lead Agency staff shall ensure compliance onsite. APCD inspectors will respond to nuisance complaints.

air pollution control district
SANTA BARBARA COUNTY

ATTACHMENT B
DIESEL PARTICULATE AND NO_x EMISSION REDUCTION MEASURES

Particulate emissions from diesel exhaust are classified as carcinogenic by the state of California. The following is a list of regulatory requirements and control strategies that should be implemented to the maximum extent feasible.

The following measures are required by state law:

- All portable diesel-powered construction equipment greater than 50 brake horsepower (bhp) shall be registered with the state's portable equipment registration program OR shall obtain an APCD permit.
- Fleet owners of diesel-powered mobile construction equipment greater than 25 hp are subject to the California Air Resource Board (CARB) In-Use Off-Road Diesel-Fueled Fleets Regulation (Title 13, California Code of Regulations (CCR), §2449), the purpose of which is to reduce oxides of nitrogen (NOx), diesel particulate matter (DPM), and other criteria pollutant emissions from in-use off-road diesel-fueled vehicles. Off-road heavy-duty trucks shall comply with the State Off-Road Regulation. For more information, see www.arb.ca.gov/msprog/ordiesel/ordiesel.htm.
- Fleet owners of diesel-fueled heavy-duty trucks and buses are subject to CARB's On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation (Title 13, CCR, §2025), the purpose of which is to reduce DPM, NOx and other criteria pollutants from in-use (on-road) diesel-fueled vehicles. For more information, see www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm.
- All commercial off-road and on-road diesel vehicles are subject, respectively, to Title 13, CCR, §2449(d)(3) and §2485, limiting engine idling time. Off-road vehicles subject to the State Off-Road Regulation are limited to idling no more than five minutes. Idling of heavy-duty diesel trucks during loading and unloading shall be limited to five minutes, unless the truck engine meets the optional low-NOx idling emission standard, the truck is labeled with a clean-idle sticker, and it is not operating within 100 feet of a restricted area.

The following measures are recommended:

- Diesel equipment meeting the CARB Tier 3 or higher emission standards for off-road heavy-duty diesel engines should be used to the maximum extent feasible.
- On-road heavy-duty equipment with model year 2010 engines or newer should be used to the maximum extent feasible.
- Diesel powered equipment should be replaced by electric equipment whenever feasible. Electric auxiliary power units should be used to the maximum extent feasible.
- Equipment/vehicles using alternative fuels, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane or biodiesel, should be used on-site where feasible.
- Catalytic converters shall be installed on gasoline-powered equipment, if feasible.
- All construction equipment shall be maintained in tune per the manufacturer's specifications.
- The engine size of construction equipment shall be the minimum practical size.
- The number of construction equipment operating simultaneously shall be minimized through efficient management practices to ensure that the smallest practical number is operating at any one time.
- Construction worker trips should be minimized by requiring carpooling and by providing for lunch onsite.
- Construction truck trips should be scheduled during non-peak hours to reduce peak hour emissions whenever feasible.
- Proposed truck routes should minimize to the extent feasible impacts to residential communities and sensitive receptors.
- Construction staging areas should be located away from sensitive receptors such that exhaust and other construction emissions do not enter the fresh air intakes to buildings, air conditioners, and windows.

PLAN REQUIREMENTS AND TIMING: Prior to grading/building permit issuance and/or map recordation, all requirements shall be shown as conditions of approval on grading/building plans, and/or on a separate sheet to be recorded with the map. Conditions shall be adhered to throughout all grading and construction periods. The contractor shall retain the Certificate of Compliance for CARB's In-Use Regulation for Off-Road Diesel Vehicles onsite and have it available for inspection.

MONITORING: The Lead Agency shall ensure measures are on project plans and/or recorded with maps. The Lead Agency staff shall ensure compliance onsite. APCD inspectors will respond to nuisance complaints.

Santa Barbara County
PUBLIC Health
DEPARTMENT

Environmental Health Services

225 Camino del Remedio ◆ Santa Barbara, CA 93110
805/681-4900 ◆ FAX 805/681-4901

2125 S. Centerpointe Pkwy. #333 ◆ Santa Maria, CA 93455-1340
805/346-8460 ◆ FAX 805/346-8485

Van Do-Reynoso, MPH, PhD *Director*
Suzanne Jacobson, CPA *Chief Financial Officer*
Paige Batson, MA, PHN, RN *Deputy Director*
Darrin Eisenbarth *Deputy Director*
Dana Gamble, LCSW *Deputy Director*
Henning Ansorg, MD *Health Officer*

Lars Seifert *Director of Environmental Health*

December 17, 2021

Mr. Zachary Dransoff
California Resources Corporation
11109 River Run Blvd.
Bakersfield, CA 93311

Subject California Lease Remedial Action Workplan
6525 Dominion Road
Santa Maria, California
SMU Site #20059
APN 129-180-038
Geotracker Global ID #T10000001823

Dear Mr. Dransoff:

The Santa Barbara County Public Health Department, Environmental Health Services (EHS), Site Mitigation Unit (SMU) has concluded the public comment period for the July 2021 document prepared by Langan Engineering and Environmental Services, Inc. (Langan) titled *Remedial Action Workplan, California Lease, Santa Barbara County, California (RAP).* The public comment period concluded on December 13, 2021 with no significant comments received. This letter serves as final approval of the *RAP*, with the conditions as outlined in EHS' September 21, 2021 letter. It is your responsibility to obtain all required permits, permit waivers, access and clearances from other agencies prior to initiating fieldwork.

If you have any questions regarding the aforementioned, please do not hesitate to call me at (805) 346-8345. Written correspondence regarding this matter should be sent to EHS at 2125 S. Centerpointe Parkway, Suite 333, Santa Maria, CA 93455, via facsimile to (805) 346-8485, or email to Marissa.censullo@sbcphd.org.

Sincerely,

Marissa Censullo

Marissa Censullo
Hazardous Materials Specialist

Ec: Mr. Cory Lavoie, Langan Engineering and Environmental Services, Inc. (clavoie@langan.com)
Mr. Mike Glavin, Californa Resources Corporation (Mike.glavin@crc.com)
Ms. Katie Nall, Planning and Development (nallk@countyofsb.org)
Mr. Greg Bishop, Central Coast Regional Water Quality Control Board (greg.bishop@waterboards.ca.gov)
Ms. Pam McNulty, Santa Barbara County Petroleum Division (pmcnult@co.santa-barbara.ca.us)
Geotracker Database

Mlc;tmr 20059_20211217

Santa Barbara County
PUBLIC Health
DEPARTMENT

Environmental Health Services

225 Camino del Remedio ◆ Santa Barbara, CA 93110
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Mouhanad Hammami *Director*
Gustavo A. Mejia, CPA *Interim Chief Financial Officer*
Ryyn Schumacher *Interim Deputy Director*
Darrin Eisenbarth *Deputy Director*
Dana Gamble, LCSW *Deputy Director*
Dr. Noemi Doohan *Medical Director*

Lars Seifert *Director of Environmental Health*

August 24, 2023

Mr. Zachary Dransoff
California Resources Corporation (CRC)
11109 River Run Blvd.
Bakersfield, CA 93311
(Zachary.Dransoff@crc.com)

Subject Biotreatment Soil Sampling Plan, NFA Status Request
United California Lease
6525 Dominion Road
Santa Maria, California
SMU Sites #20043 & 20059
APN 129-180-018
GeoTracker Global IDs #T10000001822

Dear Mr. Dransoff:

The Santa Barbara County Public Health Department, Environmental Health Services (EHS), Site Mitigation Unit (SMU) has reviewed the July 26, 2023 document prepared by Langan Engineering and Environmental Services, Inc. (Langan) titled *Biotreatment Soil Sampling Plan, NFA Status Request, United California Lease and California Lease Wells (Sampling Plan).*

The *Sampling Plan* responds to comments contained in EHS' May 12, 2023 NFA Status Request Letter, regarding United California Lease (UCAL) Biotreatment (BT) Areas. The *Sampling Plan* indicates samples will be collected from the five Biotreatment areas in accordance with the frequency (every 500 cubic yards) and analysis (total petroleum hydrocarbons (C4-C40) by 8015M, volatile organic compounds by 8260B and polycyclic aromatic hydrocarbons by 8270C-SIM) of the previously approved *Revised Soil Biotreatment Workplan* (SGI, 2012). The *Revised Soil Biotreatment Workplan* was approved via email on May 30, 2012 by Matthew Chircop incorporating the conditions of SMU's August 9, 2010 letter regarding the *Soil BioTreatment Work Plan* (SGI, 2010). Samples will be collected from two intervals (0.5 to 1 foot below ground surface (bgs), and 2 to 2.5 feet bgs) in order to verify treatment objectives were achieved and residual contaminants do not remain.

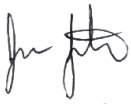
After careful review of the *Sampling Plan*, EHS approves the *Sampling Plan* with the following comments and directives:

1. Notify EHS **48 hours** in advance of field activities.
2. The report documenting the site activities shall be submitted within 60 days of completing fieldwork. In an effort to conserve resources, upload the following to GeoTracker Site #T10000001822 with email confirmation to EHS:
    a. Geo_Report: A copy of the site assessment report;

b. EDF: Laboratory Data;
c. Geo_Map: map showing site assessment locations/borings.

If you have any questions regarding the aforementioned, please do not hesitate to call me at (805) 346-7348. Written correspondence regarding this matter should be sent to EHS at 2125 S. Centerpointe Parkway, Room 333, Santa Maria, CA 93455 or via email to jjohnston@sbcphd.org.

Sincerely,



Jason Johnston
Supervising Environmental Health Specialist

ec: Mr. Cory Lavoie, Langan Engineering and Environmental Services, Inc. (clavoie@langan.com)
Mr. Marco Ojeda, Landan Engineering and Environmental Services, Inc. (mojeda@langan.com)
Mr. Greg Bishop, Central Coast Regional Water Quality Control Board (greg.bishop@waterboards.ca.gov)
Ms. Pam McNulty, Santa Barbara County Petroleum Division (pmcnult@co.santa-barbara.ca.us)
Mr. Florentino Lopez, Santa Barbara County Petroleum Division (flopez@countyofsb.org)
Ms. Katie Nall, Santa Barbara County Planning and Development (nalk@countyofsb.org)
GeoTracker Database

cc: Property Owner

jj: tmr 20043_20230824

Johnston, Jason

From: Chircop, Matthew
Sent: Wednesday, May 30, 2012 5:41 PM
To: 'Sudhakar Arakere'
Cc: McNally, Kaitlin; 'Kent Reynolds'
Subject: SMU Site # 20043 - United California Lease
Attachments: PTO 13913 - PTO Incompleteness - 5-22-2012.pdf; 8-9-10 Biotreatment.pdf

Mr. Arakere,

I have received The Source Group's May 8, 2012 report titled *Revised Soil Biotreatment Work Plan* (*Revised Work Plan*) and the attached PTO Incompleteness letter (PTO) from the APCD for the subject site. With respect to *Revised Work Plan* and Attachment A, item number 1 of the PTO, FPD has the following comments and conditions:

- Bullet item # 1 in FPD's August 8, 2010 conditional approval response to the June 16, 2010 *Biotreatment Work Plan* is considered complete. The Work Plan states that in October 2010 the UCAL 46 and the southern portion of the Omni Stockpile was excavated and disposed. Therefore item # 1 is complete.
- Bullet item # 2 required that a pilot study be conducted or a case study be submitted to FPD. On February 7, 2011 a valid case study was submitted to FPD, which fulfilled the bullet item #2 requirements.

After a careful review of the *Revised Work Plan*, the scope of work did not appear to change from the scope of work proposed in the June 16, 2010 *Biotreatment Work Plan*. Therefore, FPD considers the *Revised Work Plan* approved; however, with the exception of the items listed above, FPD's August 8, 2010 conditions shall still apply.

If you should have any questions, I can be contacted at either number listed below.

Thank you,

Matthew Chircop
Hazardous Materials Specialist
Santa Barbara County Fire Department
Fire Prevention Division
Hazardous Materials Unit
1430 Mission Drive
Solvang, CA 93463
Phone: (805) 686-8172 Solvang
Phone: (805) 346-8216 Santa Maria
Fax: (805) 686-8183

http://www.sbcfire.com

Fire Department

"Serving the community since 1926"

HEADQUARTERS

4410 Cathedral Oaks Road
Santa Barbara, CA 93110-1042
(805) 681-5500 FAX: (805) 681-5563

Michael W. Dyer
Fire Chief
County Fire Warden

Christian J. Hahn
Deputy Fire Chief

FILE COPY

August 9, 2010

Mr. Damian Reed
Glenn Springs Holdings, Inc.
5005 LBJ Freeway, Suite 1350
Dallas, TX 75244-6119

Dear Mr. Reed:

Subject: Soil Biotreatment Work Plan
United California Lease
6527 Dominion Road, Santa Maria, California
SMU Site # 20043

The Santa Barbara County Fire Department, Fire Prevention Division (FPD) Site Mitigation Unit (SMU) reviewed the June 16, 2010 report titled *Soil Biotreatment Work Plan* (*Work Plan*) prepared by The Source Group, Inc. (TSG). The *Work Plan* proposes to bioremediate the contaminated soils identified in the UCAL Edmonston, Omni, and the UCAL 46 stockpiles (Stockpiles) to reduce contaminant concentrations in soil to levels acceptable for use as backfill. Collection and analysis of soil samples before, during, and after treatment, is proposed to evaluate the effectiveness of the bioremediation. After careful review of the *Work Plan* and the site file, FPD has the following comments and conditions:

- As discussed in the July 8, 2010 meeting at the site, FPD understands that soil within the UCAL 46 stockpile and adjacent contaminated sub grade soils, the southern one third of the soil in the Omni Stockpile, and any other highly contaminated soil encountered during movement of stockpiled soil will not be treated in the biotreatment area. Please provide volume estimates and a figure depicting the portion(s) of the Omni pile and the other areas that will and will not be included in the biotreatment area.

- Also as discussed during the July 8, 2010 meeting, **prior to approval of the *Work Plan***, FPD requires implementation of a small scale biotreatment pilot study **or** submittal of a previously completed case study to FPD for review and approval documenting the effectiveness of the Spent Mushroom Compost (SMC) on similar chemicals of concern. Studies that FPD has reviewed have shown that while SMC actively reduces diesel-range hydrocarbon concentrations in soil by as much as 89%, remaining concentrations in soil did not meet regulatory clean up criteria. Studies that incorporated woodchips and yard waste (50:50 mixture) with SMC and contaminated soil have shown to be more effective

in reducing hydrocarbon concentrations. Please address this concern, and describe how this issue will be addressed in the pilot study, case study, and/or final biotreatment plan.

- The sampling protocol proposed to evaluate the effectiveness of bioremediation is specific to the analytical results obtained from the Stockpiles. The *Work Plan* indicates that the proposed bioremediation plan can be applied to other contaminated soils excavated at the site. Characterization and assessment data collected from those contaminated soils generated from other areas of the site shall be reevaluated to identify all chemicals of potential concern (COPC) and evaluate their presence on biotreatment feasibility. Should a COPC be identified that will likely not degrade in the bioremediation setting, such as but not limited to heavy metals, that material shall be stockpiled separately. A proposal for treatment or disposal shall then be submitted to FPD for review and approval.

- FPD requires that all baseline samples be analyzed for all COPCs. Should additional COPCs be detected at concentrations exceeding cleanup criteria that are not likely to bioremediate, that material shall then be segregated and removed from the treatment area.

- The Omni stockpile sampling results indicate that barium and lead are present at concentrations that have the potential to be considered hazardous waste, per California CCR Title 22, Hazardous Waste Characteristics. Although a soluble threshold limit concentration analysis was performed on these samples, and the results were below hazardous waste criteria, additional baseline samples shall be collected and analyzed to ensure the homogenous distribution of heavy metals in soil at concentrations that are not considered to be hazardous waste. FPD strongly recommends segregating the Omni stockpile soil, thus preventing mixing with other contaminated soils during biotreatment activities.

- Additionally, based on analytical results submitted to FPD, sample O-8-3'D collected from the Omni stockpile exhibited lead concentrations in excess of the proposed residential clean up criteria. Therefore, soil in the vicinity of sample O-8-3'D shall be removed and not treated or reused as proposed in the *Work Plan.* Confirmation samples shall be collected to confirm the removal of all soils containing metals in excess of cleanup criteria.

- Prior to using any treated soil as backfill, FPD requires that all material be sampled in accordance with the Department of Toxic Substances Control's October 2001 backfill guidance titled *Clean Imported Fill Material.*

- Ensure that all appropriate permits and clearances have been obtained and are in hand prior to beginning fieldwork.

- FPD shall be present to observe all sampling activities and requires at least a 48-hour notice prior to the start of fieldwork.

- Submit a letter indicating whether a pilot study will be performed, or a case-study that addresses the other comments and conditions above.

In an effort to conserve resources, FPD requests that only the body, tables, and figures of reports be submitted as hard copies and that the entire report including the body, table, figures, and all other appendices and attachments be submitted as a portable document format (PDF) files on a disk or other electronic media.

If you have any questions regarding this letter, please contact the undersigned at (805) 686-8170. Please ensure that all correspondence regarding this site is sent to my attention at the Fire Prevention Division, 195 West Highway 246, Buellton, California, 93427 or via Fax at (805) 686-8183.

Sincerely,



Matthew Chircop
Hazardous Materials Specialist

pc: Mr. Mark and Ms. Louise Ontiveros
The Hancock Trust
Mr. Kent Reynolds, The Source Group
Mr. Rich Chandler, RWQCB
Ms. Melissa Mooney, Santa Barbara County Planning and Development

MC:ks: 08-9-10 Biotreatment.doc