WellTest, Inc.
Contractor License No. 843074

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By Alameda County Environmental Health 2:33 pm, Sep 30, 2016

September 19, 2016

Mr. Mark Detterman
Alameda County LOP (County)
1131 Harbor Bay Pkwy.
Alameda, California 94502

Re: IRM, Vapor Mitigation, and FS Work Plan (Report #RO3155.IRAP_R1, 2016-08-30)
Former Four Seasons Cleaners; Cleanup Program # RO0003155
13778 Doolittle Ave., San Leandro, California

Dear Mr. Detterman:

At the request of Mr. Ernest Lee of the Marina Faire Shopping Center, WellTest, Inc. (WTI) has prepared this *IRM, Vapor Mitigation and FS Work Plan* for the above-referenced solvent release case (Figures 1 and 2). This document is prepared to address Technical Comments 3 and 4 in the County's July 27, 2016, letter and to meet the associated September 23 and September 30, 2016, report-submittal deadlines. In consideration of the scope of the active remediation proposed in this work plan, WTI is recommending on behalf of the RP that the County postpone the requirement to conduct a risk characterization and uncertainty analysis.

In further regard to Comment 3, WTI is advising the County that the property owner, at the County's express request, has retained the services of an HVAC contractor with instructions to increase the movement of fresh air through the existing dentist office and former dry cleaning unit. This work is outside the scope of WTI work and should absolutely not be considered an admission by Mr. Lee that the PCE detected in the dentist office is associated with former Four Seasons Cleaners operations. WTI is aware and is advising the County that dentists use a variety of resins, glues and solvents in their practice and it is reasonably presumed that dental patients and dental workers sometimes wear dry cleaned clothes to their appointments or workplace. WTI is further aware and is advising the County that PCE is the principal component in a commercially available product (Endosolv E) that is advertised for use to help remove root canals. WTI understands the HVAC work has been completed in early September.

Recent directive letters are presented as Attachment A, background information is presented as Attachment B. Additional supporting documentation is presented within Tables 1 through 4 and Figures 1 through 7.

SITE DESCRIPTION

The site is located in a mixed commercial and residential area of San Leandro, California. The site parcel is approximately 5.05 acres and is improved with a multi-tenant strip mall and separate restaurant building. The former dry cleaning unit is located within the strip mall and is associated with 13778 Doolittle Drive. The site lies at an elevation of approximately 15 feet above sea level and is relatively flat. The property is bounded by Doolittle Drive to the west, Fairway Drive to the north, Catalina Drive to the east and a commercial property to the south. A Site Vicinity Map is included in Figure 1.

HYROGEOLOGY

In drilling borings to 16 feet from grade in February 2015, fine grained alluvial materials were encountered to a depth of approximately 15 feet and then a one-foot interval of course grained saturated soils. Based on PCE distribution the presumed semi-confined shallow ground is presumed to flow southwesterly toward San Francisco Bay.

The following description is taken verbatim from an Anton Geological (Elk, CA) April 2, 2013, "Soil and Groundwater Investigation" report for the Former Printpack/James River Corporation Facility, 2101 Williams Street which is about 2000 feet north of the site at approximately 5 feet higher elevation (20 feet MSL) than the subject site (15 feet MSL). This property lies immediately down gradient of the former Watkin Terminal Facility at 2075 Williams Street investigated by P&D Environmental (Oakland) and 800 feet south of another solvent release site at 1964 Williams Street investigated by ARCADIS (Emeryville). The shallow groundwater underlying the two sites on Williams Street is contaminated with PCE with the highest levels detected in what is referred to below as the Deeper A Zone.

> *ARCADIS recognizes that the A-Zone extends from 10 to 38 feet below ground surfaces, and further identifies two subunits with the A Zone: "Shallow A Zone" and "Deeper A-Zone." ARCADIS describes the Shallow Z-Zone as approximately 2 feet thick and occurring somewhere below depths of 10 to 15 feet. The Deeper A Zone varies in thickness from 2 to 8 feet, which is underlain by a continuous aquitard that provides separation between the A Zone and B Zone. The B Zone extends from approximately 50 feet to 60 feet (at the ARCADIS site) and consists of sand and gravels. ARCADIS indicates that the groundwater flows to the southwest within each zone, and that the vertical gradients between the Shallow and Deeper A-Zones range from 0 to 0.4 feet in the upward direction.*
>
> *The cited P&D report indicates that on the easterly and adjacent parcel (2075 Williams Street), the described A-Zone is approximately 2 feet thick and encountered at a depth of approximately 15 to 17 feet below ground surfaces. The Deeper A-Zone is described as being typically 8 to 12 feet thick and as being encountered at depths between about 27 to 40 feet below ground surfaces. The B-Zone is identified by P&D between depths of 48 to 60 feet below ground surfaces. The groundwater gradient is indicated to be predominantly southwesterly at this adjacent site.*

Based on the above, the following scheme is tentatively adopted for the subject site taking into consideration that the subject site lies at 15 feet above MSL while those discussed above lie at about 20 feet above MSL.

A-Zone – Extending from approximately 10 to 40 feet below the ground surface (bgs) with two subunits identified as the Shallow A-Zone and the Deeper A-Zone both with a known southwesterly gradient.

- Shallow A-Zone – typically approximately 2 feet thick and occurring between the depths of 10 and 17 feet bgs (known impacted with PCE);
- Deeper A-Zone – typically varying in thickness from approximately 2 to 12 feet and occurring between depths of 27 and 40 feet bgs (presumed impacted with PCE).

B-Zone – Extending from approximately 50 to 60 feet bgs with a presumed southwesterly gradient (hopefully not impacted with PCE).

OBJECTIVES

The objectives of the proposed work are as follows:

- Detoxify the dry cleaning unit and legally close the permitted hazardous material storage areas pursuant to federal, state and local requirements including removal of certain areas of the slab and certain sewer lines previously used for storing/handling or receiving virgin and spent PCE and PCE laden wastes.
- Remove suspected secondary source areas to the extent practicable including the potentially contaminated slab area and underlying baserock, and the impacted native soils from 0.5 to 7 feet from grade.
- Install a horizontal vapor extraction well network centered in the known and suspected contaminated intervals for use in feasibility testing and likely future full scale remediation.

- Install a sub-slab venting well network for use in mitigating vapor intrusion concerns during and after implementation of active remediation (if needed) taking advantage of the slab replacement over the entire suspected contaminated interval;
- Delineate the Shallow and Deeper A-Zone Aquifer immediately southwest (down gradient) of the suspected source area;
- Establish the gradient of the Shallow A-Zone and the vertical gradient between the Shallow and Deeper A Zones immediately southwest (down gradient) of the suspected source area;
- Install sufficient air sparging wells, sub slab monitoring points, and shallow soil vapor monitoring wells for use in feasibility testing the soil vapor extraction (SVE) and sparging enhanced SVE (SESVE) processes on the basis they are generally considered and prove out to be, at least in part, the most cost effective remedial options for concurrently mitigating HVOC releases and addressing vapor intrusion concerns.
- Conduct sufficient feasibility testing over up to 60 hours using a blower, compressor and drummed activated carbon to confirm the supposition that SVE and SESVE are the most cost effective remedial option for mitigating residual PCE in impacted media (soils, groundwater and soil gas) and to establish design criteria for a full scale system.

SOIL EXCAVATION AND CONSTRUCTION ACTIVITIES

Specific tasks will include the following. The sampling and analytical methods will be as previously proposed and approved by the County for soil borings as applicable.

- **Task 1 Prefield Activities.** This task will include: (1) Obtaining drilling permits from Alameda County, a building and grading permit from the City of San Leandro, and filing a permit exemption/work notice with the Bay Area Air Quality Management District (BAAQMD); (2) Profiling soil for disposal using existing data plus up to three shallow borings in the planned excavation area; and (3) Insuring worker/bystander safety by notifying Underground Services Alert, conducting a private utilities survey, and preparing and implementing a site-specific Health and Safety that protects both workers and the public.

- **Task 2 Soil Excavation and Disposal Activities.** The areas to be stripped of concrete and excavated to 2 feet from grade in removing contaminated base rock materials and immediately underlying soils will include an approximately 870-square foot area inside the dry cleaning suite (see Figure 5 and Figure 6). Contractors will attempt to remove all subsurface utilities that are no longer needed.

  Within the area of presumed greatest concern, the interior excavation will be deepened to approximately 4 to 7 feet as needed in replacing the sewer lines. This will include the area of the former machine, the boiler room floor drain and bathroom drain and their conveyance piping. With protecting the structural integrity of the building of paramount concern, over excavation will be performed to the extent practicable as needed based on confirmation testing results or visual/olfactory indications of contamination.

  Confirmation soil samples will be collected from the excavation cavities to assess excavation effectiveness. Sidewall soil samples will be collected at a frequency of approximately one sample per 10 lineal feet, amounting to approximately eleven sidewall samples. In addition, approximately six pit bottom soil samples will be collected from the excavation cavities. Soil samples will be collected and preserved in accordance with standard VOC sampling methods and protocols, and all samples will be analyzed for HVOCs by a state-certified analytical laboratory. Up to six additional samples will be collected and analyzed at the discretion of the professional in responsible charge or at the request of the County.

Approximately 120 bank yards of contaminated material (concrete, base, and soil) will be generated for offsite disposal. These materials will be disposed of at appropriate facilities under proper manifest. The grading permit will include a soils management plan covering all staging of the materials.

- **Task 3 Install Horizontal SVE Well Network** - A branched horizontal vapor extraction well, consisting of slotted 4-inch diameter threaded PVC pipe, will be placed in the bottom of the deeper excavation area and it will be backfilled with pea gravel to approximately 4 feet in depth and covered with filter fabric. The interior excavation will then be backfilled to 12 inches from grade using control density fill with conveyance piping for the SVE systems installed in the process including additional saw cutting and trenching as needed. The area will be resurfaced using approximately 8 inches of Class II base rock and 4 inches of reinforced concrete to match surrounding surfaces. A sub slab depressurization system piping network consisting of slotted 2–inch diameter PVC piping will be installed ad hoc inside the building in the process of installing the drain rock layer. The interior subsurface piping will be stubbed along the interior wall of the building**.**

A ZONE DELINEATION AND INSTALLATION OF MW-1AS, MW-2AS, MW-3AS and MW-2AD

Via hollow-stem augur, an exploratory boring will be drilled to approximately 50 feet bgs slightly north of the location of boring DP-2 just outside the known PCE-contaminated interval and the soil conditions will be carefully examined to define the characteristic of the regional/local A Zone. Based on the geologic logs, four 4-inch diameter monitoring wells (MW-1AS, MW-2AS, MW-3AS and MW-2 AD will be installed at the locations shown in Figure 2. MW-1AS will be installed inside the former dry cleaning unit within 10 feet down gradient (SW) of the former floor drain. MW-2AS and MW-2AD will be installed outside the front of the building at the approximate location of boring DP-4 and MW-3AS in the vicinity of boring DP-3. The tentative screened intervals are 5 to 17 feet bgs for the shallow A Zone wells and 27 to 37 feet bgs for the submerged deeper A Zone well. At least one soil sample from a foot below the bottom of any permeable intervals will be submitted for certified analysis. Following development, the wells will be sounded, purged sampled and surveyed. See Appendix C, Field Methods.

These monitoring will potentially be eventually converted to groundwater extraction wells and in the case of MW-1AS through MW-3AS as vapor extraction or dual extraction wells.

SOIL VAPOR EXTRACTION/AIR SPARGE FEASIBILITY TEST

A one to five-day (8 to 60 hour duration) soil vapor extraction/air sparge (SVE/AS) feasibility test will be conducted to assess the effectiveness of this technology in remediating soil, vapor and groundwater HVOC impacts. The SVE/AS pilot test will use the horizontal vapor extraction well and the two to eight sparge wells described above. Specific tasks will include the following. The sampling and analytical methods will be as previously proposed and approved by the County for soil vapor sampling and will follow DTSC published guidelines as applicable.

- **Task 1 Prefield Activities -** This task will include obtaining a BAAQMD work notice and preparing and implementing a site-specific Health and Safety that protects both workers and the public.

- **Task 2 Install AS Wells. –** Targeting both the shallow and the deeper A zone, at least two and up to eight sparge wells will be installed using hollow stem auger equipment (see Figures 6). The air sparge wells will be sited in an approximate grid pattern in the dry cleaner suite as shown on Figure 6. The air sparge wells will be constructed of 2-inch diameter PVC threaded well casing with 0.010-inch well screen tentatively set from approximately 17 feet to 18 feet in depth for the Shallow A Zone and 37 to 38 feet for the deeper Z Zone. The actual depth, screened intervals, and slot-size will be determined based on the field conditions encountered and could vary between wells. Up to six additional sparge

wells will be installed only if SESVE is determined to be a viable remedial approach during the start of the feasibility test. At least one soil sample collected from within a foot below the bottom of any permeable zones will be submitted for certified analysis. See Appendix C, Field Methods. These air injection wells will potentially eventually be used as substrate injection wells in addressing residual HVOC contamination via insitu anaerobic bioremediation to include groundwater extraction at MW-1AS and MW-1AD to achieve hydraulic control.

- **Task 3 Install five pairs of vapor monitoring wells -** Using procedures previous approved by the County, five sets of sub slab and 5-foot deep vapor monitoring wells will be installed at the approximate locations shown in Figures 5 and 6**.**

- **Task 4 Mobilize SESVE equipment** - A mobile treatment unit will be brought to the site and parked in front of the former dry cleaning unit for conducting the feasibility testing. The SVE system will include an approximately 200-standard cubic feet per minute (scfm) variable speed claw vacuum pump (or a 300 scfm variable speed positive displacement vacuum pump – as appropriate to match the flow capacity of the HSVE well) and with a knock system, manifolds and controllers, a 30 to 50 scfm air 125 psi sparge oil-less compressor, and two-stage 85-gallon drums of vapor phase activated carbon connected in series. Above ground delivery piping will be run from SVE and AS wells to the treatment system for SVE/AS system control. Some of the equipment including the sparge compressor and drummed carbon might be located inside the vacant unit.

- **Task 5 Conduct SVE/AS feasibility testing.** The SVE/AS system will be operated for just one day if proven clearly non-viable. If deemed potential viable as anticipated up to six additional air sparge wells will be installed during the course of the five-day test. The detailed field procedures are included in Attachment C. During the testing, MW-1AS, the sub slab piping network and the five pairs of sub slab and shallow soil gas monitoring wells will be used to collect baseline and follow-up samples and to monitor influence.

REPORTING

A report summarizing the field work will be prepared for submittal to the County along with conclusions and recommendations for addition remediation/risk mitigation and further assessment of the vertical and lateral extent of groundwater contamination.

IMPLEMENTATION PLAN/SCHEDULE

Assuming approval of this work plan by the end of September 2016, we expect to complete all work and report writing by the end of the year. The field work will start with the drilling/installation of exterior borings and wells and interior soil gas monitoring points.

DISTRIBUTION LIST

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Marina Faire Shopping Center
3271 S. Highland Dr., Ste. #704
Las Vegas, Nevada 89109

Mr. Mark Detterman
Alameda County LOP
1131 Harbor Bay Pkwy.
Alameda, California 94502

CERTIFICATION

This report has been reviewed and approved by the responsible party. A report transmittal letter is provided as Attachment D. To the best of my knowledge all statements and information provided in this report are true and correct.

Sincerely
WELLTEST, INC.

William R. Dugan, P.G.
Project Manager
Professional Geologist (CA# 6253)

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Attachment A	Directive Letters
Attachment B	Background Information
Attachment C	Field Methods
Attachment D	Client Transmittal Letter

LIMITATIONS

This report was prepared in accordance with generally accepted standards of environmental practice in California at the time this investigation was performed. This investigation was conducted solely for the purpose of evaluating environmental conditions of sub-slab soil vapors, vadose-zone soil vapors, shallow soils, and the first-encountered groundwater associated with Alameda County LOP Cleanup Program Case # RO0003155. No soil engineering, geotechnical, or additional engineering references are implied or should be inferred. Evaluation of the geologic conditions at the site for purposes of this investigation is made from a limited number of observation points. Subsurface conditions may vary from those encountered during the time and locations of the available data points sampled. Additional work, including further subsurface investigation, can reduce the inherent uncertainties associated with this type of investigation. To the extent that this report is based on information provided to WTI by third parties, WTI may have made an effort to verify the accuracy of this information, but cannot guarantee the completeness or accuracy of this information. Changing conditions may lead to revisions of professional opinions, conclusions, and recommendations.

The report was prepared solely for the use of WTI's client and those listed in the distribution section of the report. Any reliance on this report by third parties shall be at such party's sole risk. WTI makes no expressed or implied warranty in regards to the contents of this report.

TABLES

TABLE 1

SUMMARY OF CURRENT & HISTORICAL INDOOR & OUTDOOR AIR ANALYTICAL DATA

13778 DOOLITTLE DRIVE, SAN LEANDRO, CA

Sample ID	Sample Date	B ($\mu g/m^3$)	T ($\mu g/m^3$)	E ($\mu g/m^3$)	o-Xyl ($\mu g/m^3$)	p&m-Xyl ($\mu g/m^3$)	PCE ($\mu g/m^3$)	TCE ($\mu g/m^3$)	cis-1,2DCE ($\mu g/m^3$)	VC ($\mu g/m^3$)	IPA ($\mu g/m^3$)
OUT-1	10/30/15	ND<11	ND<8.6	ND<7.6	ND<6.7	ND<17	**1,500**	**32**	ND<10	ND<13	ND<13
IND-1	10/30/15	ND<13	ND<10	ND<6.9	ND<7.9	ND<19	**220**	ND<22	ND<12	ND<15	ND<15
IND-2	10/30/15	ND<12	ND<9.2	ND<8.1	ND<7.2	ND<18	**18,000**	**240**	**49**	ND<14	ND<14
IA-3-off	02/14/16	ND<9.8	ND<7.5	ND<6.6	ND<5.8	ND<14	ND<22	ND<16	ND<9.1	ND<11	ND<11
IA-4	02/13/16	ND<9.8	ND<7.5	ND<6.6	ND<5.8	ND<14	ND<22	ND<16	ND<9.1	ND<11	ND<11
IA-4-off	02/14/16	ND<11	ND<8.5	ND<7.4	ND<6.6	ND<16	ND<25	ND<19	ND<10	ND<13	ND<12
IA-5	02/13/16	ND<8.9	ND<6.8	ND<6.0	ND<5.3	ND<13	ND<20	ND<15	ND<8.3	ND<10	ND<10
IA-7	02/18/16	ND<9.1	ND<6.9	ND<6.0	ND<5.4	ND<13	ND<21	ND<15	ND<8.4	ND<11	ND<10
IA-8	02/13/16	ND<22	ND<17	ND<15	ND<13	ND<32	ND<50	ND<37	ND<20	ND<26	ND<25
IA-9[1]	02/23/16	ND<18	ND<14	ND<12	ND<11	ND<37	**560**	ND<30	ND<17	ND<21	ND<20
IA-9-off	02/24/16	ND<11	ND<8.0	ND<7.0	ND<6.3	ND<15	**190**	ND<18	ND<9.8	ND<12	**1,700**
IA-3-2[2]	05/17/16	ND<0.014	ND<0.023	ND<0.014	ND<0.096	ND<0.021	ND<0.042	ND<0.016	ND<0.012	ND<0.005	---
IA-9-2[3]	05/17/16	ND<0.0099	**17**	ND<0.010	**3**	**8.4**	**260**	ND<0.012	ND<0.0086	ND<0.0037	---
IA-8-2[4]	05/17/16	ND<0.013	ND<0.022	ND<0.014	ND<0.0096	ND<0.020	ND<0.041	ND<0.015	ND<0.011	ND<0.048	---
IA-6-2[5]	05/17/16	ND<0.013	ND<0.022	ND<0.014	ND<0.0097	ND<0.021	ND<0.041	ND<0.016	ND<0.011	ND<0.049	---
ESLs Comm/Ind.		**0.42**	**1,300**	**4.9**	**440**		**2.1**	**3.0**	**35**	**0.16**	**NA**

Samples collected on 5/17/16 analyzed by TO-15 SIM. All others by TO-15.

--- = Parameter not analyzed

<0.5 / ND = Not present at or above reporting detection limit

ug/m^3 = micrograms per cubic meter = ppmv

ESLs = Environmental Screening Levels, Directi Exposure - Feb 2016

off = sample collected with HVAC system turned off

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E = Ethylbenzene

Xyl = Xylenes

MtBE = Methyl-t-butyl ether

PCE = Tetrachloroethene

TCE = Trichloroethene

VC = Vinyl Chloride

cis-1,2DCE = cis-1,2-Dichloroethene

IPA = Isopropyl Alcohol

1 = dichlorodifluoromethane @ 2,100 ug/m3, 1,2-Dicholo-1,1,2,2-tetrafluoroethane @ 490 ug/m3, and Trichlorofluoromethane @ 240 ug/m3

2 = Dichlorodifluoromethane @ 2.8 ug/m3

3 = Dichlorodifluoromethane @ 9.4 ug/m3, and Trichlorofluoromethane @ 19 ug/m3

4 = Dichlorodifluoromethane @ 3.5 ug/m3

5 = Dichlorodifluoromethane @ 3.2 ug/m3

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4 = Dichlorodifluoromethane @ 3.5 ug/m3

5 = Dichlorodifluoromethane @ 3.2 ug/m3

TABLE 3

SUMMARY OF HISTORICAL SOIL ANALYTICAL DATA

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Sample ID	Sample Depth (ft)	Sample Date	TPHd (mg/Kg)	B (mg/Kg)	T (mg/Kg)	E (mg/Kg)	o-Xyl (mg/Kg)	p&m-Xyl (mg/Kg)	PCE (mg/Kg)	TCE (mg/Kg)	cis-1,2DCE (mg/Kg)	VC (mg/Kg)	Other VOCs (mg/Kg)
S1 d 0.5'	0.5	08/10/14	**3.2**	ND	ND	ND	ND	ND	**0.056**	ND	ND	ND	All ND
S2 d 0.5'	0.5	08/10/14	**2.6**	ND	ND	ND	ND	ND	**0.045**	ND	ND	ND	All ND
S3 d 0.5'	0.5	08/10/14	**2.1**	ND	ND	ND	ND	ND	**0.1**	ND	ND	ND	All ND
S3 d 2'	2.0	08/10/14	ND<1.0	ND	ND	ND	ND	ND	**20**	ND	ND	ND	All ND
S3 d 5'	5.0	08/10/14	ND<1.0	ND	ND	ND	ND	ND	**2.4**	ND	ND	ND	All ND
DP-1d15.0	15.0	02/18/15	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	All ND
DP-2d14.5	14.5	02/18/15	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	All ND
IA-7	14.0	02/18/15	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	All ND
DP-4d14.5	14.5	02/18/15	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	All ND
DP-5d8.0	8.0	02/18/15	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	All ND
DP-6d15.0	15.0	02/18/15	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	All ND
IA-3-2[2]	42507.0	ND<0.014	ND<0.023	ND<0.014	ND<0.096	ND<0.021	ND<0.042	ND<0.016	**ND<0.012**	ND<0.005	---	ND	All ND
IA-9-2[3]	42507.0	**ND<0.009**	**17.000**	ND<0.010	**3.000**	**8.400**	**260.000**	ND<0.012	ND<0.0086	ND<0.0037	---		
IA-8-2[4]	42507.0	ND<0.013	ND<0.022	ND<0.014	ND<0.0096	ND<0.020	ND<0.041	ND<0.015	ND<0.011	ND<0.048	---	ND<0.005	All ND
IA-6-2[5]	42507.0	ND<0.013	ND<0.022	ND<0.014	ND<0.0097	ND<0.021	ND<0.041	ND<0.016	ND<0.011	ND<0.049	---	ND<0.005	All ND
DP-7d15.0	15.0	02/18/15	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	All ND
DP-8d15.0	15.0	02/18/15	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	All ND
Samples													
SG-1Ad5.0	5.0	10/13/15	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**18**	**0.24**	**0.13**	ND<0.005	All ND
SG-2Ad2.0	2.0	10/13/15	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**1.9**	**0.07**	**0.0021**	ND<0.005	All ND
SG-2Ad5.0	5.0	10/13/15	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**0.37**	**0.046**	**0.02**	ND<0.005	All ND
SG-1Bd2.0	2.0	10/13/15	---	ND<0.005	**0.0015**	ND<0.005	ND<0.005	ND<0.005	**160**	**1.2**	**0.14**	ND<0.005	All ND
SG-1Bd5.0	5.0	10/13/15	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**40**	**0.26**	**0.11**	ND<0.005	All ND
SG-1Bd7.0	7.0	10/13/15	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**2.2**	**0.2**	**0.15**	ND<0.005	All ND
SG-2Bd2.0	2.0	10/13/15	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**0.77**	**0.029**	ND<0.005	ND<0.005	All ND
SG-2Bd5.0	5.0	2 = Dichloroc	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**0.25**	**0.014**	**0.0045**	ND<0.005	All ND
SG-2Bd8.5	8.5	3 = Dichloroc	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**0.16**	**0.024**	**0.018**	ND<0.005	All ND

4 = Dichlorodifluoromethane @ 3.5 ug/m3

5 = Dichlorodifluoromethane @ 3.2 ug/m3

TABLE 3

SUMMARY OF HISTORICAL SOIL ANALYTICAL DATA

13778 DOOLITTLE DRIVE, SAN LEANDRO, CA

Sample ID	Sample Depth (ft)	Sample Date	TPHd (mg/Kg)	B (mg/Kg)	T (mg/Kg)	E (mg/Kg)	o-Xyl (mg/Kg)	p&m-Xyl (mg/Kg)	PCE (mg/Kg)	TCE (mg/Kg)	cis-1,2DCE (mg/Kg)	VC (mg/Kg)	Other VOCs (mg/Kg)
	ESLs Comm/Ind.		**500**	**0.044**	**2.9**	**3.3**	**2.3**		**0.7**	**0.46**		**0.032**	**varies**

--- = Parameter not analyzed
<0.5 / ND = Not present at or above reporting detection limit
mg/Kg = milligrams per kilogram = ppm
ESLs = Environmental Screening Levels, May 2013
B = Benzene
T = Toluene
E = Ethylbenzene
Xyl = Xylenes
MtBE = Methyl-t-butyl ether
PCE = Tetrachloroethene
TCE = Trichloroethene
VC = Vinyl Chloride
cis-1,2DCE = cis-1,2-Dichloroethene

0.19

TABLE 4

SUMMARY OF HISTORICAL GROUNDWATER ANALYTICAL DATA

13778 DOOLITTLE DRIVE, SAN LEANDRO, CA

Sample ID	Sample Date	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MtBE (µg/L)	PCE (µg/L)	TCE (µg/L)	cis-1,2DCE (µg/L)	trans-1,2DCE (µg/L)	VC (µg/L)	Other VOCs (µg/L)
S-3*	08/10/14	---	---	---	---	---	**750**	**51**	**7.6**	ND<7.1	ND<7.1	All ND
DP-1	02/18/15	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	All ND
DP-2	02/18/15	ND<0.50	ND<0.50	ND<0.50	ND<1.0	**0.55**	ND<0.50	**0.69**	ND<0.50	ND<0.50	ND<0.50	All ND
DP-3	02/18/15	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<0.50	**160**	**35**	**6.6**	ND<0.50	ND<0.50	All ND
DP-4	02/18/15	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<0.50	**12,000**	**2,100**	**610**	**11**	ND<0.50	All ND
DP-5	02/18/15	ND<0.50	ND<0.50	ND<0.50	ND<1.0	**0.61**	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	All ND
DP-6	02/18/15	ND<0.50	ND<0.50	ND<0.50	ND<1.0	**1.6**	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	All ND
IA-7	02/18/15	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<0.50	ND<0.50	**0.77**	ND<0.50	ND<0.50	ND<0.50	All ND
DP-8	02/18/15	ND<0.50	ND<0.50	ND<0.50	ND<1.0	**0.84**	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	All ND
SG-1B	10/13/15	**0.18**	**0.38**	ND<0.50	ND<1.0	ND<0.50	**2,200**	**130**	**88**	**4.3**	ND<0.50	All ND[1]
IA-3-2[2]	05/17/16	ND<0.014	ND<0.023	ND<0.014	ND<0.096	ND<0.021	**ND<0.042**	**ND<0.016**	**ND<0.012**	ND<0.005	---	All ND
IA-9-2[3]	05/17/16	ND<0.0099	**17**	ND<0.010	**3**	**8.4**	**260**	**ND<0.012**	**ND<0.0086**	**ND<0.0037**	---	All ND
IA-8-2[4]	05/17/16	ND<0.013	ND<0.022	ND<0.014	ND<0.0096	**ND<0.020**	ND<0.041	ND<0.015	ND<0.011	ND<0.048	---	All ND
IA-6-2[5]	05/17/16	ND<0.013	ND<0.022	ND<0.014	ND<0.0097	**ND<0.021**	ND<0.041	ND<0.016	ND<0.011	ND<0.049	---	All ND
SG-2B	10/13/15	**0.43**	**0.15**	ND<0.50	ND<1.0	ND<0.50	**1,500**	**480**	**280**	**22**	**0.34**	All ND[2]
Samples collected	**Comm/Ind.**	**1.0**	**40.0**	**30.0**	**20.0**	**5.0**	**5.0**	**5.0**	**6.0**	**10.0**	**0.5**	**varies**

--- = Parameter not analyzed

<0.5 / ND = Not present at or above reporting detection limit

mg/Kg = milligrams per kilogram = ppm

ESLs = Environmental Screening Levels, May 2013

B = Benzene MtBE = Methyl-t-butyl ether PCE = Tetrachloroethene

T = Toluene TCE = Trichloroethene

E = Ethylbenzene VC = Vinyl Chloride

Xyl = Xylenes (total) 2 = Dichlorodifl cis-1,2DCE = cis-1,2-Dichloroethene

1 = chlorobenzene @ 0.25 ug/L and chloroform @ 1.2 ug/L

2 = chlorobenzene @ 0.51 ug/L and chloroform @ 0.19 ug/L

FIGURES

SOURCE: USGS 1:24,000 SCALE SERIES, SAN LEANDRO QUAD

APPROX. SCALE

0 0.75 1.5 MI

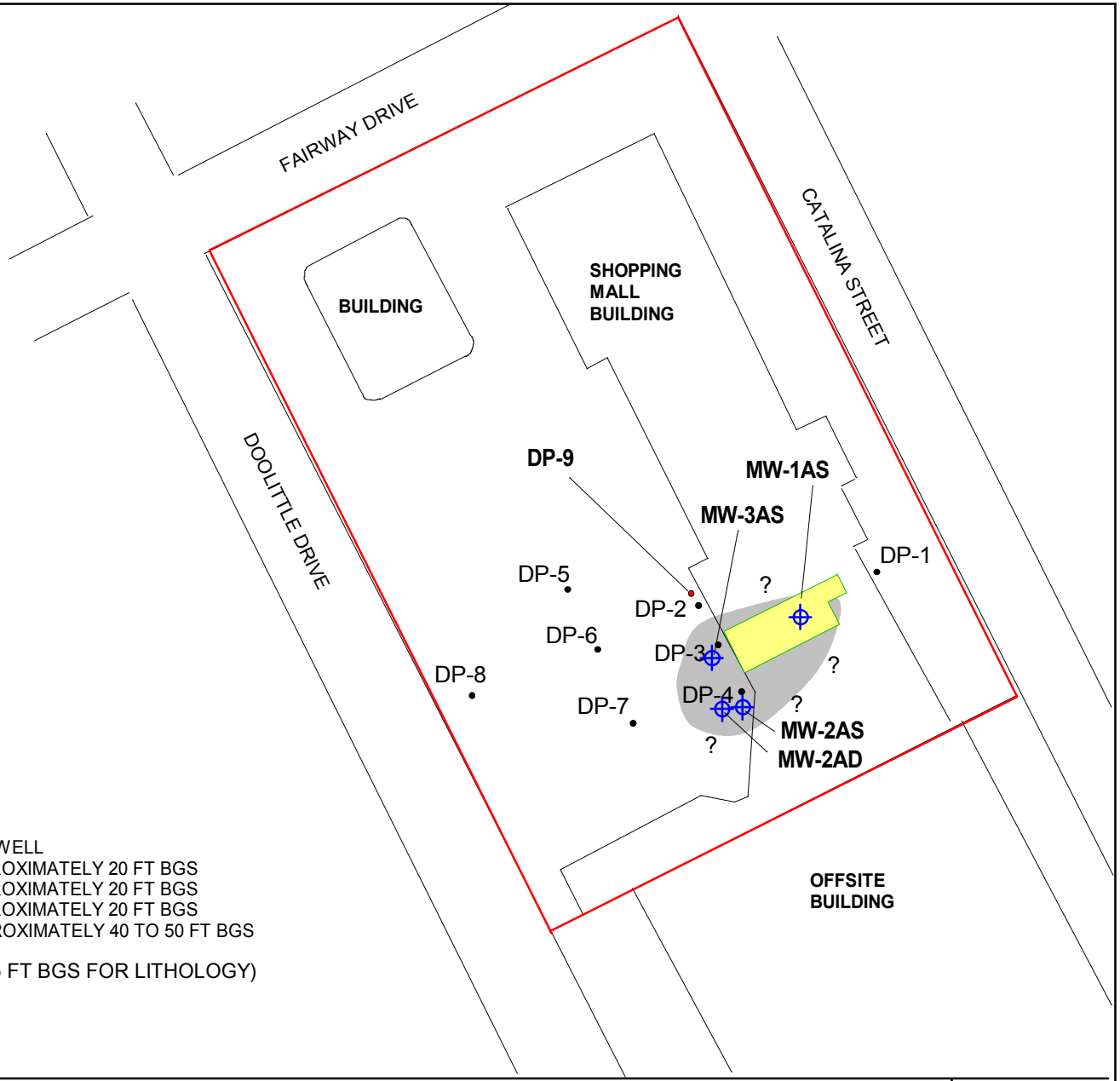
WellTest, Inc.
Contractor License No. 843074

13778 DOOLITTLE AVE.
SAN LEANDRO, CALIFORNIA

SITE VICINITY MAP

FIGURE

1



N

0 75 150

APPROXIMATE SCALE IN FEET

LEGEND

DP-8 • EXPLORATORY BORING (02/18/15)

FOUR SEASONS CLEANERS

PARCEL 80G-931-1-5

PRELIMINARY ESTIMATE OF LATERAL EXTENT OF SHALLOW GROUNDWATER IMPACTED BY VOLATILE ORGANIC COMPOUNDS

PROPOSED GROUNDWATER MONITORING WELL
MW-1AS = 4-INCH DIAMETER WELL TO APPROXIMATELY 20 FT BGS
MW-2AS = 4-INCH DIAMETER WELL TO APPROXIMATELY 20 FT BGS
MW-3AS = 4-INCH DIAMETER WELL TO APPROXIMATELY 20 FT BGS
MW-2AD = 4-INCH DIAMETER WELL TO APPROXIMATELY 40 TO 50 FT BGS

DP-9 • PROPOSED EXPLORATORY BORING (45 FT BGS FOR LITHOLOGY)

ALL LOCATIONS ARE APPROXIMATE

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San Jose, CA 95155
Phone (408) 287-2175

EXTENDED SITE MAP SHOWING BORINGS DP-1 THROUGHT DP-8 (02/18/15) AND PROPOSED SHALLOW AND DEEP A-ZONE GROUNDWATER MONITORING WELLS

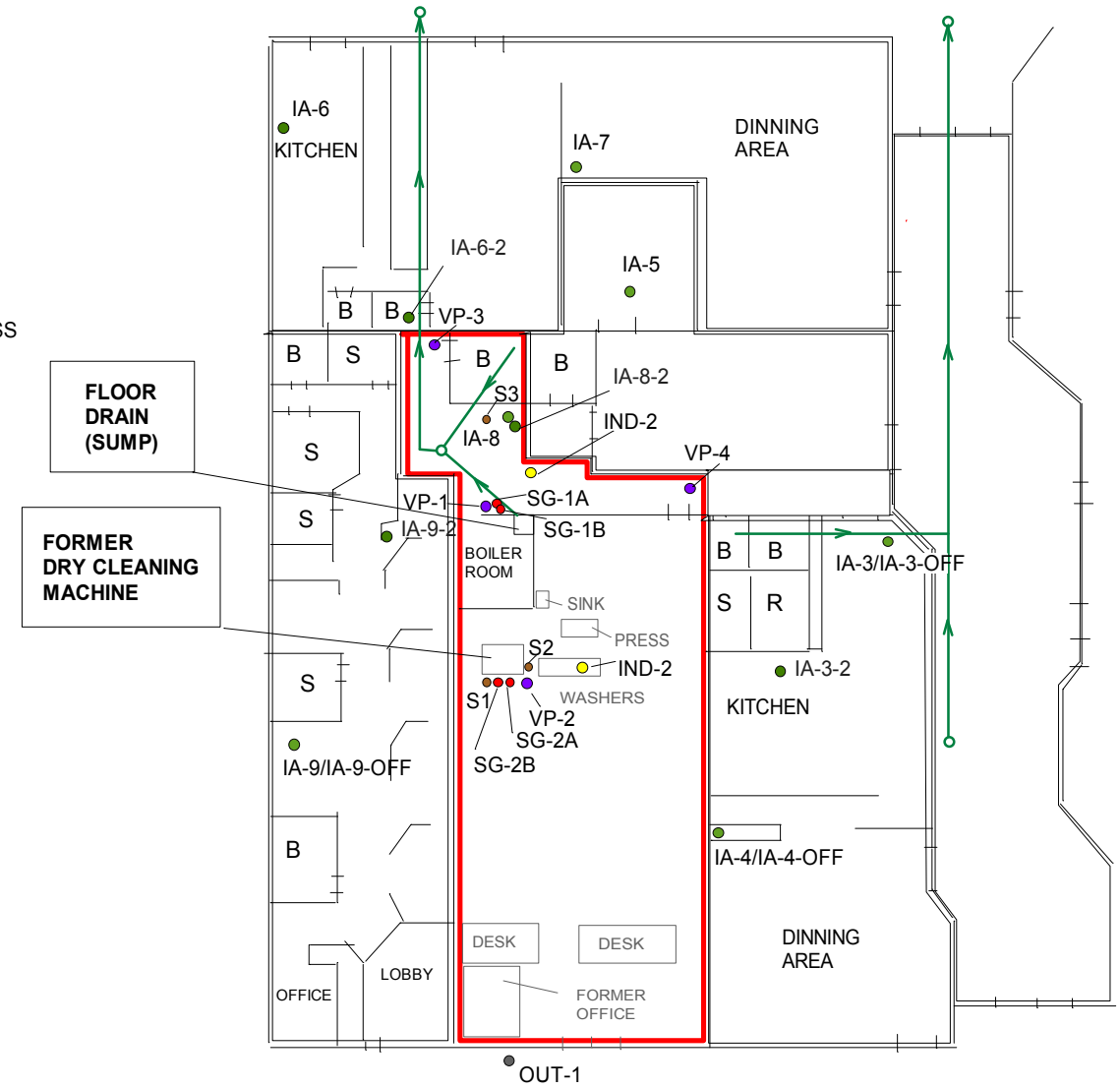
FOUR SEASONS CLEANERS
13778 DOOLITTLE DRIVE
SAN LEANDRO, CALIFORNIA

FIGURE 2

File: 5121/Figure 2

LEGEND

- INDOOR AIR SAMPLE (24-HOUR SUMMA SAMPLE)
- (8-HOUR SUMMA AMPLE)
- R REFRIGERATOR
- B BATHROOM
- S STORAGE
- PERIMETER OF THE FORMER DRY CLEANER BUSINESS (FOUR SEASONS CLEANERS)
- SOIL BORING
- SOIL-GAS MONITORING POINT
- SUBSLAB MONITORING POINT
- SEVER LINE TRACE (CRUZ BROTHERS 2016)
- OUTDOOR AIR SAMPLE (8-HOUR SUMMA SAMPLE)



0 20

APPROXIMATE SCALE IN FEET

ALL LOCATIONS ARE APPROXIMATE.
BASEMAP FROM MEASUREMENTS
TAKING BY WELLTEST (FEBRUARY 2016)

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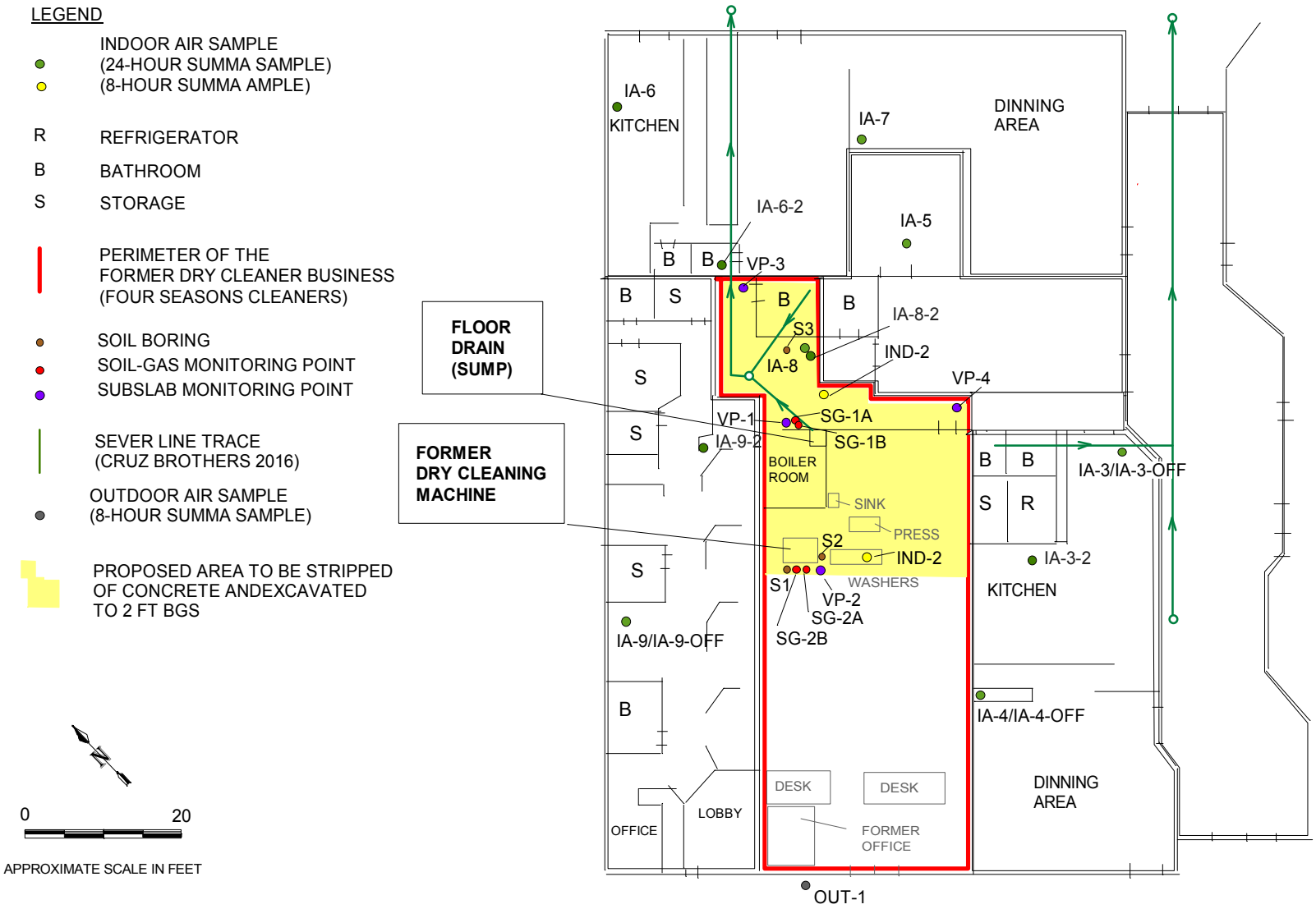
P.O. Box 8548
San Jose, CA 95155
Phone (408) 287-2175

GENERALIZED SITE MAP SHOWING HISTORIC SAMPLING LOCATIONS WITHIN AND NEAR THE FORMER DRY CLEANING UNIT

FOUR SEASONS CLEANERS
13778 DOOLITTLE AVENUE
SAN LEANDRO, CALIFORNIA

FIGURE 3

File: 5121/Drafting/Figure 3



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GENERALIZED SITE MAP SHOWING HISTORIC SAMPLING LOCATIONS AND AREA OF PROPOSED EXCAVATION TO 2 FT BGS

FOUR SEASONS CLEANERS
13778 DOOLITTLE AVENUE
SAN LEANDRO, CALIFORNIA

FIGURE
4

File: 5121/Drafting/Figure 4

LEGEND

R REFRIGERATOR

B BATHROOM

S STORAGE

PERIMETER OF THE FORMER DRY CLEANER BUSINESS (FOUR SEASONS CLEANERS)

SEWER LINE TRACE (CRUZ BROTHERS 2016)

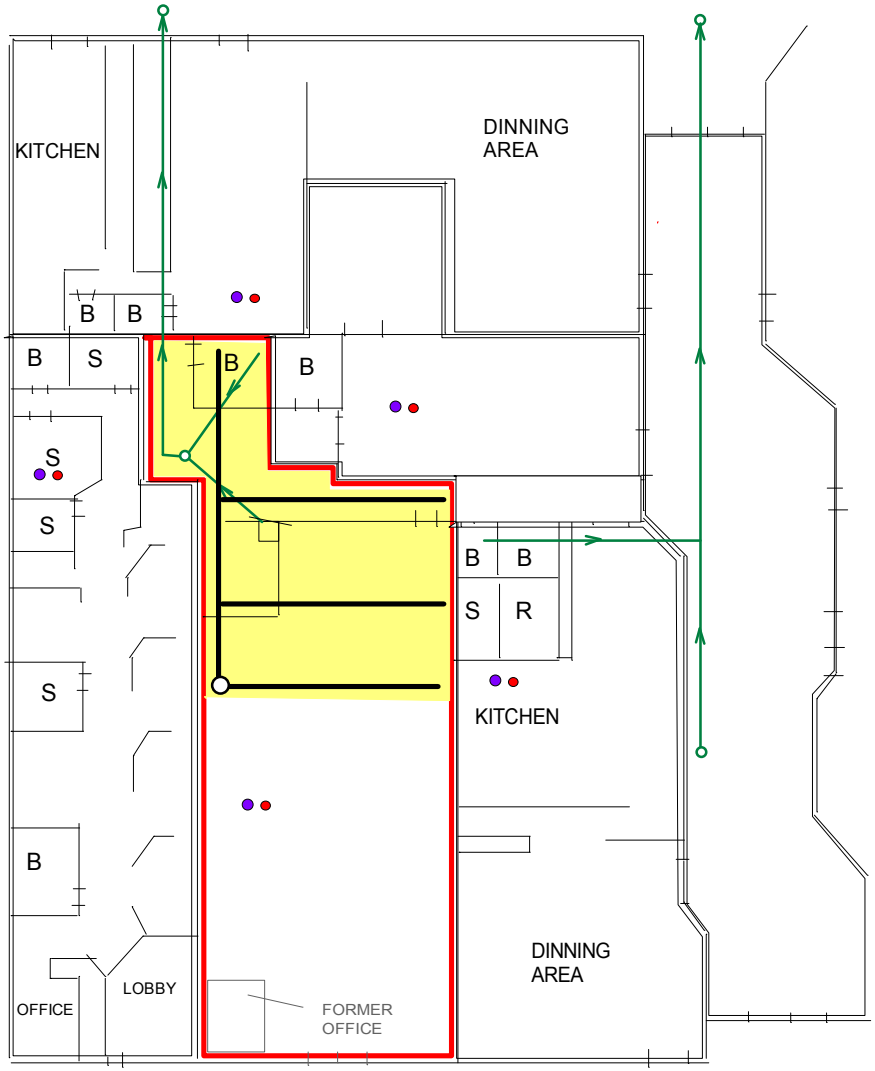
PROPOSED AREA TO BE STRIPPED OF CONCRETE ANDEXCAVATED TO 2 FT BGS

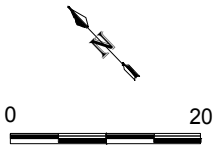
TRACE OF PROPOSED 2-INCH DIAMETER (SIX INCH DEEP) PIPING FOR SUB-SLAB DEPRESSURIZATION SYSTEM

RISER PIPE (2-INCHES DIAMETER)

PROPOSED SOIL-GAS MONITORING POINT (5FT BGS)

PROPOSED SUB-SLAB MONITORING POINT(6" BGS)





APPROXIMATE SCALE IN FEET

ALL LOCATIONS ARE APPROXIMATE.
BASEMAP FROM MEASUREMENTS
TAKING BY WELLTEST (FEBRUARY 2016)

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GENERALIZED SITE MAP SHOWING THE AREA OF PROPOSED EXCAVATION (2 FT BGS) AND SUB-SLAB DEPRESSURIZATION PIPELINES (6-INCHES BGS)

FOUR SEASONS CLEANERS
13778 DOOLITTLE AVENUE
SAN LEANDRO, CALIFORNIA

FIGURE 5

File: 5121/Drafting/Figure 5

LEGEND

R REFRIGERATOR

B BATHROOM

S STORAGE

PERIMETER OF THE FORMER DRY CLEANER BUSINESS (FOUR SEASONS CLEANERS)

SEWER LINE TRACE (CRUZ BROTHERS 2016)

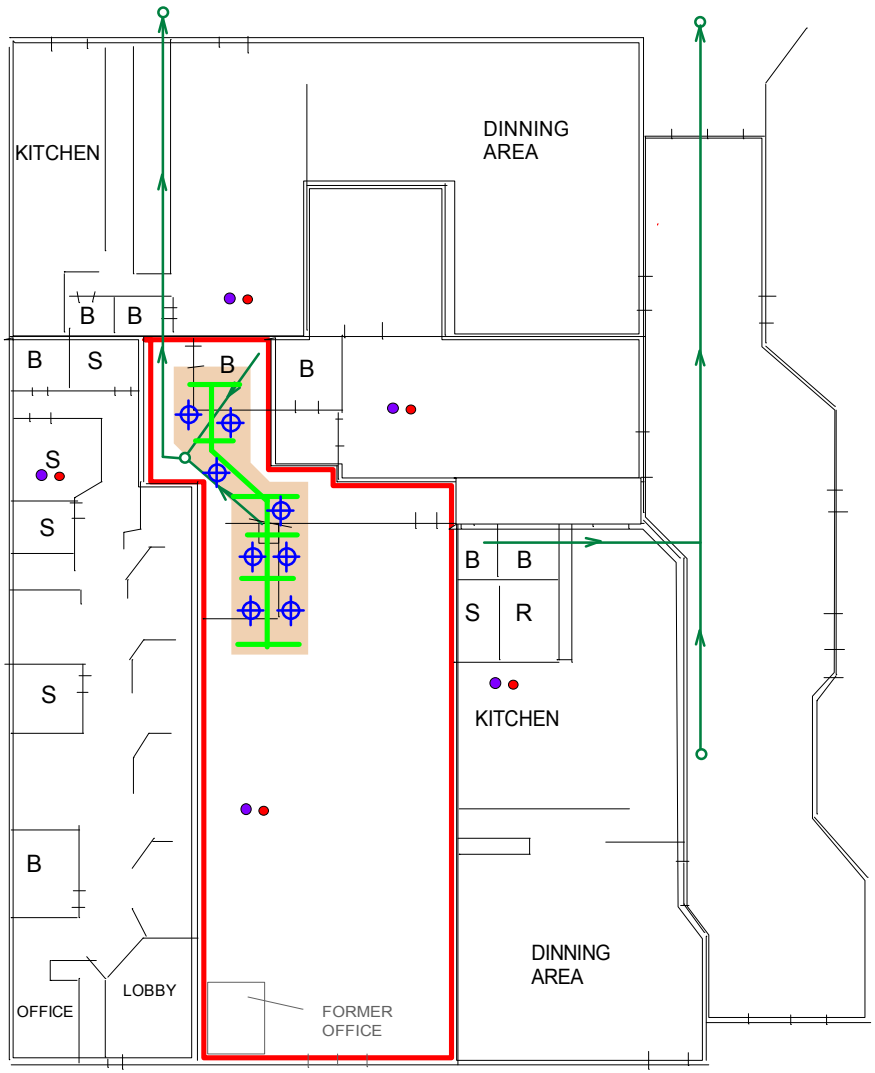
PROPOSED AREA TO BE EXCAVATED TO 4 FT BGS AND UP TO 6 FT BGS (DEPENDING ON DEPTH TO GROUNDWATER)

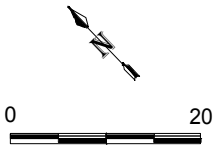
TRACE OF PROPOSED 2-INCH DIAMETER (SIX FEET DEEP) PIPING FOR HORIZONTAL VAPOR EXTRACTION SYSTEM

PROPOSED AIR SPARGE WELL 2-INCH DIAETER WELL TO 20 FT BGS

PROPOSED SOIL-GAS MONITORING POINT (5FT BGS)

PROPOSED SUB-SLAB MONITORING POINT(6" BGS)





APPROXIMATE SCALE IN FEET

ALL LOCATIONS ARE APPROXIMATE.
BASEMAP FROM MEASUREMENTS
TAKING BY WELLTEST (FEBRUARY 2016)

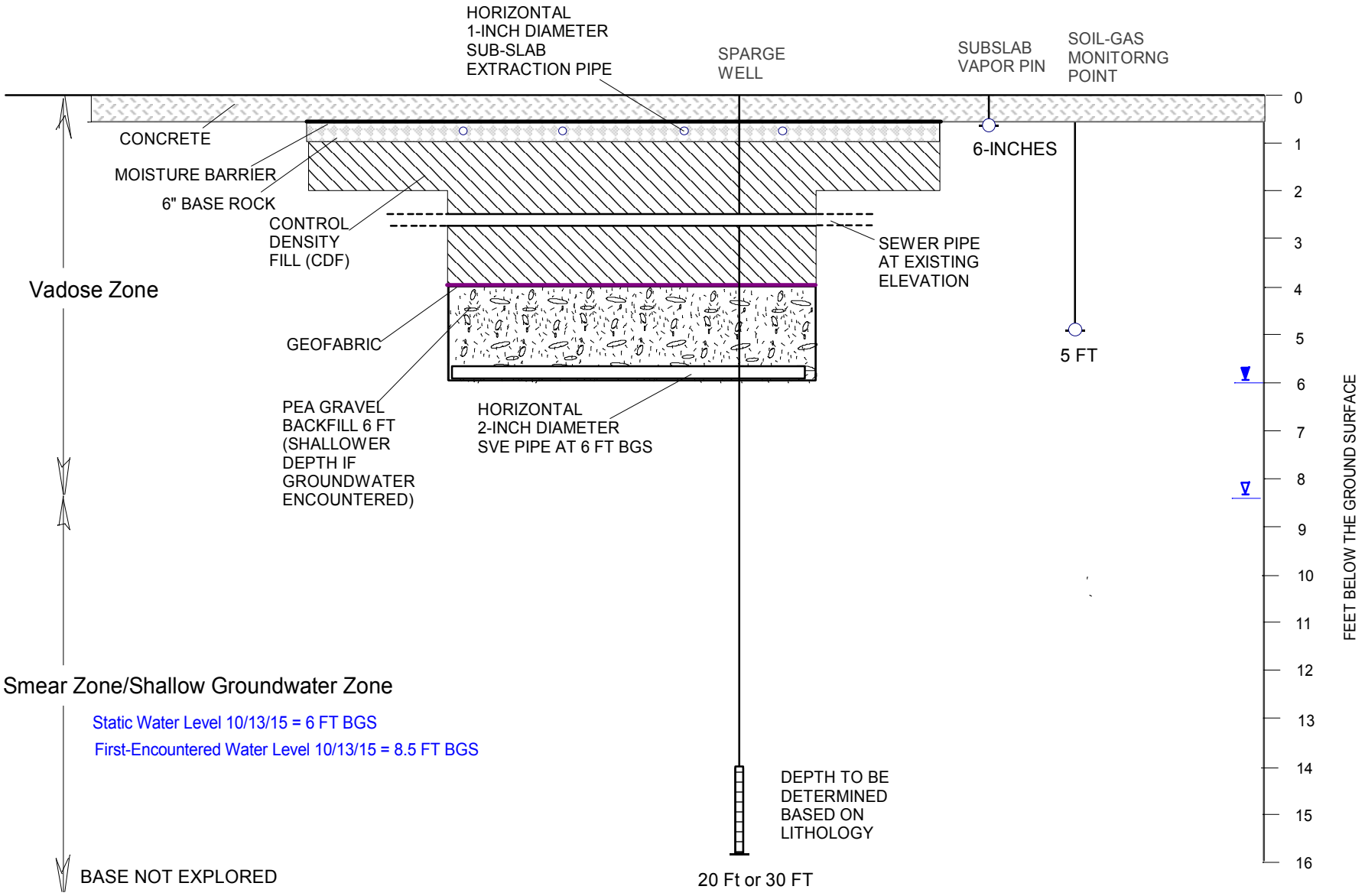
WellTest, Inc.
License No. 843074
P.O. Box 8548
San Jose, CA 95155
Phone (408) 287-2175

GENERALIZED SITE MAP SHOWING THE AREA OF PROPOSED EXCAVATION (6 FT BGS) AND HORIZONTAL VAPOR EXTRACTION WELL HVE-1 (6 FT BGS), AND SPARGE WELLS

FOUR SEASONS CLEANERS
13778 DOOLITTLE AVENUE
SAN LEANDRO, CALIFORNIA

FIGURE 6

File: 5121/Drafting/Figure 6



SECTION VIEW -- NOT TO SCALE

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P.O. Box 8548
San Jose, CA 95155
Phone (408) 287-2175

SCHEMATIC SECTION VIEW OF PROPOSED EXCAVATION (2 FT AND 6 FT BGS), SUB-SLAB AND VADOSE-ZONE VAPOR RECOVERY PIPELINES (6-INCHES AND 6FT BGS), SUB-SLAB AND VADOSE-ZONE SAMPLING POINTS AND SPARGE WELLS

FOUR SEASONS CLEANERS
13778 DOOLITTLE AVENUE
SAN LEANDRO, CALIFORNIA

FIGURE 7

File: 5121/Drafting/Figure 7

ATTACHMENT A

Directive Letters

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
REBBECA GEBHART, Interim Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

July 27, 2016

Mr. Ernie Lee
Marina Faire, Shopping Center
3271 South Highland Drive, Suite 704
Las Vegas, NV 89109
(Sent via electronic mail to: ernestlee@gmail.com)

Subject: Tennant Notification, Risk Characterization and Uncertainty Analysis, IRAP; Site Cleanup Program Case No. RO0003155 and Geotracker Global ID T10000006425, Four Seasons Cleaners, 13778 Doolittle Drive, San Leandro, CA 94577

Dear Mr. Lee:

Alameda County Department of Environmental Health (ACDEH) staff has reviewed the case file including the *Indoor Air Sampling Report,* dated June 9, 2016 (received June 29, 2016). The report was prepared and submitted on your behalf by Well Test, Inc (WTI). Thank you for submitting the report.

The report documented the re-collection of four indoor air samples in four different commercial suites at the commercial strip mall due to elevated detection limits and sampling irregularities in previous indoor air samples. In order to lower detection limits at the site, the analytical testing used a more sensitive analytical test method (EPA 8270 SIM) and this resulted in analytical results below appropriate regulatory goals in three of the four indoor air samples. The fourth indoor air sample continued to yield elevated tetrachloroethene (PCE) concentrations, up to 260 micrograms per cubic meter ($\mu g/m^3$), substantially in excess of generic commercial Environmental Screening Levels (ESLs), in the dentist office. Conversely, this concentration appears to be significantly lower than the previous concentration and may be the result of the cessation of dry cleaning operations in late 2015 at the adjacent commercial suite.

Based on ACDEH staff review of the case file, we request that you address the following technical comments and send us the reports requested below.

TECHNICAL COMMENTS

1. **Risk Characterization and Uncertainty Analysis –** Consistent with the October 2011 Department of Toxic Substances Control (DTSC) *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance)*, ACDEH requests that a Risk Characterization and an Uncertainty Analysis be conducted in order to preliminarily determine health risks at the subject site. If the estimated risk is greater than 10^{-4} or the Hazard Index is less than 1, response actions are needed (vapor intrusion mitigation and source remediation). Please submit the evaluation by the date identified below.

2. **Post-Indoor Air Sampling Notification of Building Occupants –** Consistent with the March 2012 DTSC *Vapor Intrusion Public Participation Advisory,* public notification fact sheets must be generated to communicate the results of the indoor air sampling to building occupants. ACDEH requests that fact sheets conform to the requirements of the March 2012 DTSC advisory. Consistent with the referenced October 2011 DTSC *Vapor Intrusion Guidance* this should be done individually or in small groups. Please submit draft notification documents, in MS Word, by the date identified below.

3. **Interim Mitigation Measures –** The referenced indoor air sampling report recommends interim remedial actions. This should include an evaluation of the need for interim mitigation measures, such as a modification of the Heating, Ventilation, and Air Conditioning (HVAC) system to provide positive pressure to reduce vapor intrusion exposures within at least the dentist's office, can include additional suites, and an evaluation of the need for the installation of fresh air and exhaust fans. Other options

may include carbon filtration of indoor air. These actions can be implemented quickly, and are in general conformance with the referenced October 2011 DTSC *Vapor Intrusion Guidance.* Consistent with this guidance, ACDEH does not consider mitigation to be a long-term solution. ACDEH considers remediation and mitigation as complimentary components of a response action for Volatile Organic Compounds (VOCs). Please submit this evaluation by the date identified below.

4. **Interim Remedial Actions –** As noted above, the referenced indoor air sampling report recommends interim remedial actions. This may include the installation of Soil Vapor (SVE) pilot test wells. If so, please be aware that ACDEH considers plot testing to be a form of interim remedial action. Please also be aware that a Remedial Action Plan will be required to evaluate feasible alternatives for the site, to incorporate the results of the proposed pilot test, and to recommend final alternatives in accordance with DTSC guidelines. ACDEH requests the identification of appropriate measures, and the submittal of an interim remedial action plan by the date identified below.

5. **Electronic Report and Data Upload Compliance –** A review of the case file and the State's Geotracker database indicates that the site is not in compliance upload requirements. Compliance is a State requirement. In accordance with California Code of Regulations, Title 23, Division 3, Chapter 16, Article 12, Sections 2729 and 2729.1, beginning September 1, 2001, all analytical data, including monitoring well samples, submitted in a report to a regulatory agency as part of the UST or LUST program, must be transmitted electronically to the SWRCB GeoTracker system via the internet. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs, including Site Cleanup Programs. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites was required in GeoTracker. <u>At present missing data and documents include, but may not be limited to: recent subsurface investigation reports, recent analytical EDFs, and GEO_MAPS</u>. Please see Attachment 1 for limited additional details, and the state GeoTracker website for full details. ACDEH requests notification of, and a list of, the documents uploaded to Geotracker. Please uploaded to GeoTracker by the date specified below.

<u>TECHNICAL REPORT REQUEST</u>

Please upload technical reports to the ACDEH ftp site (Attention: Mark Detterman), and to the State Water Resources Control Board's Geotracker website, in accordance with the specified file naming convention below, according to the following schedule:

- **August 17, 2016** – Geotracker Compliance
  Please email to your case worker when documents have been uploaded

- **August 17, 2016** – Draft Post-Sampling Public Notification Fact Sheet
  Please email to your case worker draft fact sheet

- **September 9, 2016** - Risk Characterization and Uncertainty Analysis
  File to be named: RO3155_RISK_R_yyyy-mm-dd

- **September 23, 2016 –** Interim Mitigation Measures
  File to be named: RO3155_IRAP_R_yyyy-mm-dd

- **September 30, 2016 –** Interim Remedial Action Plan
  File to be named: RO3155_IRAP_R_yyyy-mm-dd

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

Online case files are available for review at the following website: http://www.acgov.org/aceh/index.htm.

If you have any questions, please do not hesitate to call me at (510) 567-6876 or send me an electronic mail message at mark.detterman@acgov.org.

Sincerely,

Mark E. Detterman, PG, CEG
Senior Hazardous Materials Specialist

Enclosures: Attachment 1 – Responsible Party (ies) Legal Requirements / Obligations
Electronic Report Upload (ftp) Instructions

cc: Ms. Julie D'Hondt, Marina Faire, LP, 3271 S. Highland Drive, Suite 704, Las Vegas, NV 89109 (Sent via electronic mail to: highlandofficelv3@gmail.com)

Bill Dugan, Well Test, Inc; P.O. Box 8548, San Jose, CA 95115 (Sent via electronic mail to: dugan@welltest.biz)

Forrest Cook, Well Test, Inc; P.O. Box 8548, San Jose, CA 95115 (Sent via electronic mail to: Cook@welltest.biz)

Dilan Roe, ACDEH, (Sent via electronic mail to: dilan.roe@acgov.org)
Mark Detterman, ACDEH, (Sent via electronic mail to: mark.detterman@acgov.org)
Electronic File, GeoTracker

Attachment 1

Responsible Party(ies) Legal Requirements / Obligations

REPORT REQUESTS

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program FTP site are provided on the attached "Electronic Report Upload Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) GeoTracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the GeoTracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to Spills, Leaks, Investigations, and Cleanup (SLIC) sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in GeoTracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/).

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC)	**REVISION DATE:** May 15, 2014
	ISSUE DATE: July 5, 2005
	PREVIOUS REVISIONS: October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010, July 25, 2010
SECTION: Miscellaneous Administrative Topics & Procedures	**SUBJECT:** Electronic Report Upload (ftp) Instructions

The Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities.

REQUIREMENTS

- **Please do not submit reports as attachments to electronic mail.**
- Entire report including cover letter must be submitted to the ftp site as **a single portable document format (PDF) with no password protection**.
- It is **preferable** that reports be converted to PDF format from their original format, (e.g., Microsoft Word) rather than scanned.
- **Signature pages and perjury statements must be included and have either original or electronic signature.**
- **Do not password protect the document**. Once indexed and inserted into the correct electronic case file, the document will be secured in compliance with the County's current security standards and a password. **Documents with password protection will not be accepted**.
- Each page in the PDF document should be rotated in the direction that will make it easiest to read on a computer monitor.
- Reports must be named and saved using the following naming convention:

  RO#_Report Name_Year-Month-Date (e.g., RO#5555_WorkPlan_2005-06-14)

Submission Instructions

1) Obtain User Name and Password
   a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
      i) Send an e-mail to deh.loptoxic@acgov.org
   b) In the subject line of your request, be sure to include **"ftp PASSWORD REQUEST"** and in the body of your request, include the **Contact Information, Site Addresses**, and the **Case Numbers (RO# available in Geotracker) you will be posting for**.

2) Upload Files to the ftp Site
   a) Using Internet Explorer (IE4+), go to ftp://alcoftp1.acgov.org
      (i) Note: Netscape, Safari, and Firefox browsers will not open the FTP site as they are NOT being supported at this time.
   b) Click on Page located on the Command bar on upper right side of window, and then scroll down to Open FTP Site in Windows Explorer.
   c) Enter your User Name and Password. (Note: Both are Case Sensitive.)
   d) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
   e) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.

3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
   a) Send email to deh.loptoxic@acgov.org notify us that you have placed a report on our ftp site.
   b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name @acgov.org. (e.g., firstname.lastname@acgov.org)
   c) The subject line of the e-mail must start with the RO# followed by **Report Upload**. (e.g., Subject: RO1234 Report Upload) If site is a new case without an RO#, use the street address instead.
   d) If your document meets the above requirements and you follow the submission instructions, you will receive a notification by email indicating that your document was successfully uploaded to the ftp site.

ATTACHMENT B

Background Information

ATTACHMENT B
Background Information
13778 Doolittile Drive, San Leandro, CA
Case # RO0003155

A description of the site, the history of the site and project, and the hydrogeologic characteristics of the site are summarized in the following subsections.

Site Description: The site is located in a mixed commercial and residential area of San Leandro, California. The site parcel is approximately 5.05 acres and is improved with a multi-tenant strip mall and separate restaurant building. The dry cleaning unit is located within the strip mall and is associated with 13778 Doolittle Drive. The site lies at an elevation of approximately 15 feet above sea level and is relatively flat. The property is bounded by Doolittle Drive to the west, Fairway Drive to the north, Catalina Drive to the east and a commercial property to the south..

Previous Site Investigations: A *Limited Phase II Soil, Water, and Soil Vapor Investigation* prepared by PIERS Environmental Services, Inc. (PIERS) for the subject site in August 2014. The results of the PIERS report indicated that the subsurface at the subject site has been significantly impacted by the common dry cleaning solvent tetrachloroethylene (PCE) and it's breakdown products trichloroethene (TCE) and cis-1,2-dichloroethen (cis-1,2DCE). The likely source of the identified impacts is the on-site dry cleaner which, reportedly, historically used and stored these solvents. Based upon the results of the PIERS investigation, WTI prepared a *Soil and Water Investigation Work Plan* for the subject site, which outlined a specific set of tasks to further define the scope and extent of subsurface soil and water contamination. The Work Plan was submitted to the Alameda County Health Care Services Agency (ACHCSA), the local oversight program, and was approved (with comments) in their January 15, 2015 Directive Letter. WTI implemented the scope of the Work Plan in February 2015, which included the collection of soil and grab groundwater samples from eight temporary borings. The results of the investigation are presented in WTI's *Soil and Water Investigation Report and Vapor Assessment Work Plan*, dated March 6, 2015.

ATTACHMENT C

Field Methods

ATTACHMENT C-1
Direct-Push Drilling, Sampling and Borehole Sealing Procedures
13778 Doolittle Drive, San Leandro, California

Soil Gas Sampling Point Installation (Soil Gas Monitoring Wells)

WTI will install an Environmental Service Products' polyethylene soil vapor implant near the base of each boring. The polyethylene implants are a one-piece molded assembly made of high-density porous polyethylene. The filtration rating is 40-60 microns with a maximum temperature of 150 degrees Fahrenheit. Each implant will be fitted with a "Speedfit" push-in brass fitting with a nickel-plated finish that accommodates 1/4" OD tubing. The size of each polyethylene implant will be 1/2" OD x 1-7/8"in length. Teflon tubing (0.17" ID x 1/4" OD) will be attached to each implant and extended to the ground surface. A one-foot layer of #2/12 or #2/16 filter sand will be placed at the base of each boring. A six-inch layer of dry granular 8-mesh bentonite will be placed on top of the sand filter pack. Portland neat cement will be poured on top of the bentonite seal to just below the ground surface. The Teflon tube will be capped and placed within a locking wellhead completion (2-inch diameter casing with a locking cap).

Soil Gas Point Sampling Procedures

Soil gas samples w**ill** not be collected sooner than 72-hours to allow for representative soil gas to accumulate from the formation into the completed well. Samples will be collected using a SUMA® canister supplied by the contracted laboratory. Prior to the collection of a sample, the soil gas monitoring well will have at least 3 purge volumes of air (soil gas) removed from the probe and tubing associated with the well, as well as the soil gas from the voids within sand pack at the base of the well and within the dry granular 8-mesh bentonite above the sand pack interval. The well will be purged using a SUMA® canister (purge canister) attached to a flow meter which, in turn is attached to the Teflon tubing of the soil gas well. The well will be purged at a rate between 100 to 200 ml/minute. Once the well is purged, a sample collection SUMA® canister will be attached to the Teflon tubing of the well, the initial negative pressure of the canister will be measured (and recorded), and soil gas will be delivered to the canister from the well until a negative pressure of about five-inches of Hg is noted on the vacuum gauge on the sample collection SUMA® canister. All vacuum readings will be documented on the chain of custody record. Soil gas samples will be kept at ambient temperatures, and will be transported to the laboratory under chain of custody record.

Data Quality Assurance – IPA Shroud Leak Test Procedure

Soil Gas sampling will be conducted using an isopropyl alcohol (IPA) or Helium shroud technique described in Attachment C of the CA DTSC Soil Gas Advisory Document (July 2015) to ensure representative soil gas samples are collected. A IPA tracer shroud will be used to perform a quantitative leak test while sampling the two soil gas wells. A sealed chamber will be placed over the wellhead of the soil gas wells. A 20% IPA in air atmosphere will be maintained around the sample train and above the well annulus.

Monitoring Well and Sparge Well Installation

Wells will be permitted and installed in accordance with state and local guidelines using a subcontracted state-licensed driller. The wells will be drilled using 8-inch to 10-inch diameter hollow-stem augers to a maximum depth of approximately 20 feet below grade for the upper Z zone and 40 feet below ground surface (bgs) for the deeper. A WTI. geologist will log the borings from soil samples and auger cuttings using the Unified Soil Classification System and standard geologic techniques. Under the direction of a State of California Registered Geologist, descriptive information will be denoted on the boring logs including soil and groundwater information and well installation data. Soil samples for logging purposes and/or chemical analysis will be collected at approximate 5-foot depth intervals or changes in lithology. If applicable, soil samples for chemical analyses will be collected from 2-inch diameter split-spoon samplers equipped with

6-inch brass liners. The brass liners will be capped with Teflon, plastic end caps, and placed in sealable plastic bags. The brass liners will be stored in iced coolers and transported to a state certified laboratory, with chain-of-custody documentation.

Well construction information will be denoted on the boring logs in the field. Well construction materials will consist of a cement grout or bentonite bottom seal (if necessary), 2 to 4-inch diameter flush-threaded Schedule 40 PVC casing and 0.010-inch factory-slotted screen, #2/12 Monterey sand pack, a bentonite and cement grout surface seal, and a locking cap and protective vault box.

Once the total depth is achieved, the sand pack will be placed from the bottom of the boring and extended approximately 2-feet above the well screen. A 1- to 2-foot-thick bentonite seal will be placed on top of the sand pack, with cement grout placed on top of the bentonite seal extending to the ground surface. A traffic proof well vault box will be placed over the wells.

Following development of the two monitoring wells a licensed surveyor will be contracted to establish the elevation and coordinates.

Well Development/Groundwater Sampling

Well development of new wells will be performed utilizing surge block/swab and groundwater extraction techniques. Well development will be performed until the majority of suspended fines are removed or until approximately ten casing volumes are removed. Well development documentation will consist of recording data including: time, groundwater and total well depth, turbidity, gallons removed, and well stabilization parameters (pH, conductivity, temperature). Development and purge waters will be stored on site in 55-gallon drums pending proper disposal at a State-licensed facility. Well development will not be performed within 72 hours of the completion of each new well. Groundwater sampling procedures will consist of initially measuring and documenting the water level in the well and checking the well for the presence of separate-phase hydrocarbon (SPH) using an oil/water interface probe or a clear Teflon bailer. If the well does not contain SPH, it will be purged a minimum of three casing volumes or until dry. During purging, well stabilization parameters (temperature, pH, and electrical conductivity) will be monitored. After 80% recovery of the water levels, a groundwater sample will be collected with a clean Teflon bailer and placed into the appropriate EPA-approved containers. Sampling equipment will be cleaned with tri-sodium phosphate between uses. The samples will be labeled and transported under iced storage to the laboratory using appropriate chain-of-custody documentation.

Headspace and Soil Gas Testing via Field Instruments

Soil samples collected during drilling activities will be analyzed in the field for concentrations of volatile organic compounds using a photo ionization detector (PID). The test procedure involves placement of the soil sample in a clean plastic bag. The bag will be warmed for approximately 20 minutes, pierced, and the head-space within the bag tested for total organic vapor measured in parts per million volume as isobutylene. The instrument will be calibrated prior to field use. The results of the field-testing will be noted on the boring logs.

Samples of extracted soil gas collected in Tedlar bags will also be field tested using a PID during SVE and air sparging feasibility testing. Certain Tedlar bag samples at the beginning of the testing and during the testing will be collected in duplicate to allow for comparative certified analysis as described below.

Laboratory Methods

Selected soil samples, extracted soil gas Tedlar bag samples, and all groundwater samples will be submitted to a California state-certified laboratory and analyzed as warranted for gasoline range TPH using GC/MS.

ATTACHMENT C-2
Feasible Test Procedures
13778 Doolittle Drive, San Leandro

Identified Potential Objectives:

- Determine baseline contaminant concentrations at individual wells to be used for influence testing and extraction well(s). Also determine concentrations of oxygen and carbon dioxide. The resulting data will be used to define baseline conditions and estimate mass potential.
- Determine baseline water table depth. Data can be contrasted against measurements made during SVE and AS to determine how the water table responds and indicate SVE and AS influence.
- Determine qualitative well performance using a pressure degradation test to determine if the existing wells are adequate for use.
- Determine flow versus vacuum pressure relationship for SVE via step testing. Data will allow sizing of the soil vapor extraction (SVE) blower and related infrastructure. Step testing entails varying the applied vacuum and measuring the resulting flow rate, extracted soil gas and discharge temperatures, extracted vapor concentrations, and influence zone pressures. At the close of step testing and fixed vacuum testing, concentrations of contaminants, oxygen, and carbon dioxide should be ascertained for comparison with baseline conditions.
- Determine initial contaminant mass removal rates and influence via fixed rate testing. Mass removal rates at specific test wells will be estimated for a fixed applied vacuum. Also subsurface influence will be measured and recorded. The data can be used to specify available soil vapor treatment equipment, facilitate preparation of the air discharge permit, and set the design influence radius. Also, moisture removal rates can be determined by tracking moisture collected in the air/water separator. Concentration versus time at fixed applied vacuum can indicate available contaminant mass discharge (CMD – mass available in regions of soil vapor flow before diffusion limits mass removal).
- Determine sparging breakthrough pressure for each sparge well. Typically, the breakthrough pressure is the maximum pressure required to initiate subsurface air sparging. This data can be used to size the sparge blower and related infrastructure.
- Determine air-sparging flow versus pressure post breakthrough pressure at multiple depth wells. This data aids in sizing sparge blower and related infrastructure.
- Identify air-sparging contribution to contaminant mass removal. The initial concentration attributed to air sparging relates to what mass is immediately available from volatizing VOCs from the deeper unsaturated and saturated zones within the zone of influence. Time series data indicates when diffusion limitations are reached. Mass removal trends associated with quick pulse cycles indicate the variability in flow channels established at the onset of air sparging.
- Estimate zone of AS influence. The California LUFT Manual, September 2012 states, “Increased vapor concentrations and/or dissolved oxygen (DO) levels in observation wells after test initiation are evidence that the ROI includes the observation well.” Relevant data collected before and after AS include soundings, PID measurements of volatile organics in samples of extracted soil vapors, well and in situ measurements of dissolved oxygen using a meter and probe combination.

Proposed Infrastructure

- Proposed horizontal vapor extraction well – See report text and Figure 6. It is anticipated that the 4-inch well will extend approximately 50 feet including short branches and will lie at approximately 6.5 feet from grade within the approximate center of the contaminated interval.

- Proposed air sparge wells AS-1 through AS-8, with 2-foot screen lengths tentatively set between 17 to 18 feet bgs for the shallow A Zone and 37 to 38 feet for the deeper A Zone as determine by field conditions encountered. Typically, the objective is to place the top of the 2-foot screened interval 5 to 10 feet below the base of the impacted water bearing zone, but in this case due to confined/submerged aquifer conditions and the plan to tightly space the sparge wells to accelerate the attainment of cleanup objectives, the targeted interval straddles the bottom of the permeable intervals that comprise the shallow and deeper A Zone.

- **Mobile treatment system** – Well Test has several state-of the art units built within the last few years all equipped with diesel generators, 200 to 350 scfm claw vacuum pumps, a variable speed frequency drive, knock out drum, controls, meters and manifolds, and vapor phase carbon treatment trains.

- **Sparge compressor** – One or more 2 HP portable, electric, oil-free air compressors, maximum pressure 125 cfm, capable of providing 5 cfm at 90 PSI (or functional equivalent).

- **Vapor phase activated carbon treatment vessels**. two-stage 85-gallon drums of vapor phase activated carbon connected in series.

Baseline and Follow-up Data Collection

- Prior to and within two weeks after testing, all ten proposed vapor monitoring points will be sampled into Tedlar bags as well as the riser serving the sib slab depressurization system riser. All the sparge wells and monitoring wells will be purged and sampled.

SVE Test Procedures

- **Short SVE testing:** Vacuum will be drawn for 1 to 2 hours at HSVE-1 during which time influence monitoring will be conducted at all ten soil vapor monitoring points. MW-1AS, and the sub-slab piping network riser using a magnahelix gauge. Once steady state conditions are reached after initiating the SVE testing, a sample of the extracted vapors will be collected into duplicate Tedlar bags. One bag sample will be tested in the field for total volatile hydrocarbons as hexane using a calibrated FID or PID. One Tedlar bag will be submitted for certified analysis of volatile organics. The water level in the knock out tank will be measure before and after the test. During the course of the testing the following measurements will be recorded every fifteen minutes: (1) vapor extraction flow rate in cfm; (2) system vacuum at the knock out drum inches of mercury; (3) the negative pressure at the extraction well head in inches of mercury; (4) influent and effluent VOC concentrations via PID or FID; the vacuum induced at the influence monitoring wells in inches of water; (5) blower effluent temperature.

- **Step Test:** First measure the distance between the SVE well and the influence monitoring wells and the level of water in the knock out drum. Activate the SVE system starting at full dilution, and begin to close the dilution air in steps – monitor and record applied vacuum pressure, flow rate, blower effluent temperature, influent VOC concentration, effluent VOC concentration, and liquid level in knockout. Bring the system to the maximum vacuum pressure and record aforementioned parameters. Check the SVE wellheads. Now bring the applied pressure down in sequential steps to achieve the maximum mass removal rate.

Sparge Test Procedures

- Prior to testing, gauge depth to water and measure dissolved oxygen at all sparge wells and the horizontal extraction well. With SVE system operating, conduct air sparging testing at each individual sparge well. First determine the distances between the sparge wells and all wells to be used for influence monitoring. Next, sequentially determine the concentrations of VOCs, oxygen and carbon dioxide in soil gas samples from HSVE-1 using property calibrated field analyzers. Incrementally apply pressure, measure and record pressure, flow rate and air temperature. Once stable flow has been

achieved, the pressure should fall below the breakthrough pressure and stabilize. Once the pressure has stabilized, proceed with step testing. First establish the compressor's maximum pressure and flow capacity. Next, establish the minimum pressure needed to maintain flow. Then, in succession, set the sparge pressure to 25%, 50%, and 75% of the difference between the maximum pressure and the minimum pressures needed to maintain flow. Measure and record pressure, flow rate and air temperature for each step, and check for visual and olfactory changes at HSVE-1. For influence testing, maintain a fixed pressure at 75% as determined in step testing. After one hour of sparging, measure concentrations of VOCs, oxygen and carbon dioxide in soil gas samples from selected vapor monitoring wells. At the completion of the test repeat the measurements of DO and depth to groundwater that were conducted prior to testing.

- **Five-day test –** Once all the individual sparge testing is complete, the applied vacuum at the maximum mass removal rate and continue SESVE operations to bring the total operating time to 120 hours operating week days from approximately 10:00 AM to 5:00 PM. At least once each day the following parameters will be monitored and recorded influent VOC, applied vacuum and flow rate, liquid level in knockout, and temperatures at the influent, at the blower, and at the effluent. Periodically measure and record subsurface pressures at the vapor monitoring wells. Also, periodically measure and record the depth to groundwater at the sparge wells. Over the course of the testing various sparge well configurations will be testing to optimize mass removal rates

- US Army Corps of Engineers. 2002. Engineering and Design: Soil Vapor Extraction and Bioventing. EM 1110-1-4001. June 3, 2002.
- Naval Facilities Engineering Command. 2001. Final: Air Sparging Guidance Document. TR-2193-ENV. August 31, 2001.
- California LUFT Manual, September 2012. Dual Phase Extraction Feasibility Test

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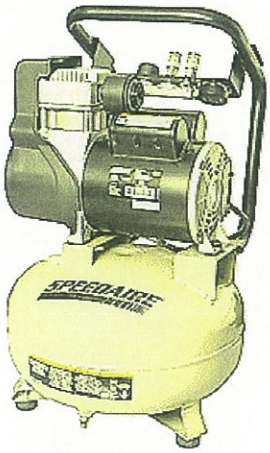

Price
$145.05–$494.25

TECHNICAL SPECS

Item **Portable Electric Oil-Free Air Compressor** Voltage **115VAC**

Free Air CFM @ 90 PSI	HP	Max. Pressure	Tank Type
Please Select	Please Select	Please Select	Please Select

Tank Size	Full Load Amps	Overall Length	Overall Width
Please Select	Please Select	Please Select	Please Select

Overall Height	Weight
Please Select	Please Select

How can we improve the ?

To Bill Dugan
Fr MTC
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Select items to compare **2 Products**

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Compare / Item #	Mfr. Model #	Free Air CFM @ 90 PSI	HP	Max. Pressure	Tank Type	Tank Size	Full Load Amps	Price	Pick Up	Qty
	25F538	0.60	0.33	100 psi	Hot Dog	2 gal.	2.6	$145.05 / each	Expected to arrive **Wed. Sep 14.**	
	1NNE7	4.90	1.80	125 psi	Pancake	6 gal.	15.0	$494.25 / each	Expected to arrive **Wed. Sep 14.**	

ATTACHMENT D

Client Transmittal Letter

September 23, 2016

Mr. Mark Detterman
Alameda County LOP (County)
1131 Harbor Bay Pkwy.
Alameda, California 94502

Re: IRM, Vapor Mitigation, and FS Work Plan (Report #RO3155.IRAP_R1, 2016-08-30)
Former Four Seasons Cleaners; Cleanup Program # RO0003155
13778 Doolittle Ave., San Leandro, California

Dear Mr. Detterman:

Attached for your review is a technical report (WTI Report #5121) for the above-referenced cleanup program case. The report was prepared by WellTest, Inc. at my request.

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

If you should have any questions or comments, please do not hesitate to contact me, or the WellTest project manager, Bill Dugan at (408) 287-2175.

Sincerely,

Mr. Ernest Lee
Marina Faire Shopping Center
3271 S. Highland Dr., Ste. #704
Las Vegas, Nevada 89109