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RECEIVED
By Alameda County Environmental Health 10:38 am, Oct 13, 2016

Ms. Dilan Roe
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: 1233 Bockman Road
San Lorenzo, California
ACEH Case No: RO00003217

Dear Ms. Roe:

PaulsCorp, LLC, has retained Pangea Environmental Services, Inc. (Pangea) for environmental consulting services for the project referenced above. Pangea is submitting the attached report on my behalf.

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached report are true and correct to the best of my knowledge.

Sincerely,

Andrew J. Lavaux
Managing Director Multifamily Development

October 7, 2016

Andrew Lavaux
PAULS Corporation, LLC
100 Saint Paul Street
Denver, Colorado 80206

Re: **Pilot Study Workplan**
Bockman Road Property
1233 Bockman Road
San Leandro, California 94577
ACEH Case # RO00003217

Dear Mr. Lavaux:

On behalf of PAULS Corporation, LLC, PANGEA Environmental Services, Inc. (PANGEA) prepared this *Pilot Study Workplan* for the subject property. A pilot study is proposed to confirm the effectiveness of the excavation approach presented in Pangea's *Draft Corrective Action Plan* dated October 7, 2016 prior to full CAP implementation. This workplan was requested during an agency meeting on August 11, 2016.

If you have any questions or comments, please call me at (510) 435-8664 or email briddell@pangeaenv.com.

Sincerely,
PANGEA Environmental Services, Inc.

Bob Clark-Riddell, P.E.
Principal Engineer

Attachment: *Pilot Study Workplan*

PILOT STUDY WORKPLAN

1233 Bockman Road
San Lorenzo, CA 94577

October 7, 2016

Prepared for:

PAULS Corporation, LLC
100 Saint Paul Street
Denver, Colorado 80206

Prepared by:

PANGEA Environmental Services, Inc.
1710 Franklin Street, Suite 200
Oakland, California 94612

Written by:

Ron Scheele, P.G.
Principal Geologist

Bob Clark-Riddell, P.E.
Principal Engineer

Table of Contents

ATTACHMENTS

1.0 INTRODUCTION

On behalf of PAULS Corporation, LLC (PaulsCorp, LLC), PANGEA Environmental Services, Inc. (PANGEA) has prepared this *Pilot Study Workplan* for the subject property located at 1233 Bockman Road in San Lorenzo, California (Site) (Figure 1). A pilot study is proposed to confirm the effectiveness of the excavation approach presented in Pangea's *Draft Corrective Action Plan* (CAP) dated October 7, 2016 prior to full CAP implementation. This workplan was requested during an agency meeting on August 11, 2016.

2.0 SITE BACKGROUND

The Site is currently under initial grading for residential development of 53 two-story residential units. Initial grading is occurring on the western portion of the Site, in compliance with the approved *Soil Management Plan* and agency correspondence. Extensive Site assessment was conducted to initially delineate the extent of volatile organic compounds (VOCs) in the site subsurface. The VOC impact is apparently due a historic dry cleaner at 1269 Bockman Road (eastern portion of Site), a former auto shop at 1415 Bockman Road (western portion of the Site), and potential offsite sources of petroleum hydrocarbons from 1210 Bockman (former Impulse Motors fueling station/auto repair facility) and 17093 Via Chiquita (commercial street sweeping business).

The primary chemicals of concern (COCs) include the following chemicals that have been detected in shallow soil gas in excess of conservative environmental screening levels: benzene, ethylbenzene, and tetrachloroethene (also known as perchloroethene [PCE]). No significant VOC impact has been detected in soil or groundwater.

Soil beneath the Site consists of sandy gravel fill to approximately 1 ft bgs underlain by 2- to 3-feet of moderately plastic clay. The clay layer is underlain by silt and a discontinuous, one-foot thick sand lens observed intermittently between 6 and 10 feet below grade surface (bgs). The depth to static groundwater is approximately 8 feet bgs.

PANGEA prepared a CAP proposing excavation to target residual VOCs that pose a potential vapor intrusion risk for future Site residents. The CAP scope of work includes additional assessment to more thoroughly evaluate subsurface conditions, preparation of a human health risk assessment to guide the excavation and confirm that post-excavation conditions sufficiently safeguard human health, and contingency measures for passive and/or active subslab ventilation systems under Site buildings. The CAP also proposes post-excavation soil gas testing to confirm sufficient removal and mitigation of subsurface VOC impact.

For additional background information refer to PANGEA's *Site Assessment Report* dated August 26, 2016 or PANGEA's *Draft Corrective Action Plan* dated October 7, 2016.

3.0 EXCAVATION PILOT STUDY

The purpose of the pilot study is to confirm the effectiveness of the excavation and soil reuse approach presented in Pangea's *Draft Corrective Action Plan* (CAP) dated October 7, 2016 prior to full CAP implementation. The scope of work for the pilot study is consistent with the excavation and post-excavation procedures of the CAP.

3.1 Pilot Study Area

The pilot study area will target select *PCE* and *ethylbenzene* impact that exceeds Environmental Screening Levels (ESLs) established by the San Francisco Bay Regional Water Quality Control Board (RWQCB) for *residential* site use. The PCE and ethylbenzene impact in soil gas above ESLs are shown on Figure 2 and Figure 3, respectively. These figures also present results of additional soil gas assessment conducted after completion of the *Site Assessment Report* dated August 26, 2016. A discussion of the VOC impact is presented within the CAP.

The proposed pilot study excavation area is shown on Figure 4. The pilot study excavation area consists of approximately 5,250 square feet. Assuming excavation to a depth of 7 feet, the proposed excavation soil volume is approximately 1,350 cubic yards. This is equivalent to approximately 2,300 tons of soil, assuming 1.7 tons/cubic yard.

3.2 Excavation Preparation, Permitting and Notification

Soil excavation will be performed by an appropriately licensed contractor. Prior to initiating field activities, the following tasks will be conducted:

- Obtain authorization from ACEH and permits from the City of San Lorenzo, as necessary.
- Pre-mark the excavation area with white paint and notify Underground Service Alert (USA) of the excavation activities at least 48 hours before work begins;
- Prepare a Site-specific health and safety plan to educate personnel and minimize their exposure to potential hazards related to Site activities; and
- Coordinate with excavation and laboratory contractors and with involved parties.

Perimeter barriers will be installed and maintained throughout excavation and backfilling activities. Because the excavation work is on private property, it is anticipated that *no* encroachment onto the public right of way will be necessary during soil excavation work.

3.3 Soil Excavation Sequence, Screening and Stockpiling

Excavated soil will be screened for offsite disposal or onsite reuse based on soil sampling and field screening procedures described in this section. Based on our understanding of Site conditions, the upper 3 ft of soil is not significantly impacted by VOCs. MIP and soil gas data indicates that some limited VOC impact is present in deeper soil approximately 4 to 6 ft bgs, within and near thin, laterally discontinuous sand materials near this depth.

Soil screening with be performed using a PID. (Visual observations may also assist with screening, although the limited VOC impact suggests there will be limited or no visual VOC manifestation). Field staff/technicians will screen soil with a PID in numerous manners. As soil is excavated and stockpiled, technicians will screen soil in the stockpile, within the excavator bucket, and within newly exposed soil. Soil will also be placed in a plastic bag for screening. Due to the silt and clay composition of site soil, technicians will loosen soil within the bag while screening for VOCs with the PID.

Based on PID readings, technicians will assist with segregation and stockpiling of the VOC-impacted material. Initially, any soil with VOC impact (0.1 ppmv or greater) will be stockpiled separately from 'clean' soil into 'impacted' soil stockpiles. Soil with PID readings may also be placed into separate stockpiled based on relative PID screening results, such as 'low' or 'high' VOC impact.

To facilitate soil screening, Pangea plans to systematically screen and coordinate soil stockpiling in approximate 50 cubic yard batches. Each batch or stockpile will represent an approximate 6-inch vertical lift from either the PCE or the ethylbenzene excavation area. Each stockpile will be approximately 30 ft long, 15 ft wide and average 3 ft high. After stockpiling each batch/lift, field technicians will conduct additional soil screening with a PID by placing stockpiled soil into bags for PID measurement. This soil screening with bag samples will be conducted at least one time for each 25 cubic yards. The planned soil stockpiling is shown on Figure 4.

Air monitoring will be conducted near each soil stockpile. If PID readings around any stockpile exceed 50 ppmv, the stockpile will be continuously covered with plastic sheeting to the extent practical during soil stockpiling activities. Air monitoring procedures during excavation are described below in Section 3.8.

At the conclusion of each work day, each soil stockpile will be covered with plastic sheeting. The plastic sheeting will be held in place by sand bags. On each morning, technicians will screen each plastic-covered stockpile for VOCs by inserting the PID tip into a small slit or hole cut in the plastic cover and inserting the PID intake. Based on this additional PID screening, the stockpiled soil will be consolidated into the 'clean' area or the 'impacted' area. Further screening of soil will be conducted in these secondary stockpiles.

At the conclusion of all soil screening, the most impacted soil will be disposed offsite. 'Clean' soil will be reused within the pilot test area to facilitate subsequent soil gas confirmation testing to evaluate the effectiveness of the soil screening and soil reuse plan for this site. Based on our understanding of site conditions, Pangea estimates that approximately half of the soil within the limited PCE impact area will be eligible for reuse at the site. Since ethylbenzene is more amenable to natural attenuation than PCE, Pangea estimates that more soil may be eligible for reuse within the ethylbenzene impact area.

Note: The stockpiling plan shown on Figure 4 assumes there is sufficient time for the pilot study to complete soil work for one area (e.g., the PCE impact area) and then proceed to the other impact area (e.g., the ethylbenzene impact area) with average 3-ft tall stockpiles. If time and space does not permit, both impact areas will be excavated simultaneously, and the soil stockpiles may double in height (to average 6-ft tall) to accommodate the additional soil.

3.4 Soil Reuse Criteria and Soil Sampling

Our initial soil reuse criteria is as follows. For the PCE impact area, any stockpiled soil with final PID readings at or above 0.1 ppmv will not be reused. While empirically 0.1 ppmv PCE equals 680 µg/m^3, a PID reading of 0.1 ppmv roughly correlates to a soil gas concentration of approximately 240 µg/m^3 (the residential soil gas ESL for PCE) based on our experience correlating laboratory analysis with PID readings. Therefore, a PID reading of 0.1 ppmv is an appropriate screening levels for PCE-impacted soil to considered for reuse. For the ethylbenzene impact area, any stockpiled soil with final PID readings at or above 0.2 ppmv will not be reused since the residential soil gas ESL for ethylbenzene of 560 µg/m^3 is twice the corresponding ESL for PCE.

For soil planned for reuse, soil analytical testing will be performed as follows: one discrete soil sample will be collected and analyzed for every 100 cubic yards of soil. The soil sample will be collected using EPA Method 5035 (e.g., TerraCore) and analyzed for VOCs by EPA Method 8260B using at a California-certified laboratory. Soil exceeding Tier 1 ESL criteria will not be reused at the site.

3.5 Soil Backfilling

Backfilling will commence after receipt of soil analytical data from the sidewall and floor sampling. While the excavation pit is open, the excavation will be secured with fencing and sloping as required to comply with OSHA safety requirements. The pilot study area will be backfilled initially with soil from the study area that meets the above reuse criteria. Other site soil available from grading operations may be used as backfill. If necessary, fill material will be imported from an offsite source following procedure in Section 3.11.

3.6 Offsite Soil Disposal

Soil for offsite disposal will be profiled according to requirements of the soil accepting facility. To help facilitate offsite soil disposal, Pangea has provided initial soil analytical data and performed additional analysis of composite and discrete analysis within the pilot study area to meet City of Alameda requirements for disposal at the Chuck Corica Golf Complex. Greenway Golf Management, who manages the soil work for the golf complex, has deemed the completed soil profiling program as acceptable for their facility.

For the ethylbenzene area, Pangea collected three discrete soil samples using EPA Method 5035 (e.g., TerraCore) for VOC analysis by EPA Method 8260 and also collected three 4-pt composites for analysis for TPHg/d/mo (Method 8015), SVOCs (Method 8270), PCBs (Method 8082), CAM17 metals, pesticides, and asbestos. For the PCE test area, Pangea collected three discrete soil samples for analysis for VOCs (EPA Method 8260 with collection EPA Method 5035 [TerraCore]), TPHd/g/mo (Method 8015), SVOCs (Method 8270), PCBs (Method 8082), CAM17 metals, pesticides, and asbestos. The Alameda golf course has indicated that soil delivery may not be allowed sometime in early to mid November. Alternate facilities will be contacted if the Chuck Corica Golf Complex is unable to accept the soil.

A State-licensed waste hauler will be used to transport any offsite disposal soil to an appropriate facility. Waste haulers will be required to follow the route prescribed by the approved transit plan provided by PaulsCorp.

Trucks transporting soil off the site will follow procedures described below in Section 3.10 and in the approved Storm Water Pollution Prevention Plan (SWPPP). Trucks will follow the approved transit plan involving routing along Bockman Road to access Highway 880.

Note that if little or no soil can be reused at the site because of project schedule and residual VOC concerns, additional truck traffic for soil offhaul as well as import of fill material will be required.

3.7 Soil Excavation Practices

Throughout field activities, all applicable municipal codes and best management practices (BMPs) and standards will be followed. Mechanical and manual (hand digging) excavation techniques will be utilized during remedial activities. Procedures before and during excavation activity include:

- A competent person trained to identify hazardous conditions, with authority to take corrective action, will be in charge of excavation. This person will inspect excavations daily and after every rain event, and ensure that all equipment and materials are in good, working condition.

- Excavated or other materials as required will be stored 2 feet or more from the edge of the excavation. Workers will stay away from any equipment loading or unloading material. Perimeter protection will be provided at all times.

- Workers will have all appropriate training and wear the required personal protective equipment including hardhats, safety footwear, gloves, eye protection, hearing protection, and fall protection devices, as needed.

- Excavated material and the excavation pit will be monitored by hand-held screening instrumentation, (e.g., PID), as well as visual and olfactory indications of soil impact from petroleum hydrocarbons or chlorinated solvents (e.g., visible green or gray staining, odor).

- Stockpiles of materials will not be placed within the public right of way, will not obstruct drainage ways, will not be subject to erosion, will not endanger other properties and will not create a public nuisance or safety hazard. Stockpiles of any contaminated soil will be placed away from the north and east property boundaries to minimize any potential impact to offsite residences.

- Debris (brick, rubble, etc.) encountered during excavation as well as concrete and/or asphalt cuttings will be separated from the excavated soil and handled separately for recycling.

The contractor will comply with Cal/OSHA requirement to ensure a safe working environment and to keep the sides of the excavation stable. Excavation activities will be documented by photographs.

3.8 Odor, Dust and Noise Control

Air monitoring will be conducted during the excavation and handling of any contaminated soil. PID readings will be taken every hour along the downwind perimeter of the Site to ensure that the activities do not pose a threat to the adjacent offsite residences and exceed VOC emissions of 50 ppmv in accordance with the Bay Area Air Quality Management's Regulation 8, Organic Compounds Rule 40. The downwind direction will be determined by a mounted windsock. If the Site is windless, PID readings will be taken from the northern, eastern and southern perimeter of the Site, which are the boundaries closest to the site activities. The 50 ppmv threshold also corresponds to an action level that is 50% of the 8 hour time-weighted-average permissible exposure limit for PCE and ethylbenzene established by Cal OSHA. If VOCs exceed the above threshold, stockpiled soil with VOCs measured in surrounding air will be covered as continuously as practical with ongoing soil management.

All graded surfaces of any nature shall be wetted, or otherwise suitably contained to prevent nuisance from dust or spillage on city streets or adjacent properties. Equipment, materials and roadways on the Site shall be

used in a manner or treated as to prevent excessive dust conditions. Dust and dirt control activities shall not result in any material entering the storm drain system. Additional procedures are included in the Storm Water Pollution Prevention Plan (SWPPP) approved for the site grading operations.

Dust control measures during excavation, backfilling, and handling of soil will consist of spraying the minimum amount of water needed to suppress the dust onto the soil and work area. Vapor suppressant spray will also be utilized to control odors, as deemed necessary. Any soil not off-hauled from the Site the same day will be stockpiled on plastic sheeting and covered with plastic, if significant rain is expected, or if suspicious odors or visible dust is being generated from the stockpiles.

Noise generated during excavation will be monitored and modified accordingly, to ensure compliance with any applicable noise ordinances. According to the City of San Lorenzo Noise Ordinance 2003 - 005, excavation activities will only be conducted between the hours of 7 am to 7 pm on weekdays, and between 8 am to 7 pm on Saturdays and Sundays.

3.9 Groundwater Control

Although groundwater is not expected to be encountered in the excavation, if necessary, groundwater removal and disposal will be performed to manage any potential groundwater accumulation in the excavation. Depending on the volumes and recharge rates, groundwater will be pumped either directly into vacuum trucks for transport and disposal, or will be pumped into a recovery tank for storage and offsite recycling/disposal at an appropriate facility.

3.10 Grading and Erosion Control

In addition to procedures in the Storm Water Pollution Prevention Plan (SWPPP) approved for the site grading operations, the following grading and erosion control best management practices (BMP) will be observed and implemented throughout excavation activities:

- Delineate with field markers clearing limits, easements, setbacks, sensitive or critical areas, buffer zones, trees, and drainage courses.
- Stabilize all denuded areas and install and maintain all temporary erosion and sediment controls continuously between October 15th and April 15th.
- Perform clearing and earth moving activities only during dry weather (without significant rainfall).
- Provisions will be made for diverting on-site runoff around exposed areas and diverting offsite runoff around the Site.

- Provisions for preventing erosion and trapping sediment on Site, storm drain inlet protection, covers for soil stock piles, and/or other measures.

- Store, handle, and dispose of construction materials and wastes properly, so as to prevent their contact with stormwater.

- Control and prevent the discharge of all potential pollutants, including pavement cutting wastes, concrete, petroleum products, chemicals, washwater or sediments, and non-storm water discharges to storm drains and any nearby surface water.

- Avoid cleaning or maintaining vehicles on Site, except in a designated area where washwater is contained and treated.

- Protect adjacent properties and undisturbed areas from construction impacts.

- Limit construction access routes and stabilize designated access points.

- Avoid tracking dirt or other materials off Site; clean offsite paved areas and sidewalks using dry sweeping methods.

- Train and provide instruction to all employees and subcontractors regarding the construction BMPs.

If any storm water catch basins are found in close proximity to excavation, the contractor will implement the following procedures designed to ensure that grading and erosion control practices proposed for the above project comply with best management practices and standards.

- Any catch basin will be protected by silt fencing or other erosion sedimentation prevention devices at all times.

- Erosion control devices will not be moved or modified without approval of the project manager.

- All removable erosion protective devices shall be in place at the beginning and end of each working day at all times.

- All silt and debris shall be removed from streets and public right of way immediately.

- All immediate downstream inlets will be protected.

3.11 Criteria for Import of Backfill Material

For import of fill material from commercial sources or quarries, letters of certification will be provided by the quarry or commercial business providing the engineered fill, baserock or other material. If the certification information is deemed insufficient, additional soil characterization will be conducted to facilitate the use of imported fill.

For non-commercial facilities, documentation regarding the previous land use and any environmental site assessments performed at the source of the fill will be provided to minimize the potential of introducing contaminated fill material onto the site. If an environmental site assessment was performed at the fill source site, its findings will be provided.

If adequate documentation cannot be provided, the source fill material will be tested for potential impact to ensure that 'clean' fill is being brought onsite. Per ACEH direction, the source fill material will be sampled and analyzed for TPH, VOCs, SVOCs, and CAM-17 metals, and results will be compared to RWQCB Tier 1 ESLs. Samples will be submitted under chain-of-custody to a California certified laboratory.

3.12 Proposed Temporary Vapor Barrier

Upon completion of the pilot study excavation, plastic sheeting will be installed along the eastern boundary of the pilot study area to minimize potential subsurface vapor migration from the future excavation area located eastward. The plastic sheeting (e.g., Visqueen) will be a minimum thickness of 6 mil. The proposed vapor barrier location is shown on Figure 4. The considered slurry wall would pose geotechnical concerns for the planned buildings and would be more costly.

3.13 Confirmation Soil Sampling

Confirmation soil samples will be taken from the bottom and sidewalls of the PCE and ethylbenzene pilot study excavation areas. Within each of the two pilot study areas, four sidewall and two bottom samples will be collected and analyzed. Soil sample will be collected using EPA Method 5035 (e.g., TerraCore) and analyzed for VOCs by EPA Method 8260B using at a California-certified laboratory. OCs by EPA Method 8260B at a California-certified laboratory.

3.14 Confirmation Soil Gas Sampling

Soil gas sampling will be conducted to help verify that VOCs levels in the pilot study area have been reduced to well below ESLs. As shown on Figure 5, soil vapor wells will be installed within the middle of the pilot study backfill area and near the boundary with native material to better evaluate potential vapor rebound from surrounding native soil. Select probes are also located within the footprint of the adjacent planned buildings.

An additional well will be installed in native soil west of the PCE pilot test excavation area for control purposes. Pangea will also sample existing soil gas well SV-21 located near the pilot test area, which will provide longer-term data for this area of the site.

The soil vapor monitoring wells will be installed and sampled according to the State *Advisory – Active Soil Gas Investigations* (CalEPA/DTSC, 2015). The soil vapor wells will be constructed at approximately 5 to 6 ft bgs The wells will be constructed by setting a vapor implant attached to ¼-inch Teflon™ tubing at 6 feet bgs and backfilling the annular space with Monterey #3 sand pack up to 5 feet bgs. A ½ foot of dry bentonite crumbles will be poured on top of the sand and the remaining annular space will be backfilled with hydrated bentonite. The Teflon™ tubing will be set in a 2-inch PVC riser and capped to prevent moisture from entering.

This is the same procedure used for prior sampling as documented in our *Site Assessment Report* dated August 26, 2016 (Pangea, 2016a). Note that due to the naturally tight formation, soil gas wells installed for the prior assessment were purged between 24 and 48 hours prior to sampling to allow collection of representative samples in this tight soil. If necessary for these new wells installed in the backfil, purging will be conducted about 24 hours in advance of sample collection. Samples were collected by connecting a 1-liter Summa™ canister to the tubing through a flow rate regulator calibrated to a rate of approximately 100-200 milliliters per minute (mL/min). To further evaluate potential leakage within the sampling system, a leak-check enclosure/shroud will be placed over the sample train and isopropyl alcohol will be introduced into the shroud. A PID will be used to monitor the concentration of isopropyl alcohol within the shroud during sample collection.

Soil gas samples will be analyzed by EPA Method TO-15. At least two soil gas samples from each of the PCE and ethylbenzene pilot test areas will be analyzed for fixed gas by ASTM Method D-1946. Soil gas samples will be collected and analyzed a minimum of two events to evaluate soil gas trends within the pilot test area, to help demonstrate that soil excavation is successfully helping remediate the source of the VOC vapor cloud and the vapor intrusion risk. Pangea will attempt to retain the soil gas monitoring wells to collect additional repeatable data for several seasons.

3.15 Reporting

PANGEA will prepare a technical report documenting procedures and results of the excavation pilot test. The report will propose modification of the CAP excavation approach as necessary to help achieve remediation to final site cleanup levels. ESLs.

4.0 REFERENCES

CalEPA/DTSC, 2015, *Advisory – Active Soil Gas Investigations,* July 2015

PANGEA, 2016a, *Site Assessment Report*. August 26, 2016.

PANGEA, 2016b, *Draft Corrective Action Plan*. October 9, 2016.

Figure 1

1233 Bockman Road
San Lorenzo, California

PANGEA

Vicinity Map

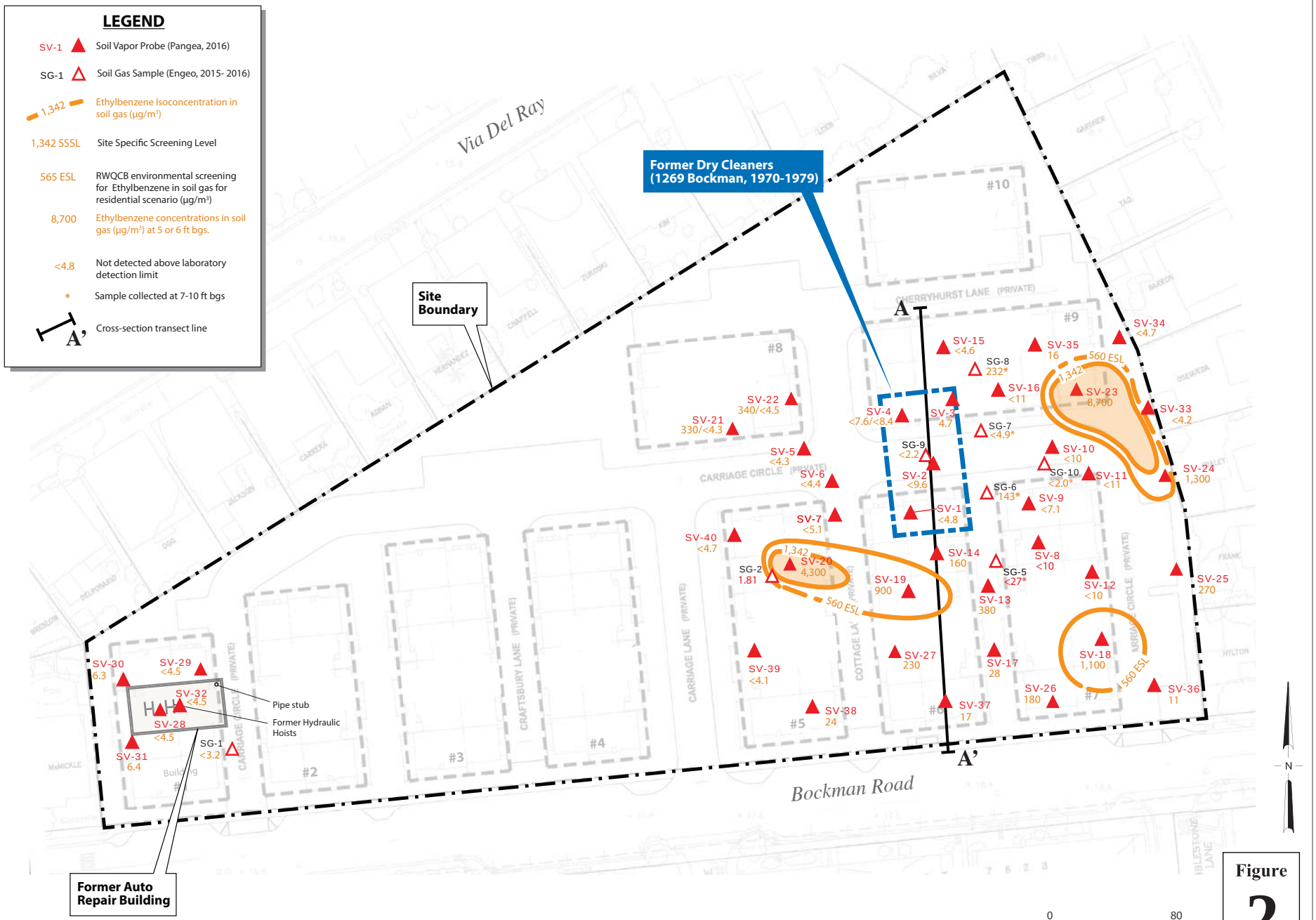


Figure 2

Map courtesy of ENGEO Incorporated. Base map derived from a electronic file titled "ACAD2010-151072-BASE.dwg," received on 09/15/15, and "Bockman Road," by Tetra Tech dated 06/11/15.

1233 Bockman Road
San Lorenzo, California

PANGEA

Ethylbenzene in Soil Gas

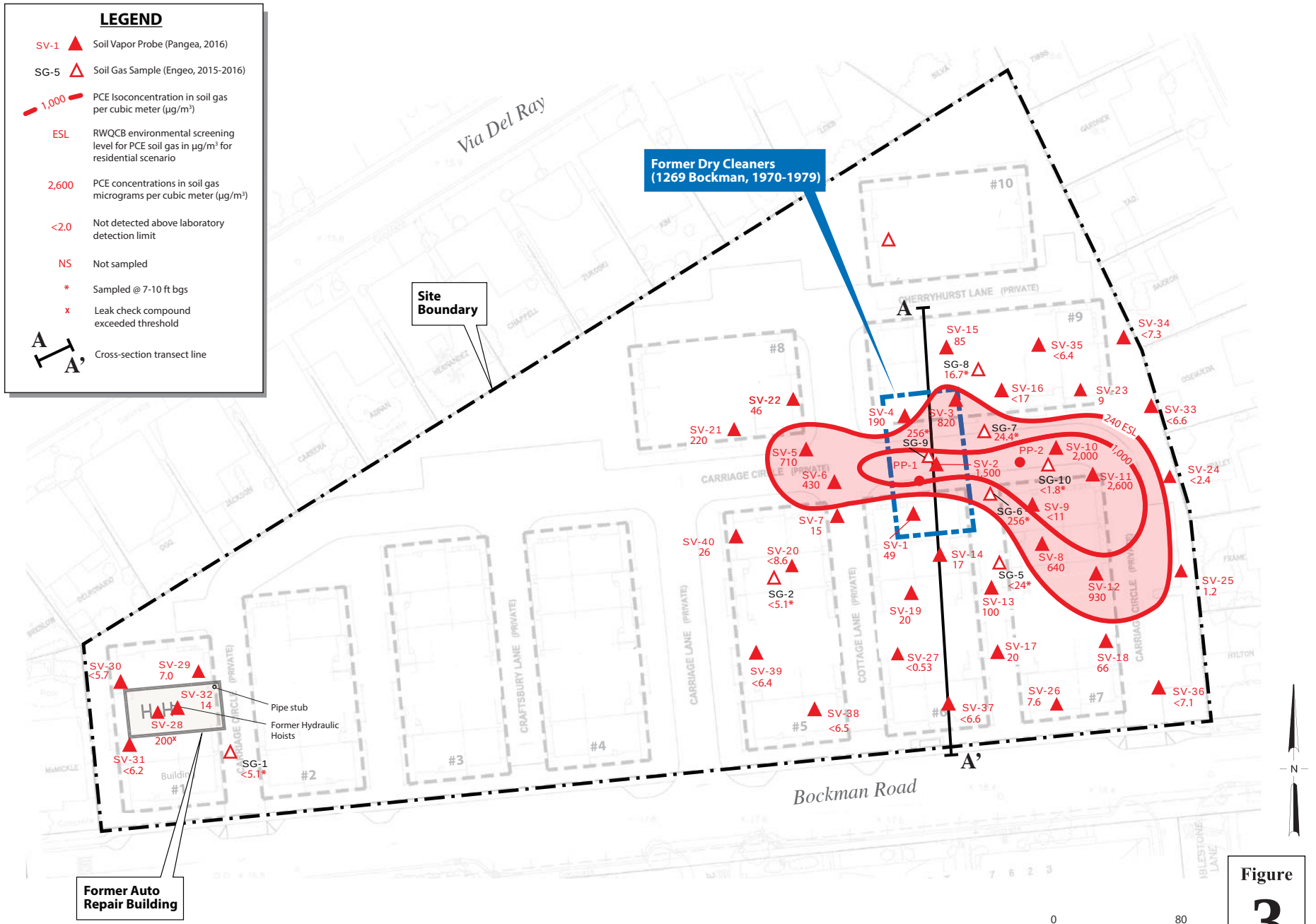


Figure 3

Map courtesy of ENGEO Incorporated. Base map derived from a electronic file titled "ACAD2010-151072-BASE.dwg," received on 09/15/15, and "Bockman Road," by Tetra Tech dated 06/11/15.

1233 Bockman Road
San Lorenzo, California

PANGEA

PCE in Soil Gas

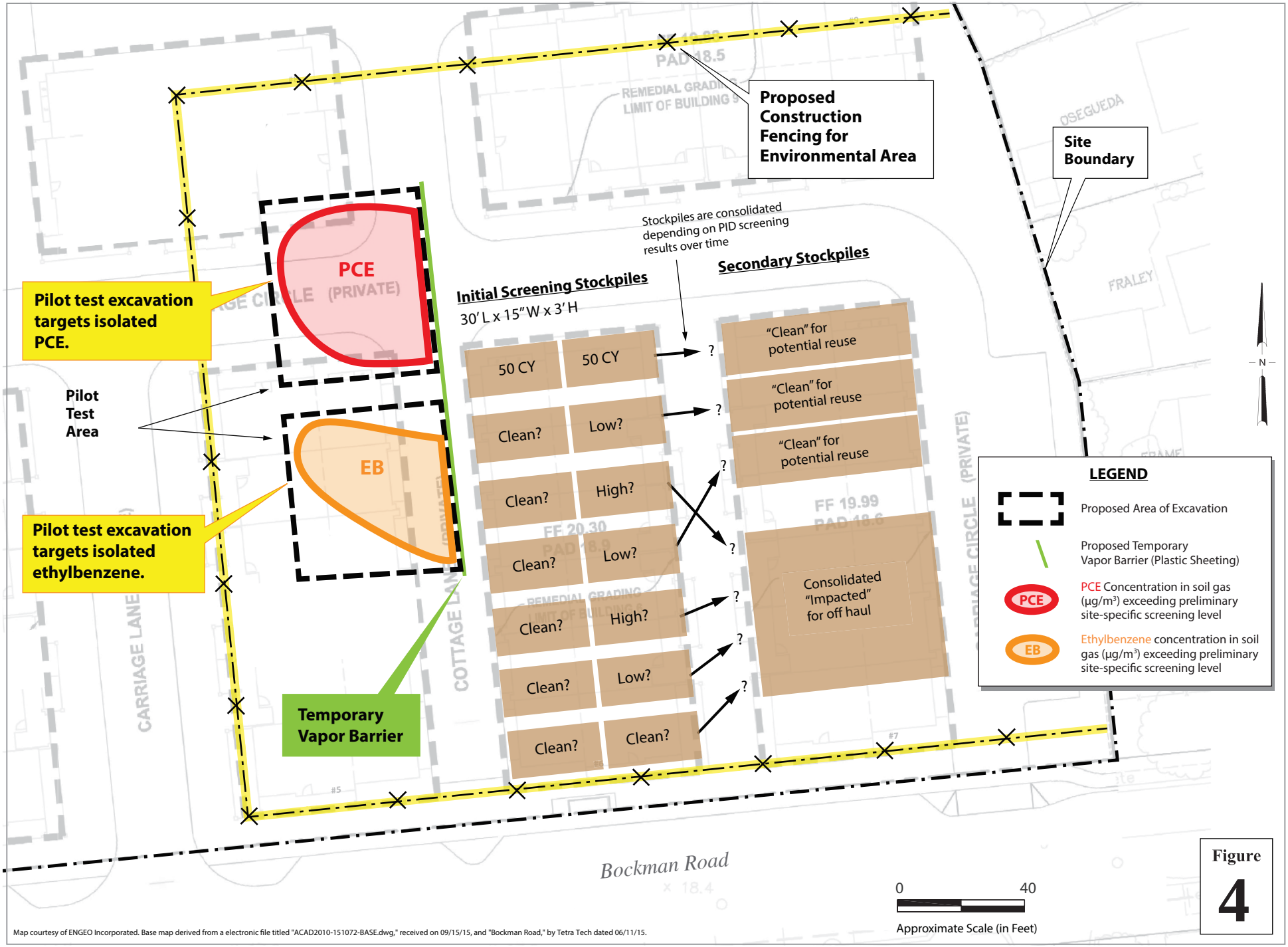


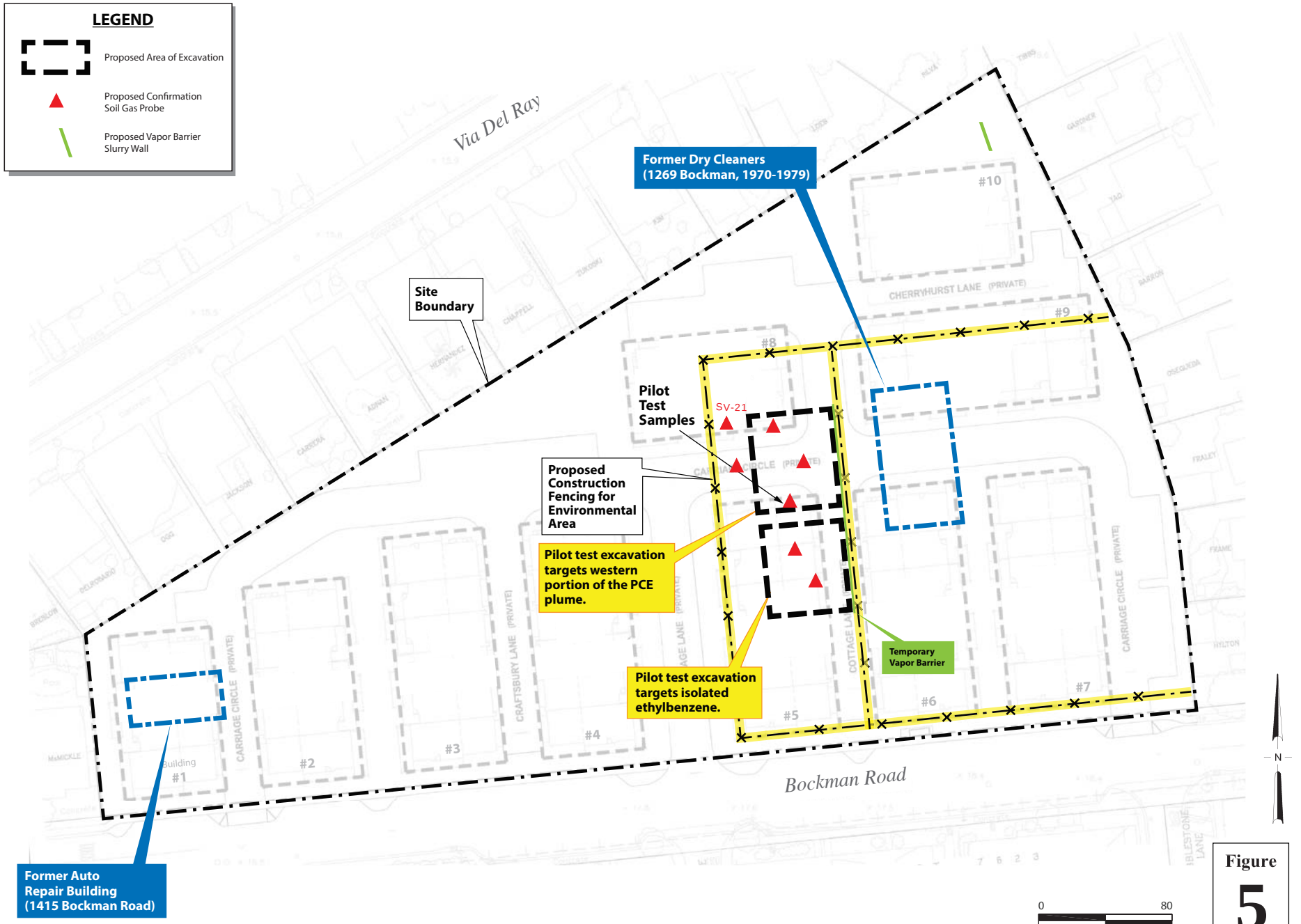
Figure 4

Map courtesy of ENGEO Incorporated. Base map derived from a electronic file titled "ACAD2010-151072-BASE.dwg," received on 09/15/15, and "Bockman Road," by Tetra Tech dated 06/11/15.

1233 Bockman Road
San Lorenzo, California

PANGEA

Proposed Excavation Plan



Map courtesy of ENGEO Incorporated. Base map derived from a electronic file titled "ACAD2010-151072-BASE.dwg," received on 09/15/15, and "Bockman Road," by Tetra Tech dated 06/11/15.

Figure 5

1233 Bockman Road
San Lorenzo, California

PANGEA

Proposed Confirmation Soil Gas Sampling Locations

Pangea

Table 1. Soil Gas Analytical Data - 1233 Bockman Road, San Lorenzo, California

Boring/ Sample ID	Date Sampled	Sample Depth (ft bgs)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	1,2-DCA	PCE	TCE	Chloroform	Isopropyl Alcohol (Leak Check Compound)	Notes
			ug/m^3										
Residential ESL for soil/subslab gas:			**48**	**160,000**	**560**	**52,000**	**41**	**54**	**240**	**240**	**61**	**NA**	
Soil Gas Samples - Engeo 2015 - 2016													
SG-1	06/25/15	5.0	1.34	6.33	<3.2	<6.5	<7.8	<3.1	<5.1	<8.1	4.92	<30	
SG-2	06/25/15	5.0	2.45	18.3	1.81	14.83	<7.8	<3.1	<5.1	<8.1	<7.4	<30	
SG-5	06/24/16	10	<19	<26	<27	<44	<140	<55	<24	<150	ND	--	
SG-6	06/24/16	7.0	<1.6	4.1	143	260	<5.2	<2.1	**256**	<5.4	ND	--	
SG-7	06/24/16	10	21.9	20.9	<4.9	<9.9	<12	<4.7	24.4	<12	ND	--	
SG-8	06/24/16	7.0	9.18	19.1	232	1,172	<5.2	<2.1	16.7	<5.4	ND	--	
SG-9	06/24/16	7.0	3.84	9.96	<2.2	4.69	<5.2	<2.1	**256**	<5.4	ND	--	
SG-10	06/24/16	10	**61.8**	76.2	<2.0	6.97	<10	<4.1	<1.8	<11	ND	--	
Soil Gas Samples - Pangea 2016													
SV-1	07/27/16	6.0	<3.5	<4.2	<4.8	<4.8	<23	<4.5	49	<5.9	<5.4	<11	
SV-2	07/27/16	6.0	<7.1	<8.3	<9.6	<9.6	<46	<8.9	**1,500**	<12	<11	<22	
SV-3	07/27/16	6.0	14	14	4.7	7.7	<22	<4.2	**820**	<5.6	<5.1	140	
SV-4	07/27/16	6.0	18	7.5	<7.6	<7.6	<36	<7.0	150	<9.4	<8.5	<17	
SV-4	09/01/16	6.0	<6.2	<7.3	<8.4	<16.8	<40	<7.8	190	<10	<9.4	<19	
SV-5	07/27/16	6.0	3.8	<3.7	<4.3	<4.3	<21	<4.0	**710**	<5.3	<4.8	<9.6	
SV-6	07/27/16	6.0	12	<3.8	<4.4	<4.4	<21	<4.1	**430**	<5.4	<4.9	<9.9	
SV-7	07/27/16	6.0	18	27	<5.1	<5.1	<25	<4.7	15	<6.3	<5.7	<12	
SV-8	07/28/16	6.0	<4.9*	<11*	<10*	<15*	--	<14*	**640**	<8.7*	<9.4*	<22*	
SV-9	09/01/16	6.0	<5.2	<6.1	<7.1	<14.2	<34	<6.6	<11	<8.8	<8.0	62	Re-sampled 09/01/16
SV-10	07/28/16	6.0	<4.9*	<11*	<10*	<15*	--	<14*	**2,000**	170*	<9.4*	<22*	
SV-11	07/28/16	6.0	<4.9*	<11*	<10*	<15*	--	<14*	**2,600**	150*	<9.4*	<22*	
SV-12	07/28/16	6.0	<4.9*	<11*	<10*	110*	--	<14*	**930**	76*	<9.4*	<22*	

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Table 1. Soil Gas Analytical Data - 1233 Bockman Road, San Lorenzo, California

Boring/ Sample ID	Date Sampled	Sample Depth (ft bgs)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	1,2-DCA	PCE	TCE	Chloroform	Isopropyl Alcohol (Leak Check Compound)	Notes
			ug/m^3										
Residential ESL for soil/subslab gas:			**48**	**160,000**	**560**	**52,000**	**41**	**54**	**240**	**240**	**61**	**NA**	
SV-13	07/28/16	6.0	<4.9*	<11*	380	1,470	--	<14*	100*	<8.7*	<9.4*	<22*	
SV-14	07/27/16	6.0	3.4	3.6	160	980	<20	<3.8	17	<5.1	<4.6	64	
SV-15	07/27/16	6.0	25	9.2	<4.6	8.6	<22	<4.3	85	6.1	<5.2	<10	
SV-16	07/27/16	6.0	35	13	<11	<11	<52	<10	<17	<13	<12	<24	
SV-17	07/28/16	6.0	34	13	28	191	--	<4.1	20	9.7	<5.0	150	
SV-18	07/28/16	6.0	**54**	59	**1,100**	3,190	--	<4.1	66	<5.5	<5.0	7.9*	
SV-19	07/28/16	6.0	15	40	**900**	2,490	--	<4.1	20	11	<5.0	8.7*	
SV-20	08/05/16	6.0	66*	160	**4,300**	18,400	17*	<130	<8.6*	<170	<160	<310	
SV-21	08/05/16	6.0	5.6*	<11	330	3,090	3.2*	<12	160	<16	<15	<29	
SV-21	09/01/16	6.0	<3.2	<3.8	<4.3	9.7	<21	<4.0	220	<5.4	<4.9	<9.8	
SV-22	08/05/16	6.0	21*	<82	340	18,100	10*	<88	24*	<120	<110	<210	
SV-22	09/01/16	6.0	<3.3	<3.9	<4.5	30.7	<21	<4.1	46	<5.5	8.0	<10	
SV-23	08/05/16	6.0	24*	150	**8,700**	34,000	19*	<130	9.0*	<170	<150	<310	
SV-24	08/05/16	6.0	42	45	**1,300**	5,500	13*	<35	<2.4*	<47	<43	<86	
SV-25	08/05/16	6.0	39	47	270	1,440	<1.2*	<11	1.2*	<14	<13	<26	
SV-26	08/05/16	6.0	23	28	180	920	2.6*	<4.4	7.6	<5.8	<5.3	<11	
SV-27	08/05/16	6.0	**73**	48	230	1,250	3.9*	<7.9	<0.53*	<11	<9.6	<19	
SV-28	08/22/16	6.0	<3.3	<3.9	<4.5	<9.0	<22	<4.2	200	9.6	<5.1	1,800	well destroyed 08/22/16
SV-29	08/22/16	6.0	7.5	<3.9	<4.5	17.1	<21	<4.1	7.0	<5.5	<5.0	83	well destroyed 08/22/16
SV-30	09/01/16	6.0	31	42	6.3	33.3	<21	<4.0	<6.7	<5.3	6.6	<9.7	
SV-31	09/01/16	6.0	16	34	6.4	40	<19	<3.7	<6.2	<4.9	<4.5	<9.0	
SV-32	09/01/16	6.0	6.4	3.9	<4.5	<9.0	<21	<4.1	14	<5.5	<5.0	<10	
SV-33	09/01/16	6.0	20	27	<4.2	8.8	<20	<3.9	<6.6	<5.2	<4.7	<9.5	
SV-34	09/01/16	6.0	17	33	4.7	24.3	<22	<4.3	<7.3	<5.7	<5.2	<11	
SV-35	09/01/16	6.0	36	100	16	79	<20	<3.8	<6.4	<5.1	5.8	<9.3	
SV-36	09/01/16	6.0	33	72	11	53	<22	<4.2	<7.1	<5.6	<5.1	<10	

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Table 1. Soil Gas Analytical Data - 1233 Bockman Road, San Lorenzo, California

Boring/ Sample ID	Date Sampled	Sample Depth (ft bgs)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	1,2-DCA	PCE	TCE	Chloroform	Isopropyl Alcohol (Leak Check Compound)	Notes
			ug/m^3										
Residential ESL for soil/subslab gas:			**48**	**160,000**	**560**	**52,000**	**41**	**54**	**240**	**240**	**61**	**NA**	
SV-37	09/01/16	6.0	43	110	17	85	<21	<4.0	<6.6	<5.3	<4.8	<9.6	
SV-38	09/01/16	6.0	48	120	24	120	<20	<3.9	<6.5	<5.2	<4.7	<9.4	
SV-39	09/01/16	6.0	19	30	<4.1	12	<20	<3.8	<6.4	<5.1	<4.6	<9.3	
SV-40	09/01/16	6.0	29	51	<4.7	22.2	<23	<4.4	26	<5.9	17	<11	
Shroud (SV-8)	07/28/16	--	--	--	--	--	--	--	--	--	--	130,000	
Shroud (SV-24)	08/05/16	--	--	--	--	--	--	--	--	--	--	180,000	

Abbreviations:

DCA = 1,2-dichloroethane

PCE = Tetrachloroethene

TCE = Trichloroethene

1,1,1-TCA = 1,1,1-Trichloroethane

VOCs by EPA Method TO-15.

See lab report for trace concentrations of other VOCs

ug/m^3 = Micrograms per cubic meter of air.

ft bgs = Feet below ground surface

ESL = Environmental Screening Level for Shallow Soil Gas for Evaluation of Potential Vapor Intrusion (Table E-2). Established by the SFBRWQCB, Interim Final - November 2007; Feb 2016 (Rev. 3)

ND = not detected above laboratory reporting limits.

-- = Not analyzed

< n = Chemical not present at a concentration in excess of laboratory detection limit shown.

Bold concentrations exceed residential ESL.

* = Represents an estimated concentration (j-flag value) below the reporting limit, or indicates that there was no detection above the method detection limit.

contaminant detections highlighted in gray