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Alameda County
Environmental Health

RECEIVED

September 28, 2007

Mr. Jerry Wickham Alameda County Department of Environmental Health 1131 Harbor Bay Parkway, Suite 250 Alameda, CA 94502

SUBJECT:

WORK PLAN CERTIFICATION

ACEH Case # RO 0000357

rold m Turn

Snow Cleaners

2678 Coolidge Avenue

Oakland, CA

Dear Mr. Wickham:

You will find enclosed one copy of the following document prepared by P&D Environmental, Inc.

 Subsurface Investigation Work Plan (SG1 Through SG5, B12, B15 Through B27, MW3 and MW4) dated September 28, 2007 (document 0298.W3).

I declare, under penalty of perjury, that the information and/or recommendations contained in the above-mentioned work plan for the subject site is true and correct to the best of my knowledge.

Should you have any questions, please do not hesitate to call me at (800) 818-7669.

Cordially.

Snow Cleaners, Inc.

Harold Turner President

Cc: Mr. LeRoy Griffin, Oakland Fire Department, Emergency Services, 250 Frank Ogawa Plaza, Suite 3341, Oakland, CA 94612 (with enclosure)

0298.L30

"SERVING THE CLEANING INDUSTRY FOR OVER 90 YEARS"

P&D ENVIRONMENTAL, INC.

55 Santa Clara Ave, Suite 240 Oakland, CA 94610 (510) 658-6916

September 28, 2007 Work Plan 0298.W3

Mr. Jerry Wickham Alameda County Environmental Health Services 1131 Harbor Bay Parkway, Suite 250 Alameda, CA 94502

SUBJECT: SUBSURFACE INVESTIGATION WORK PLAN

(SG1 Through SG5, B12, B15 Through B27, MW3 and MW4)

Fuel Leak Site RO0000357

2678 Coolidge Ave.

Oakland, CA

Dear Mr. Wickham:

P&D Environmental, Inc. (P&D), is pleased to present this work plan for further investigation of the horizontal and vertical extent of petroleum hydrocarbons and Halogenated Volatile Organic Compounds (HVOCs) in soil and groundwater at and in the vicinity of the subject site. P&D proposes the following scope of work.

- Collect soil gas samples at 5 locations at a depth of five feet at the site to investigate the extent of perchloroethylene in soil gas.
- Drill or hand auger a total of 14 boreholes (designated as B12 and B15 through B27) for the collection of soil and groundwater samples at and near the site and to investigate the extent of the perched water table encountered at the site.
- Install a total of two groundwater monitoring wells designated as MW3 and MW4.
- Arrange for the existing and new wells to be surveyed by a licensed surveyor.
- Develop the wells.
- Purge and sample all of the wells.
- Arrange for laboratory analysis.
- Prepare a report.

This work plan is prepared in response to a written request from Alameda County Environmental Health (ACEH) dated July 25, 2007.

All work will be performed under the direct supervision of an appropriately registered professional. This work plan is prepared in accordance with guidelines set forth in the document "Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites" dated August 10, 1990 and "Appendix A - Workplan for Initial Subsurface Investigation" dated August 20, 1991.

A Site Location Map is attached as Figure 1. A Site Plan showing proposed drilling locations at the site is attached as Figure 2, and a Vicinity Map showing proposed drilling locations in the vicinity of the site is attached as Figure 3.

BACKGROUND

Review of the file for the subject site at the ACEH offices identified the following reports documenting underground tank removal and subsurface investigation at the subject site.

- Tank Removal Activities and Work Plan For a Preliminary Groundwater Investigation dated August 21, 1990 prepared by C.M. Chambers and Associates.
- Proposal for Work Plan and Site Safety Plan dated July 30, 1993 prepared by Joslin Geotechnical.
- Interim Report on Underground Tank Release Investigation dated May 20, 1994 prepared by Joslin Geotechnical (the report documents installation of two groundwater monitoring wells).
- Transmittal of Test Results dated November 30, 1998 prepared by Joslin Geotechnical. The following documents were attached to the transmittal.
 - o March 5, 1991 letter prepared by C.M. Chambers and Associates documenting soil disposal related to the UST removal activities.
 - o January 20, 1994 letter prepared by Joslin Geotechnical documenting soil (collected on January 4, 1994) and water (collected on January 26, 1994) sample results associated with installation of the two groundwater monitoring wells.
 - o July 27, 1994 letter prepared by Joslin Geotechnical documenting water sample results for samples collected from the two wells on May 31, 1994.
 - o August 20, 1994 letter prepared by Joslin Geotechnical documenting water sample results for samples collected from the two wells on July 29, 1994.
 - October 5, 1994 letter prepared by Joslin Geotechnical documenting water sample results for samples collected from the two wells on September 14, 1994.
 - o January 20, 1995 letter prepared by Joslin Geotechnical documenting water sample results for samples collected from the two wells on December 22, 1994.
 - o June 10, 1995 letter prepared by Joslin Geotechnical documenting water sample results for samples collected from the two wells on May 15, 1995.
 - o November 20, 1998 letter prepared by Joslin Geotechnical documenting water sample results for samples collected from the two wells on November 3, 1998.

The site is presently operated as a dry cleaning establishment, and is reported to have historically been used for dry cleaning operations since approximately 1907. Review of the above documents shows that a total of six underground storage tanks (USTs) were removed from the site in 1990. Soil samples collected from beneath the USTs showed detectable concentrations of petroleum hydrocarbons identified as paint thinner. The quality of the sample results is questionable because the samples were stored in glass jars and extracted at the laboratory 30 days or more after the date of sample collection. Limited excavation of soil from the UST pit was performed to remove discolored soil and soil that exhibited a head space concentration greater than 100 ppm using a combustible gas indicator. The UST pit dimensions after excavation were reported to be approximately 9 feet by 40 feet and 15 feet deep.

Based on conversations with Mr. Harold Turner, the property owner, some of the excavated soil was placed into planters and landscaped areas surrounding the site building. During a site visit by P&D personnel, a total of seven areas were identified where the soil had been placed. The calculated volume of the soil is approximately 13 cubic yards. The locations of the planters and landscaped areas are shown on Figure 2. In addition, Mr. Turner is in the process of determining the disposition of excavated soil that was removed from the site.

In January, 1994 two groundwater monitoring wells were installed in Davis Street approximately five feet south of the former UST pit. Figure 3 shows the area of fresh concrete sidewalk, presumably from resurfacing of the former UST pit. Well B1 (the well closest to Coolidge Avenue, and subsequently re-named as well MW1) was drilled to a total depth of 46.1 feet, and was constructed using 2-inch diameter PVC pipe. The screened interval is from 25 to 45 feet below the ground surface. Groundwater was initially encountered at a depth of 42.1 feet and subsequently stabilized at a depth of approximately 29 feet below the ground surface. The subsurface materials encountered in the borehole consisted predominantly of clay and silty clay. No evidence of petroleum hydrocarbons was detected in the borehole at the time of drilling, and no petroleum hydrocarbons were detected in soil samples from the borehole or water samples from the well.

Well B2 (subsequently re-named as well MW2) was drilled to a total depth of approximately 26.5 feet, and was constructed using 4-inch diameter PVC pipe. The screened interval is from 11 to 26 feet below the ground surface. Groundwater was initially encountered at a depth of approximately 18.5 feet, and subsequently stabilized at a depth of approximately 18.5 feet. The subsurface materials encountered in the borehole consisted predominantly of clayey sand and clayey gravel between the depths of approximately 10 and 21 feet below the ground surface. Petroleum odors were detected in materials from the borehole at the time of drilling, and in soil samples from the borehole. A layer of separate phase hydrocarbons was detected on the water in the well. The laboratory identified the petroleum hydrocarbons as Stoddard solvent. The water in well MW2 was interpreted to be perched water.

Review of the historical water sample results from the wells shows that no petroleum hydrocarbons have been detected in well MW1, but petroleum hydrocarbons have been consistently detected in well MW2. Although mention of removal of separate phase hydrocarbons appears in the quarterly groundwater sampling reports, no measurements of depth to water or free product thickness are provided. Based on discussions with Mr. Turner, it is P&D's understanding that no free product removal activities had occurred at the site prior to 2003.

On January 18, 2003 P&D personnel monitored the two wells for depth to water and the presence of free product. Depth to water was measured using an electric water level indicator to the nearest 0.01 foot. Free product was measured using a steel tape with water-finding and product-finding paste. The measured depth to water in well MW1 was 20.06 feet. No free product was present in the well, and no odors or other evidence of petroleum hydrocarbons were detected in the well. In well MW2, the measured depth to water was 11.55 feet, and 0.02 feet of free product was measured in the well.

P&D prepared a Subsurface Investigation Work Plan (0298.W1) dated January 30, 2003 that addressed information previously requested by ACEH. Following telephone conversations with Mr. Amir Gholami, the new ACEH caseworker for the site, a work plan addendum (0298.L3) dated February 6, 2003 was submitted to ACEH. In a letter dated February 27, 2003 from ACEH, the work plan addendum were approved by ACEH.

On February 14, 2003, P&D personnel placed a hydrocarbon-absorbent sock in well MW2 as an interim remedial action for separate phase hydrocarbon abatement. The two groundwater monitoring wells were monitored and sampled once on February 20, 2003. The samples were analyzed for petroleum hydrocarbons quantified as gasoline, diesel, motor oil, and Stoddard solvent, and for Volatile Organic Compounds (VOCs) by EPA Method 8260. Documentation of the field activities and sample results for February 2003 are presented in P&D's Groundwater Monitoring and Sampling Report (0298.R1) dated March 10, 2003. With the exception of near-detection limit results for two compounds, no analytes were detected in well MW1. In well MW2, petroleum hydrocarbons quantified as gasoline, diesel, motor oil, and Stoddard Solvent were detected at concentrations of 76, 370, 37, 75 mg/L respectively. However, review of the laboratory analytical reports shows that the highest concentrations correspond with results identified by the laboratory as Stoddard Solvent.

Review of the February 20, 2003 water sample results also shows that benzene, MTBE, the drycleaning chemical tetrachloroethene (PCE) and the associated decomposition product trichlorethene (TCE) were not detected in either of the wells. In both wells very low concentrations of gasoline constituents, including toluene, ethylbenzene, xylenes and naphthalene were detected. In well MW2, toluene, ethylbenzene, xylenes and naphthalene were detected at concentrations ranging from 0.032 to 0.16 mg/L. In addition, trans-1,2-dichloroethene, cis-1,2-dichloroethene, and vinyl chloride were detected in well MW2 at concentrations of 0.022, 0.36 and 0.024 mg/L, respectively. Vinyl chloride is a decomposition product of dichloroethene. Dichloroethene is a possible decomposition product of PCE and TCE. However, no PCE or TCE were detected in either of the wells. Comparison of the sample results shows that the samples collected on February 20, 2003 are consistent with the results reported for previous sampling events by others. Historically, PCE and TCE have not been previously detected in either of the wells.

Following installation of a hydrocarbon absorbent sock in well MW2, and subsequent monitoring and sampling of wells MW1 and MW2; boreholes B3 and B7 were drilled on September 22, 2004, boreholes B4, B5 and B6 were drilled on October 22, 2004, and wells MW1 and MW2 were sampled on October 27, 2004. Review of the laboratory results for the soil and water samples collected from boreholes B3 through B7 and wells MW1 and MW2 suggests that Stoddard Solvent has impacted groundwater at the former UST pit on Davis Street and the Stoddard Solvent extends in a southeasterly direction approximately parallel to Davis Street.

The presence of Stoddard Solvent at concentrations as high as 2100 mg/kg between the depths of 10 and 20 feet in borehole B2 drilled by others (the borehole for well MW2) indicates that the extent of the Stoddard Solvent in soil in the suspected source area has not yet been completely defined.

Water levels in the two existing groundwater monitoring wells show that a perched water table is present at or near the site. Based on field observations and the laboratory results of water samples from well MW2, the perched water table has historically been impacted with separate phase Stoddard Solvent. Between the former UST pit and borehole B7 the Stoddard Solvent has moved vertically downward from the perched water table (static water level of approximately 16 feet below the ground surface) to the regional water table (static water level of approximately 23 feet below the ground surface).

Although PCE and TCE have not been detected in any samples, cis-1,2-dichloroethene was detected in well MW2 and in boreholes B6 and B7 at concentrations of 3.3, 0.00067 and 0.36 mg/L, respectively. Based on the pattern of cis-1,2-dichloroethene detection in wells MW1 and MW2, and in boreholes B3 through B7 the distribution of cis-1,2-dichloroethene may be nearly coincidental in location with the distribution of TPH-D in groundwater that was identified by the laboratory as Stoddard Solvent. Documentation of the field activities and laboratory results for boreholes B3 through B7, as well as the October 27, 2004 monitoring and sampling of wells MW1 and MW2 are presented in P&D's Subsurface Investigation Report – B3 Through B7 (document 0298.R2) dated February 28, 2005.

The topography in the area surrounding the site slopes to the east and south. Peralta Creek is located approximately 400 feet to the east and southeast of the subject site. During a site visit on January 18, 2002, portions of the creek directly to the east of the site were observed to be lined with concrete. Portions of the creek to the southeast of the site at the Peralta Hacienda Historic Park (south of Davis Street) were observed to not be lined with concrete. Although the site vicinity topography slopes to the east and south, the area between Coolidge Avenue (bordering the property on the west) and 34th Avenue (the first street encountered to the east of the site) is remarkably flat. Almost all of the change in elevation between the site and Peralta Creek occurs to the east of 34th Avenue. Although the groundwater flow direction at the site is unknown, based on these observations, the anticipated groundwater flow direction at the site is toward the southeast, towards Peralta Creek.

In a letter dated July 11, 2005 Mr. Jerry Wickham of the ACEH requested a work plan for additional subsurface investigation. In addition the letter requested that soil in planters and landscaped areas be sampled as previously proposed, a subsurface conduit study and sensitive receptor survey be performed, and information be uploaded to the GeoTracker database.

A review of underground utilities in the vicinity of the subject site was performed. P&D personnel visited the City of Oakland Public Works Agency (COPWA) for the review of relevant documents. Utility maps were also obtained from the East Bay Municipal Utility District (EBMUD), Pacific Gas & Electric (PG&E), and SBC Communications (SBC). P&D personnel visited the study area on August 3, 2005 to identify surface features and mark the area for underground utility location by Underground Service Alert (USA). USA was contacted to identify the location of all underground utilities in the study area. Following USA notification and marking of the study area by utility service providers, P&D contracted Advanced Geological Services, Inc. (AGS) to map the location and depth of underground utilities in the site vicinity.

Results of the document review and utility location survey are reported in the Preferential Pathway Conduit Study (document 0298.R3) dated September 12, 2005 prepared by P&D.

P&D performed a well survey within a 2000-foot radius of the subject site. The well survey was performed by submitting requests to the California Department of Water Resources (DWR) and the Alameda County Public Works Agency (ACPWA) for identification of wells located within a 2000-foot radius of the subject site. In addition, a sensitive receptor survey was performed to identify production wells with in 2,000 feet of the site; hospitals, day care centers and schools within 200 feet of the site, and surface water bodies near the site. Results of the well survey and sensitive receptor survey are reported in the Well Survey and Sensitive Receptor Survey (document 0298.R4) dated September 2, 2005 prepared by P&D.

P&D also prepared a Subsurface Investigation Work Plan (B8 To B14) dated September 12, 2005 (document 0298.W2) to collect soil samples from planters at the site where soil excavated from the UST pit was placed, drill seven additional exploratory boreholes (designated as B8 through B14) for the collection of soil and groundwater samples, and hand auger six exploratory boreholes (designated as H1 through H6) for the collection of soil samples from beneath existing structures. The work plan was approved in a letter from the ACEH dated September 28, 2005. The results of the investigation are in the Subsurface Investigation Report (Comp A Through Comp E, H1 Through H6, B8 Through B11, B13, B14) prepared by P&D dated June 19, 2007 (document 0298.R5).

As required by the California State Water Resources Control Board (SWRCB), all required analytical data was submitted in electronic form to the GeoTracker database between July 28 and August 8, 2005. Wells MW1 and MW2 located adjacent to the site have not been surveyed. Mr. Hamid Foolad of the SWRCB GeoTracker unit stated on August 5, 2005 that all GeoTracker requirements are currently fulfilled, provided that Alameda County is made aware that survey data for wells MW1 and MW2 have not been uploaded to the GeoTracker database.

SCOPE OF WORK

To determine the extent of impact to soil and groundwater in the vicinity of the subject site, P&D will perform the following tasks:

- Coordinate with regulatory agencies, including permitting for drilling soil borings and monitoring well installation, scheduling inspection of borehole grouting, and access to the public right-of-way.
- Prepare a health and safety plan.
- Collect soil gas samples at five locations at a depth of five feet at the site to investigate the extent of perchloroethylene in soil gas.
- Drill or hand auger a total of 14 boreholes (designated as B12 and B15 through B27) for the collection of soil and groundwater samples at and near the site and to investigate the extent of the perched water table encountered at and near the site.
- Install a total of two groundwater monitoring wells designated as MW3 and MW4.
- Arrange for the existing and new wells to be surveyed by a licensed surveyor.

September 28, 2007 Work Plan 0298.W3

- Develop the wells.
- Purge and sample all of the wells.
- Arrange for laboratory analysis.
- Prepare a report.

Each of these is discussed below in detail.

Permitting and Regulatory Agency Coordination

Following ACEH approval of this work plan, permits will be obtained for the drilling of the soil borings and for access to the public right-of-way. Notification will be provided to ACEH of the scheduled drilling dates prior to drilling.

Health and Safety Plan Preparation

A health and safety plan and a traffic plan will be prepared for the scope of work identified in this work plan. Prior to the beginning of field work, the drilling locations will be marked with white paint and Underground Service Alert will be notified for underground utility location.

Soil Gas Sample Collection

Soil gas samples will be collected at five locations designated as SG1 through SG5 (see Figure 2). The samples will be collected into one-liter Summa canisters at a depth of 5 feet using direct-push drilling equipment. The rationale for the proposed sample collection locations is as follows.

- <u>SG1, SG2 and SG3</u> To evaluate the horizontal extent of Stoddard solvent and HVOCs in soil gas in the vicinity of borehole B14.
- <u>SG3</u>, <u>SG4</u>, and <u>SG5</u> To evaluate the horizontal extent of Stoddard solvent and HVOCs in soil gas in the vicinity of borehole H3.

Soil Boring Oversight and Sample Collection

A total of eight soil borings, designated as B15 through B22, will be drilled to characterize subsurface conditions at the subject site (see Figure 2). The rationale and sample collection intervals for each of the proposed boring locations is as follows.

• <u>B15, B16, B17 and B18</u> – To evaluate the horizontal and vertical extent of Stoddard solvent and HVOCs in soil in the vicinity of B14 to a depth of 45 feet below the ground surface, and to evaluate the presence and extent of the perched water table encountered in nearby boreholes B13 and B14. Soil samples will be retained for laboratory analysis at five foot intervals beginning at a depth of five feet below the ground surface. One groundwater grab sample will be collected from each of the perched and deeper first-encountered non-perched water bearing zone for each borehole if groundwater is encountered during drilling.

- <u>B19 and B20</u> To evaluate the vertical extent of Stoddard solvent in soil to a depth of 45 feet below the ground surface that was detected at boreholes H4 and H5, respectively, and to evaluate the presence and extent of the perched water table encountered in nearby boreholes B13 and B14. Soil samples will be retained for laboratory analysis at five foot intervals beginning at a depth of five feet below the ground surface. One groundwater grab sample will be collected from each of the perched and deeper first-encountered non-perched water bearing zone for each borehole if groundwater is encountered during drilling.
- <u>B21</u> To evaluate the horizontal and vertical extent of Stoddard solvent to a depth of 45 feet below the ground surface that was detected in nearby borehole H5 and in the former UST pit, and to evaluate the presence and extent of the perched water table encountered in nearby boreholes B13 and B14. Soil samples will be retained for laboratory analysis at five foot intervals beginning at a depth of five feet below the ground surface. One groundwater grab sample will be collected from each of the perched and deeper first-encountered non-perched water bearing zone if groundwater is encountered during drilling.
- <u>B22</u> To evaluate the horizontal and vertical extent of Stoddard solvent to a depth of 45 feet below the ground surface that was detected in nearby borehole H5 and in the former UST pit, and to evaluate the presence and extent of the perched water table encountered in nearby boreholes B13 and B14. Soil samples will be retained for laboratory analysis at five foot intervals beginning at a depth of five feet below the ground surface. One groundwater grab sample will be collected from each of the perched and deeper first-encountered non-perched water bearing zone if groundwater is encountered during drilling.

A total of four soil borings designated as B12, and B23 through B25) will be drilled to characterize subsurface conditions in the vicinity of the subject site (see Figure 3). The rationale for each of the proposed boring locations is as follows.

- <u>B12</u> To evaluate the horizontal and vertical extent of Stoddard solvent to a depth of 45 feet below the ground surface that was detected in nearby borehole B2 (now well MW2) and in the former UST pit, and to evaluate the presence and extent of the perched water table encountered in nearby well MW2. Soil samples will be retained for laboratory analysis at five foot intervals beginning at a depth of five feet below the ground surface. One groundwater grab sample will be collected from each of the perched and deeper first-encountered non-perched water bearing zone if groundwater is encountered during drilling.
- B23 and B24 To evaluate the horizontal and vertical extent of Stoddard solvent to a depth of 45 feet below the ground surface that was detected in nearby borehole B2 (now well MW2) and in the former UST pit, and to evaluate the presence and extent of the perched water table encountered in nearby well MW2. Soil samples will be retained for laboratory analysis at five foot intervals beginning at a depth of five feet below the ground surface. One groundwater grab sample will be collected from each of the perched and deeper first-encountered non-perched water bearing zone for each borehole if groundwater is encountered during drilling.

• <u>B25</u> – To evaluate the downgradient eastern extent of the groundwater Stoddard solvent and HVOC plume. No soil samples will be retained for laboratory analysis, however one groundwater grab sample will be collected. This location was previously identified as B23 in P&D's Subsurface Investigation Report dated June 19, 2007.

The boreholes will be drilled to a depth of 5 feet below first encountered groundwater, or ten feet below the deepest evidence of contamination observed in the field, whichever is deeper. Groundwater is expected to be encountered at depths of approximately 18 feet below grade for perched water at the site, and approximately 40 feet for first-encountered non-perched groundwater.

Each boring will be continuously cored using GeoProbe direct-push technology. The soil from all of the borings will be logged in the field in accordance with standard geologic field techniques and the Unified Soil Classification System. All soil samples from the boreholes will be evaluated with a Photoionization Detector (PID) equipped with a 10.3 eV bulb and calibrated using a 100 ppm isobutylene standard. Soil samples will be retained from each borehole for laboratory analysis. Soil samples will be retained for laboratory analysis by cutting six-inch long sections from the cellulose acetate sampling tube. The ends of the tube will be sequentially covered with aluminum foil and plastic endcaps. The tube will then be labeled and stored in a cooler with ice pending delivery to the laboratory. Chain of custody procedures will be observed for all sample handling.

The groundwater grab samples will be collected using a Geoprobe Hydropunch, with polyethylene tubing and a stainless steel foot valve. The samples will be placed into 40-milliliter VOA vials and one-liter amber bottles and stored in a cooler with ice pending delivery to the laboratory. Chain of custody procedures will be observed for all sample handling.

A total of two boreholes, designated as B26 and B27 (previously identified as B24 and B25 in P&D's Subsurface Investigation Report dated June 19, 2007) will be hand augered at locations adjacent to Peralta Creek as shown on Figure 3. Soil from the boreholes will be evaluated with a PID and logged as described above. No soil samples will be retained for laboratory analysis. One water sample will be collected from each borehole using a Teflon bailer or clean tubing with a stainless steel footvalve as described above. Chain of custody procedures will be observed for all sample handling.

All drilling and sampling equipment will be cleaned with an Alconox solution followed by a clean water rinse prior to use in each borehole, or will be new disposable equipment. Following completion of sample collection activities, the boreholes will be filled with neat cement grout. Any soil or water generated during drilling will be stored in drums at the site pending characterization and disposal.

Well Construction

To evaluate groundwater flow direction and water quality in the vicinity of the site a total of two groundwater monitoring wells designated as MW3 and MW4 (see Figure 3) will be constructed. The wells will be drilled with a truck-mounted hollw stem auger drill rig and 8-inch outside

diameter hollow stem augers. The wells will be constructed to a total depth of 45 feet below the ground surface, and will consist of 2-inch diameter Schedule 40 PVC pipe with the bottom 15 feet constructed of 0.010-inch factory slot screen. The well screen will be surrounded with #2/12 washed sack sand to a height of one foot above the top of the screen. Bentonite pellets will be placed in the borehole above the filter sand to a height of one foot above the sand. The remaining annular space will be filled with neat cement grout to approximately one foot below the ground surface. The tops of the wells will be covered with traffic-rated locking well vaults. Review of geologic cross section B-B' in P&D's Subsurface Investigation Report (Comp A Through Comp E, H1 Through H6, B8 Through B11, B13, B14) dated June 19, 2007 shows that the proposed screen depth will include a sandy layer encountered between the approximate depths of 35 and 40 feet below the ground surface where groundwater and contaminants are encountered.

Wellhead Surveying

The existing and proposed wellhead elevations and locations will be surveyed vertically and horizontally by a State-licensed surveyor in accordance with State of California Water Resources Control Board (SWRCB) Geotracker guidelines to allow determination of groundwater flow direction in the vicinity of the site. In addition, borehole locations B25, B26 and B27 will be surveyed horizontally and vertically for accurate site map and geologic cross section preparation purposes.

Well Development

At least 72 hours after construction, the wells will be developed by surging and over-pumping until the water discharged from the wells is relatively clear. Prior to development, the wells will be monitored for depth to water using an electric water level indicator with an accuracy of 0.01 feet, and for the presence of free product and sheen using a transparent bailer. Water removed from the wells during development will be stored in labeled drums onsite, pending analysis and appropriate disposal.

Well Monitoring and Sampling

At least 48 hours after development of wells MW3 and MW4, the two existing wells (MW1 and MW2) and proposed wells MW3 and MW4 will be monitored for the presence of separate phase hydrocarbons and then purged and sampled. The depth to water will be measured to the nearest 0.01 foot using an electric water level indicator. The presence of free product and sheen will be evaluated using a transparent bailer.

Prior to well sampling the wells will be purged of a minimum of three casing volumes of water or until the wells have been purged dry. During purging operations, the field parameters of electrical conductivity, temperature, and pH will be monitored. Once the field parameters are observed to stabilize, and a minimum of three casing volumes have been purged or the wells have purged dry and partially recovered, water samples will be collected using a clean Teflon bailer. Records of the field parameters measured during well purging will be included with the final report.

September 28, 2007 Work Plan 0298.W3

The water samples will be transferred to 40-milliliter glass VOA vials and 1-liter amber glass bottles that will be sealed with Teflon-lined screw caps. The VOA vials will be overturned and tapped to ensure that no air bubbles are present. The VOA vials and bottles will be transferred to a cooler with ice, until they are transported to the laboratory. Chain of custody documentation accompanied the samples to the laboratory.

Arrange for Sample Analysis

All of the soil gas samples will be analyzed at Air Toxics Limited of Folsom California for Stoddard solvent using EPA Method TO-3 and for HVOCs by EPA Method TO-15.

All of the soil and groundwater samples will be analyzed at McCampbell Analytical, Inc (McCampbell) of Pittsburg, California for TPH Multi-Range (TPH as Gasoline, TPH as Stoddard solvent and TPH as Bunker Oil) using Modified EPA Method 8015, and for benzene, toluene, ethylbenzene, and xylenes (BTEX), as well as HVOCs using EPA Method 8260. McCampbell is a State-Approved hazardous waste testing laboratory. Based upon review of the sanitary sewer maps provided in P&D's Preferential Pathway Conduit Study (document 0298.R3) dated September 12, 2005 and conversations with East Bay Municipal Utility District (EBMUD personnel, a split sample of any water samples collected from the perched zone for boreholes B12, B23 and B24 will be provided to EBMUD for analysis to determine if there is evidence to identify the perched water is municipal or sewage water.

Report Preparation

Upon receipt of the laboratory analytical results, a report will be prepared. The report will document soil and groundwater sample collection and sample results. The report will include a site vicinity map showing the drilling locations, tables summarizing the sample results, recommendations based on the results, and the stamp of an appropriately registered professional.

Evidence of a perched water table has been encountered in boreholes B4, B5, B13, B14 and well MW2. Following further delineation of the extent of the perched water table and review of the boring logs for boreholes B23 and B24, P&D will make recommendations for installation of a monitoring well in the vicinity of borehole B24 to monitor the non-perched water-bearing zone and for installation of groundwater monitoring wells in the perched water-bearing zone. In addition, following review of the subsurface conditions at borehole B25, P&D will make recommendations for additional downgradient wells to monitor the central portion of the groundwater plume. P&D will also include a discussion of the evidence for the sanitary sewer trench in Davis Street or the sewer lateral trench for the property as being a preferential pathway for contaminants from the site.

September 28, 2007 Work Plan 0298.W3

Should you have any questions, please do not hesitate to contact us at (510) 658-6916.

Sincerely,

P&D Environmental, Inc.

Paul H. King

Professional Geologist #5901

Expires: 12/31/07

PAUL H. KING
No. 5901

STATE OF CALIFORNIA

Attachments: Figure 1 - Site Location Map

Figure 2 - Site Plan Showing Cis-1,2-DCE Concentrations in Soil at 5-Foot Depth

and Proposed Sample Collection Locations

Figure 3 - Site Vicinity Map Showing TPH-D in Groundwater and Proposed

Borehole Locations

cc: Mr. Harold Turner – Snow Cleaners

PHK 0298.W3







