

By Alameda County Environmental Health at 2:50 pm, Mar 10, 2014

Alameda County Environmental Health Services 1131 Harbor Bay Parkway, Suite 250 Alameda, California 94502-6577

Re: Document Transmittal

German Autocraft, 301 East 14<sup>th</sup> Street, San Leandro, California AC LOP Case # 2783; Fuel Leak Case No. RO0000302; Global ID T0600100639

Dear Sir or Ma'am:

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

Sincerely,

Lee Seung

Owner, German Autocraft



Mr. Mark Detterman, P.G., C.E.G. Alameda County Environmental Health Services 1131 Harbor Bay Parkway, Suite 250 Alameda, California 94502

Re: Technical Memo/Work Plan

German Autocraft Facility 301 East 14<sup>th</sup> Street San Leandro, California

Dear Mr. Detterman:

Stratus Environmental, Inc. (Stratus) has prepared this Technical Memo/Work Plan, on behalf of Mr. Seung Lee, for the German Autocraft Facility (the Site), located at 301 East 14<sup>th</sup> Street, San Leandro, California (see Figures 1 and 2). Subsurface petroleum hydrocarbon impact to soil and groundwater has previously been identified in the vicinity of the site. In a letter dated September 30, 2013, Alameda County Environmental Health Department (ACEHD) requested that a technical memo be prepared for the subject property. The letter indicated known issues involving the site's eligibility under the State Water Resources Control Board (SWRCB) Low-Threat Closure Policy (LTCP), and requested that the technical memo address the various issues, including a limited site conceptual model (SCM) and a work plan for further assessment of hydrocarbon impact on- and off-site. During a meeting between ACEHD, Stratus, and Mr. Lee on October 29, 2013, held to discuss the items in the letter, the actions needed for application of the LTCP were clarified. Among other issues, the domestic irrigation well at 141 Farrelly Drive was identified as the pivotal point for the use of the LTCP; if the domestic well was not destroyed or removed, it would be much more difficult to close the site under the policy.

The owner of the 141 Farrelly Drive property has stated that he will not destroy the well under any circumstances, and in addition, that there are several other wells in the neighborhood that have never been identified. Research into the latter statement indicates a need for further investigation of water wells in the site vicinity.

The site has been under investigation for over 23 years. Site investigation has included approximately 46 soil borings, of which 14 have been converted to groundwater monitoring wells and 8 were converted to soil vapor sampling points. The underground

storage tank (UST) pit was over-excavated during 2011, to remove any remaining soil impact from the subsurface; no other remedial activities have been conducted.

This document summarizes historical environmental investigations completed at the site and available information relevant to the ongoing environmental case, such as site geology and hydrogeology and the known extent of subsurface hydrocarbon impact. The document will discuss the extent of petroleum hydrocarbon impact near the western and southwestern portions of the site and site vicinity, consider the risk to the human populations possibly exposed to hydrocarbon impact, and describe the further assessment of the on- and off-site petroleum hydrocarbon impact to soil, groundwater, and soil vapor.

#### SITE DESCRIPTION

The property is located on the southern corner of the intersection of East 14<sup>th</sup> Street and Garcia Avenue in the City of San Leandro (Figure 2). Available records indicate that the property was used as a retail gasoline service station until 1981. According to historical documents prepared by previous consultants representing Mr. Lee, the property has been exclusively used for automotive repair since 1981. Mr. Lee purchased the property on April 15, 1985. In September 1990, six single-walled steel USTs (two 1,000-gallon and two 2,000-gallon USTs previously used to store unleaded gasoline, one 550-gallon UST previously used to store regular gasoline, and one 150-gallon UST previously used to store waste oil) were removed from the property and properly disposed. In addition, the fuel dispenser island and associated product lines were removed at that time. The general configuration of the site is shown on Figure 2. The area surrounding the site is mixed commercial and moderate density residential. A site vicinity map is included as Figure 3.

According to the SWRCB's GeoTracker database, numerous other contaminated properties under the ACEHD's regulatory oversight are present in the immediate vicinity of German Autocraft. Sunshine Cleaners, a dry cleaning business located at 223 East 14<sup>th</sup> Street, approximately 130 feet north-northwest of the site, has had an open (but predominately inactive) environmental case since 1993; that site is currently in the assessment phase for chlorinated solvents. San Leandro Chrysler-Plymouth, formerly located at 232 East 14<sup>th</sup> Street, northeast across 14<sup>th</sup> Street from German Autocraft, had a leaking UST environmental case open until 1997. In addition, the former Monument Gas station, located at 111 East 14<sup>th</sup> Street, approximately 375 feet north-northwest of German Autocraft, had a leaking UST case open until 2005. The Monument Gas case assessed groundwater contamination offsite to the southeast of that site (along Farrelly Drive) until closure.

### **CASE HISTORY**

Environmental investigations at the site began in September 1990, when the six former single-walled steel USTs (two 1,000-gallon and two 2,000-gallon USTs previously used to

store unleaded gasoline, one 550-gallon UST previously used to store regular gasoline, and one 150-gallon UST previously used to store waste oil) were removed from the property and properly disposed. The five fuel storage USTs were formerly located in a common pit on the north side of the property adjacent to Garcia Avenue; the waste oil UST was located on the south side of the station building/garage. During removal of the USTs, The Environmental Construction Company (TECC) noted that both of the 1,000-gallon USTs and the 550-gallon UST had holes in them and showed signs of extensive corrosion. Soil staining was noted in both the main UST area and the waste-oil UST area during excavation. Following the removal of the USTs and product lines, ten soil samples were collected from below the USTs, one soil sample from beneath the former piping, and three samples from stockpiled soil.

The main UST pit was excavated to approximately 44 feet long, by 16 feet wide, and 8 feet deep; the waste oil UST pit was excavated to approximately 6 feet by 5 feet, and 6 feet deep. Historical documentation appears to indicate that the soil excavated from the waste oil UST excavation (~15 yd³) was removed from the site. When the main UST area excavation was completed, TECC lined the excavation area with plastic, placed the excavated soil back in the excavation pit, and covered it with plastic as an intended temporary containment measure. Analytical results of soil samples collected during the UST removal activities indicated the presence of highly impacted soil (total petroleum hydrocarbons as gasoline [TPHg]/gasoline-range organics [GRO] and benzene, toluene, ethylbenzene, and total xylenes [BTEX] only) in the main UST pit. No detectable concentrations of GRO, total petroleum hydrocarbons as diesel (TPHd)/diesel-range organics (DRO), BTEX, oil and grease, or purgeable halocarbons were reported in the soil sample collected at the base of the waste oil UST excavation (though stockpile samples of excavated soil indicated some oil and grease impact).

In December 1990, TECC advanced three onsite soil borings (B-1, B-2, and B-3) to depths of about 35 feet below ground surface (bgs) and installed one groundwater monitoring well (MW-1) screened (25 to 45 feet bgs) across first-encountered water (approximately 30 to 35 feet bgs) just northeast of the main former UST excavation. Soil and groundwater samples from these borings and the monitoring well indicated GRO and BTEX impact at all four locations. A table summarizing soil boring and well construction details is included as Table 1.

In December 1994 and January 1995, Chemist Enterprises (renamed in 1995 as Environmental Testing and Management [ETM]) advanced two additional onsite soil borings (CE-1 and CE-2) and installed two additional onsite groundwater monitoring wells (MW-2 and MW-3) to further evaluate soil and groundwater impact. Boring CE-2 was advanced within the former UST excavation/backfill to assess impact directly beneath the former USTs. Soil and groundwater impact were found to be highest within the smear zone and at the water table surface (approximately 20 to 30 feet bgs).

In June 1994, Mr. Lee applied and was accepted in the SWRCB's UST Cleanup Fund as a priority B claimant.

In August 1995, following the detection of liquid-phase hydrocarbons (LPH) in boring CE-1, one additional groundwater monitoring well (MW-4) was installed by ETM within the former UST excavation for the purpose of removing LPH. LPH was reported in well MW-4 after development; a passive skimmer system was subsequently installed in the well for removal of LPH. The thickness of LPH at well MW-4 prior to installation of the skimmer system on September 22, 1995, was 0.10 feet. The skimmer system was maintained between September 1995 and June 1998, during which time, no measurable quantities of LPH were reportedly removed from well MW-4 (only water with a hydrocarbon sheen). Following numerous attempts to redevelop the well and extract additional LPH from the vicinity of well MW-4, the skimmer system was removed and the well was added to the regular monitoring and sampling program. During the third quarter 1995, a routine quarterly groundwater monitoring and sampling program was established at the site. Quarterly groundwater monitoring results are summarized on Table 2.

Between November 1995 and April 1996, ETM advanced thirty-nine (39) additional on- and off-site soil borings (ETM-1 through ETM-40, with ETM-16 attempted, but not completed) throughout the surrounding residential neighborhood (Figure 3). Soil conditions were logged in borings ETM-1, ETM-2, ETM-5, ETM-6, ETM-7, ETM-10, ETM-11, ETM-17, ETM-19, ETM-21, and ETM-22. Soil samples were collected for laboratory analyses from borings ETM-1, ETM-2, and ETM-7. Grab groundwater samples were collected from all thirty-nine borings (except ETM-6 which did not yield water). Analytical results indicated hydrocarbon impact to groundwater was found to be extensive in the area downgradient (west-northwest) of the site; thirty of the thirty-eight grab groundwater samples were reported to contain GRO and/or benzene. In addition, LPH was reported during the sampling of boring ETM-38, located on West Broadmoor Boulevard, approximately 320 feet northwest of the site. Well MW-1A was later installed immediately adjacent to boring ETM-38, and no LPH have been noted in this well during historical monitoring.

While canvassing the neighborhood to acquire access to properties for the investigation, ETM discovered a private residential irrigation well located at the residence at 141 Farrelly Drive, approximately 440 feet northwest (downgradient) of the site. The owner of the well (and the property), Mr. Mitch Ramirez, had been using the well for landscape irrigation; upon the discovery of LPH in boring ETM-38, approximately 115 feet southeast of the 141 Farrelly Drive irrigation well, ACEHD requested that Mr. Ramirez discontinue use of his well. In April 1996, ETM collected a groundwater sample from the 141 Farrelly Drive well; results indicated the well was not impacted by petroleum hydrocarbons. With Mr. Ramirez's permission, the irrigation well was added to the periodic monitoring and

sampling program. Further details on the well at 141 Farrelly Drive are presented in a later section of this document.

In May 1997, the City of San Leandro contracted AllCal Property Services (AllCal) to install one groundwater monitoring well near the location of boring ETM-38. The well was designated MW-1, but is now referred to as MW-1A to avoid confusion with German Autocraft's onsite well MW-1. Initial sampling results of well MW-1A indicated GRO/BTEX impact (but LPH was not present).

In November 1997, the depression in the UST pits caused by the settling of the excavated soil was filled in with approximately 16 cubic yards of clayey silt soil and covered with Class II base rock.

In August 1998, ETM installed onsite monitoring well MW-5 and offsite monitoring wells MW-6, MW-8, MW-9, MW-10, and MW-11, to further evaluate the downgradient extent of GRO/BTEX impact in Garcia Avenue and the residential city block between Garcia Avenue and Broadmoor Boulevard. Well MW-7 was not installed due to a utility obstruction in Garcia Avenue. Initial analytical results from the wells indicated impact to all six new wells.

In January 2001, three additional off-site groundwater monitoring wells (MW-12, MW-13, and MW-14) were installed by ETM to continue delineation of the groundwater impact offsite. Initial analytical results from well MW-12 indicated impact; wells MW-13 and MW-14 indicated little to no impact to the southwest of the site in the vicinity of Lafayette Avenue.

In November 2007, Groundwater Cleaners, Inc. (GCI) prepared and submitted a Corrective Action Plan (CAP) that provided technical and cost effectiveness evaluations of monitored natural attenuation (MNA), soil excavation, dual phase extraction (DPE)/air sparging (AS), and bioremediation. Results of their evaluation indicated that DPE/AS would be most viable and cost-effective, and recommended that a 5-day DPE/AS pilot test be performed. In a letter dated December 28, 2007, ACEHD indicated their concurrence with the proposed DPE/AS feasibility study; however, due to the data gap related to potential risk associated with the vapor intrusion pathway, the ACEHD requested that further site characterization be performed; specifically, a soil vapor investigation. GCI prepared a Work Plan for Soil Vapor Investigation, dated February 14, 2008, and a Work Plan for DPE/AS Feasibility Study, dated February 15, 2008. Both work plans were conditionally approved by ACEHD in a letter dated October 23, 2008.

In January 2009, GCI advanced eight on- and off-site soil borings (SV-1 through SV-8) and collected grab groundwater samples. In immediately adjacent boreholes, GCI installed temporary dual-completion soil vapor sampling points (at depths of approximately 5.0 to 5.5 feet bgs and at approximately 12.5 to 14.0 feet bgs). The shallow points were installed

within clayey soil, while the deeper points were placed across a 1-foot thick sandy unit identified during continuous core of the adjacent borings. Analytical results of the soil vapor samples were compared to the Regional Water Quality Control Board, San Francisco's (RWQCB-SF) Environmental Screening Levels (ESLs) established for commercial land use (for the onsite auto repair business) and residential land use (for the predominant off-site land use) for GRO, BTEX, and methyl tertiary butyl ether (MTBE). Analytical results of samples collected at the 5-foot depths did not exceed the onsite commercial or off-site residential ESLs, with the exception of SV-8 (which exceeded the residential ESL for GRO) and SV-2 (which exceeded the residential ESL for benzene). Based on the results of the soil vapor sampling, GCI concluded that significant vertical attenuation is occurring and that results indicate that vapor intrusion concerns are unlikely based on commercial onsite and residential off-site uses.

In February and March 2009, GCI conducted the approved 5-day DPE remediation feasibility test at the site. DPE testing was performed using onsite wells MW-1, MW-2, MW-3, and MW-4, both individually and as a group, while using outlying wells MW-5, MW-6, and MW-8 to check for vacuum influences. GCI's DPE/AS Feasibility Report, dated March 31, 2009, stated that the DPE testing generally failed (too much water and not enough vapor flow) and concluded that only horizontal DPE wells would be appropriate (AS was never attempted). In response to this report, ACEHD issued a letter dated October 27, 2009, requesting a work plan for installation of DPE wells (and several additional items). GCI submitted a Work Plan for Additional Investigation, dated January 15, 2010, in which they partially addressed ACEHD's issues outlined in the October 2009 letter; ACEHD never formally reviewed the document, and shortly thereafter Stratus assumed consulting responsibilities for the site.

On July 22, 2010, a meeting was held between ACEHD and Stratus to review the current status of the project, to discuss the October 2009 ACEHD letter and GCI January 2010 response/work plan, and to discuss steps to immediately begin remediation efforts at the site. During this meeting, it was agreed that an SCM/Interim Remedial Action Plan (IRAP) would be prepared and would include a comprehensive data tabulation of all historic work performed at the site, would identify data gaps that require additional work, would propose any additional onsite wells/borings needed to complete onsite lateral and vertical soil assessment, and would include a proposal to excavate impacted soil at the former UST area as a preliminary remedial step before the initiation of DPE remediation. This approach was agreed upon by ACEHD, and was meant to expedite ACEHD's review time on the SCM/IRAP.

On January 25, 2011, Stratus oversaw the destruction of two groundwater monitoring wells (MW-1 and MW-4), which were located within the limits of the proposed excavation. During the same drilling mobilization, Stratus directed the advancement of soil borings B-4 and B-5, to a depth of approximately 32 feet bgs. These borings were

performed in order to assess subsurface conditions near a former fuel dispenser and waste oil UST. Between May 17 and June 17, 2011, Stratus oversaw the excavation of approximately 788 tons of soil from the former site UST area. The excavation extended to a maximum depth of about 12 feet below surface grade. After removing this soil, clean backfill material was placed within the excavation cavity. In November 2011, offsite well MW-6 was destroyed in the presence of a Stratus representative.

#### **GEOLOGY**

The site lies on the East Bay Plain approximately one mile west of the Oakland/San Leandro Hills and the northwest-trending Hayward Fault, and approximately three miles east of the San Francisco Bay. The site is at an elevation of approximately 50 feet above mean seal level (msl) with local topography predominately flat and sloping gently towards the west.

Local subsurface soil stratigraphy has been investigated by the drilling of more than 60 vertical soil borings at the site and immediately surrounding area on behalf of Mr. Lee, which have been logged by an array of different geologists over the past 15+ years. Most of the historic borings were logged on 5-foot intervals, although the eight soil borings drilled in 2009 (SV-1 through SV-8) were continuously cored (to approximately 14 feet bgs). According to available geologic boring logs related to the site, subsurface soils have been logged to a maximum depth of approximately 45 feet bgs.

From the surface to approximately 25 feet bgs, the soil generally consists of fine-grained materials (clay and sandy clay). Beneath the upper fine-grained material, from approximately 25 to 35 feet bgs (ranging from 3 to 13 feet in apparent thickness), a sandy unit of apparent higher permeability is present (clayey and silty sands with some clean sands). It is within this sandy layer that groundwater is first encountered. In general, the sandy water-bearing unit appears to thicken and coarsen to the west and northwest of the site (offsite, downgradient). Notably, the sandy layer appears to be thin (to absent) in the center of the site property itself (B-1, B-2, B-3, MW-1, and ETM-7) and to the northeast of the site across 14th Avenue (ETM-10, ETM-11). Beneath the sandy water-bearing unit, additional fine-grained soils have been encountered (clays). In both the upper and lower clayey layers, thin (1 to 4 feet in apparent thickness), discontinuous, sandy layers are reportedly interbedded. Notably, within the thick upper section of vadose zone clays, an approximate 1-foot thick sand, clay with sand, clayey gravel. or gravelly clay was encountered between 11 and 14 feet bgs (targeted in deep soil gas sample locations). A geologic cross-section illustrating interpreted geologic conditions beneath the site and site vicinity is included as Figure 4. The surface trace of this cross section is included on Figure 3.

#### **HYDROGEOLOGY**

A total of fourteen permanent groundwater monitoring wells (MW-1 through MW-6, MW-8 through MW-14, and MW-1A) have been screened to depths of between 20 and 40 feet bgs to monitor groundwater occurrence and quality in the first encountered water-bearing zone. The monitoring well array has included five onsite wells, and nine offsite wells spanning the city block west-northwest of the site, from Garcia Avenue to Broadmoor Boulevard (wells MW-1, MW-4, and MW-6 were destroyed in 2011). Historically, groundwater in the monitoring well array has been measured as shallow as 15.05 feet bgs to as deep as 30.25 feet bgs, with a historical average of about 25 feet bgs. Seasonal fluctuations in water table levels on the order of 5 to 10 feet are typical. Lowest groundwater levels were observed in the early 1990's. The geologic cross section provided as Figure 4 includes an illustration of the groundwater elevation fluctuation range in comparison to subsurface soil types at these depths within the subsurface.

Historically, the dominant groundwater flow in the vicinity of the site has been generally west and west-northwest at an average gradient of approximately 0.002 foot per foot (ft/ft). However, onsite groundwater flow is variable, with a consistent secondary gradient to the southwest in the direction of well MW-2 from wells MW-1, MW-3, and MW-4. Groundwater elevation contour maps from 1998, 2010, and 2013 are included as Figures 5, 6, and 7, respectively, that illustrate the secondary groundwater flow direction. A historical groundwater flow direction rose diagram for the site is presented as Figure 8.

### TARGETED DISCUSSION OF HYDROCARBON IMPACT

Generally speaking, the main area assessed for groundwater impact has been in an arc from west to north of the site. The groundwater impact plume as of the most recent groundwater monitoring event is bound, for GRO, by non-detectable concentrations in wells MW-11, MW-13, MW-14, and the 141 Farrelly Drive well. For benzene, the impact plume is limited to detections in wells MW-2 and MW-10.

The southwest portion of the site has not been extensively assessed. It appears that a localized secondary groundwater flow in the direction of monitoring well MW-2, cross-gradient from the main direction, has caused migration of hydrocarbon impact from the UST source area to the southern area of the site and to the west of the site. The following sections will contain a discussion of the petroleum hydrocarbon impact to soil and groundwater in this area. Historical soil analytical data is included in Appendix A; Table 2 summarizes groundwater monitoring and sampling results for the site.

# **Summary of Soil Impact**

Overall, the highest hydrocarbon impact to soil at the site is found in soil samples collected from the former UST pit source area and nearby, but the area to the south and west of the source area has not been well investigated.

In December 1994, well MW-2 was installed at the site. Soil samples from that boring were analyzed from 31 and 36 feet bgs (approximately at the water table surface and just below); GRO and benzene were reported at 6,300 milligrams per kilogram (mg/kg) and 110 mg/kg, respectively, in the 31 foot bgs sample. The following year, soil borings ETM-5 through ETM-8 were advanced in the targeted area. Soil samples were screened for analysis by using a photoionization detector (PID), and the PID screening did not indicate hydrocarbons in any of the samples from the borings except in ETM-7. Boring ETM-7, located within the service area of the site building, contained a maximum of 1.1 mg/kg GRO and 0.019 mg/kg benzene at 26 feet bgs. PID screening for each boring was conducted on samples collected at intervals of 5 feet or less. During subsequent assessment in 1996, boring ETM-16 was attempted southwest of the site along Garcia Avenue, but advancement was unsuccessful.

Well MW-8 was installed off-site, approximately 70 feet southwest of the site in the southern Garcia Avenue sidewalk, in August 1998. Two soil samples were submitted for analysis from boring MW-8, from 21 and 31 feet bgs. The sample from 31 feet bgs contained 1.3 mg/kg GRO and 0.0052 mg/kg benzene; the 21 foot sample did not contain detectible concentrations of hydrocarbons.

# **Summary of Groundwater Impact**

Grab groundwater samples were collected from borings ETM-5 and ETM-8 in November/December 1995, located approximately 50 feet southwest of the site and on the southeast edge of the site, respectively. The sample from ETM-5 contained 170 micrograms per liter ( $\mu$ g/l) GRO and no detection of benzene, and the sample from ETM-8 contained 1,300  $\mu$ g/l GRO and 18  $\mu$ g/l benzene. Boring ETM-6 was attempted between the two apartment buildings that are adjacent to the site to the west; the boring was dry at the total depth of 29 feet bgs and no water sample was collected.

In January 2009 grab groundwater samples were collected at the locations of each temporary soil vapor sampling point. In the area of focus, the grab groundwater sample from location SV-1 contained 15,000  $\mu$ g/l GRO and 1,600  $\mu$ g/l benzene. Vapor point SV-1 was located near monitoring well MW-2, which in March 2009 contained 9,800  $\mu$ g/l GRO and 270  $\mu$ g/l benzene. The grab groundwater sample from the vapor point location SV-8, located on the far south corner of the site, contained 860  $\mu$ g/l GRO and 0.58  $\mu$ g/l benzene.

Monitoring well MW-2, located on the western edge of the site, was installed in December 1994. Concentrations of GRO and benzene in well MW-2 were at their highest immediately after installation, at  $980,000 \,\mu\text{g/l}$  and  $9,400 \,\mu\text{g/l}$ , respectively. Since that time, the well has been sampled as part of the periodic monitoring program, and GRO and benzene concentrations have shown a fluctuating but consistent downward trend. During the third quarter 2013 groundwater monitoring event, GRO and benzene concentrations in well MW-2 were reported at  $7,400 \,\mu\text{g/l}$  and  $5.3 \,\mu\text{g/l}$ , respectively.

Overall, the extent of GRO and benzene impact in the direction of the secondary groundwater gradient is not fully defined.

# **Summary of Soil Vapor Impact**

Soil vapor samples were collected on- and off-site, from temporary soil vapor sampling points SV-1 through SV-8 in 2009. The samples were collected at two depths, approximately 5 to 5.5 feet bgs and 11.5 to 14 feet bgs. The results of the soil vapor sampling indicated that the extent of hydrocarbon impact is widespread, but mostly below the RWQCB's 2013 Tier I ESLs for TPHg/GRO (50,000 micrograms per cubic meter  $[\mu g/m^3]$ ), and for benzene (420  $\mu g/m^3$ ). In the samples collected from the temporary vapor points, only the deep sample from vapor point SV-7 (located in the northern corner of the site) at 12.5 feet bgs contained TPHg/GRO above the ESL, at 660,000 µg/m<sup>3</sup>. The vapor samples collected from vapor point SV-8 (located in the southwest corner of the site) did have concentrations within an order of magnitude of the ESL, at 17,000 and 19,000  $\mu$ g/m<sup>3</sup> (duplicate samples) and 35,000  $\mu$ g/m<sup>3</sup> from depths of 5.0 and 13.5 feet bgs, respectively. The sample collected from vapor point SV-2 (located in the northeast corner of the site) contained 270 µg/m<sup>3</sup> benzene, which is also within an order of magnitude of the 2013 ESL. Compared to the current ESLs, the soil vapor samples collected in 2009 did not otherwise have hydrocarbon concentrations within an order of magnitude for TPHg/GRO, BTEX, or MTBE. Table 3 summarizes the 2009 soil vapor sampling results, with comparisons to the 2013 ESLs.

#### TARGETED SITE CONCEPTUAL MODEL

The entire site vicinity was profiled in an SCM in Stratus's Site Conceptual Model and Interim Remedial Action Plan, dated October 18, 2010. The southern portion of the site, and the area in the direction of the secondary groundwater gradient, will be profiled more specifically in this section.

# **Sensitive Receptors**

Populations that have the potential to be exposed to the hydrocarbon impact beneath the site vicinity in the target area include the onsite workers at the German Autocraft facility, off-site residents of the adjacent apartment buildings and the houses beyond to the

southwest, the employees of the adjacent 7-Eleven/liquor store to the southeast, and construction workers in the event of any excavation at the site.

Although there are some basements in the properties in the site vicinity, the results of a door-to-door survey conducted in January 2011, found that there were no properties with basements within the focus area of this SCM.

A formal water well survey, including consulting the California Department of Water Resources (DWR) well completion report database and field reconnaissance of any identified wells, has not been conducted for this site. A 2,000-foot radius well search conducted for the nearby Monument Gas site, located approximately 350 feet northwest of the site, identified that there are wells located at 74 Euclid Avenue (approximately 1,000 feet southeast of the German Autocraft site) and 92 Broadmoor Avenue (approximately 550 feet northeast of the site). The Monument Gas well survey did not identify the well at 141 Farrelly Drive. The locations of known water wells are shown on Figure 9.

### **141 FARRELLY DRIVE WELL**

The irrigation well located at 141 Farrelly Drive was brought into ACEHD oversight as part of this environmental case in 1996. The well has been sampled periodically since that date, and has never shown any evidence of petroleum hydrocarbon impact. The existence of the well is a complicating factor for consideration of the LTCP on the subject site. Although the well has reportedly been out of service since 1996, the well is nonetheless a possible exposure pathway to the occupants of the home. Additionally, the operation of the well could have a direct effect on the stability of the hydrocarbon plume originating at the site.

Ideally, the 141 Farrelly Drive well would be destroyed, removing the possibility of exposure and allowing for closure under the LTCP. Stratus has approached the owner of the well and he is not willing to destroy the well under any foreseeable circumstances; therefore, low-threat closure will have to be achieved by different means. In addition, the owner of 141 Farrelly Drive stated to Stratus personnel that there were at least four other water wells in his neighborhood, which have never been identified by an environmental consultant or ACEHD.

In RWQCB's June 1999 East Bay Plain Groundwater Basin Beneficial Use Evaluation Report, it is stated that in 1994, the city of San Leandro attempted to determine the location of any properties being serviced by domestic wells. Using East Bay Municipal Utility Districty (EBMUD) records, a total of ten residences were identified, and by 1998, seven of the ten residences with wells had been connected to EBMUD service and/or had their wells destroyed, leaving three remaining domestic wells in existence in the city of

San Leandro. These claims, and the results of the Monument Gas well search, indicate that further investigation is needed into the water wells in the site vicinity.

#### ADDITIONAL SITE ASSESSMENT AND REMEDIATION

# **Project Rationale**

The rationale for the proposed work is twofold: first, in order to achieve low-threat closure at the site, the size of the hydrocarbon plume needs to be reduced to an adequate distance from private water wells. In the *Draft Feasibility Study/Corrective Action Plan* (FS/CAP), dated December 6, 2012, Stratus recommended the use of ozone sparging to accomplish the plume reduction, a limited version of which will be described in the following sections.

The LTCP states several sets of groundwater criteria that allow for low-threat closure. The applicable set of groundwater criteria for this site are:

- 1. The contaminant plume that exceeds water quality objectives is less than 100 feet in length.
- 2. There is no free product.
- 3. The nearest existing water supply well or surface water body is greater than 250 feet from the defined plume boundary.

No free product has been directly measured at the site during the monitoring period (as far back as 1990 for well MW-1), but the very high hydrocarbon concentrations measured historically in well MW-1 imply the possibility of free product. In contrast, following the over-excavation activity at the site in May and June 2011, soil samples collected from the base and sidewalls of the excavation did not contain any detectable concentrations of petroleum hydrocarbons.

The nearest water supply well, the 141 Farrelly Drive well, is approximately 250 feet from well MW-10, which had reported concentrations of 4,400  $\mu$ g/L GRO and 16  $\mu$ g/L benzene during the third quarter 2013 sampling event. Because the removal of the private well is not possible at this time, the current contaminant plume requires significant reduction in order to meet criteria 1 and 3. In addition, a new groundwater monitoring well will be installed near the former location of well MW-1 in order to evaluate the presence of free product, if any, in the source area. As a result of the 2011 over-excavation, Stratus believes the majority of the source area soil impact has been removed. Prior to the implementation of *in-situ* chemical oxidation (ISCO) and the related well installation, Stratus recommends installation of a monitoring well (MW-15) to replace former wells MW-1 and MW-4 in the former UST pit. The replacement well will be used to assess the groundwater conditions to determine whether groundwater

impact necessitates operation of ISCO. If elevated concentrations of petroleum hydrocarbons remain, Stratus recommends implementation of ISCO as proposed.

In the FS/CAP, several remediation options were outlined and evaluated for effectiveness. The FS/CAP concluded by recommending on- and off-site ISCO by ozone injection in order to remediate hydrocarbon impact to the groundwater. Access to off-site properties for the installation of the ISCO system is complex and time-consuming, as well as not completely assured. Therefore, the onsite ISCO will be implemented first. The use of ISCO at the site will reduce the source-area impact, which allows for enhanced down-gradient attenuation.

Secondly, a secondary flow component to groundwater flow has been proven to the west and southwest portion of the site. Investigation of hydrocarbon impact to soil, groundwater, and soil vapor is justified by the current lack of data about this portion of the site and vicinity, and will be outlined below.

# **Proposed Work**

The goals of the assessment and CAP are to:

- Investigate the extent of hydrocarbon impact in the soil on- and off-site. Onsite, the shallow soil is relatively uninvestigated, and requires additional laboratory analyses to apply for the LTCP. Off-site, soil borings were advanced in the past, but many did not have soil and/or groundwater samples collected for analysis. Soil samples will be collected during the advancement of grab groundwater sampling borings and soil vapor point borings, as described below.
- Investigate the extent of the hydrocarbon plume in the direction of the secondary groundwater gradient beyond monitoring well MW-2. Limited groundwater sampling has been conducted in that area; two Hydropunch grab groundwater samples will be collected to the southwest of the site (HP-1, HP-2). Soil boring ETM-6 was advanced in 1995 to collect a groundwater sample from the area between the two apartment buildings to the southwest of the site, but the boring was dry even after allowing for infiltration overnight. Hydropunch borings HP-1 and HP-2 will be advanced beyond the two apartment buildings because, since the advancement of boring ETM-6, hedges have been planted between the two buildings and equipment access is no longer possible.
- Assess the hydrocarbon concentrations in soil vapor in the site vicinity. Soil vapor sampling was conducted at the site once in 2009, from temporary sampling points (SV-1 through SV-8). Permanent sampling points (VP-1 through VP-8), installed at the approximate locations of the temporary points, will allow for sample repetition in the future and comparison to the 2009 sampling results. The

temporary soil vapor probes were installed at two depths in order to evaluate deeper soil vapor, but as there are no reported basements within 150 feet of the investigated area, it is not deemed necessary to collect deeper soil vapor samples. Therefore, only a single vapor point will be installed at each location.

- If warranted by groundwater conditions, install three ozone-injection wells (IW-1 through IW-3) to prepare for the installation of the ISCO system.
- If warranted, obtain a water discharge requirement (WDR) permit from RWQCB for ozone injection/sparging, as needed.
- If warranted, mobilize and construct an ozone injection system at the property and begin sparging ozone into the subsurface using wells IW-1 through IW-3.
- Conduct periodic groundwater monitoring and sampling in order to assess the performance of the ozone injection work, and verify compliance with the terms of the WDR.
- Conduct a well search in the site vicinity.

The proposed scope of work has been subdivided into five tasks, as outlined below. All work will be conducted under the direct supervision of a State of California Professional Geologist or Professional Engineer, and in accordance with standards established by the California Department of Toxic Substances Control (DTSC), ACEHD, United States Environmental Protection Agency, and SWRCB Tri-Regional guidelines.

# Task 1: Pre-Field Activities and Planning

Following receipt of ACEHD concurrence with the activities proposed herein, the following activities would be completed:

- Update the site-specific health and safety plan for the site.
- Physically mark the proposed boring locations, contact Underground Service Alert, and perform an underground utility survey in the vicinity of the proposed well locations.
- Obtain well installation/soil boring permits from Alameda County Public Works
  Department (ACPWD), an encroachment permit from the City of San Leandro, and
  the WDR from RWQCB.
- Prior to the proposed soil vapor sampling event, weather reports will be referenced to verify that a significant rain event (e.g., ≥ 0.5-inch) is not forecasted within 48 hours of the sampling event. If significant rain is forecasted during the scheduled sampling event, the sampling will be rescheduled.

Notify ACEHD, ACPWD, and the property owner of the scheduled field activities.

## Task 2: Field Activities

## Task 2A: Soil borings

A C-57 licensed drilling contractor will advance borings HP-1 and HP-2 using a direct push rig equipped with 2-inch diameter hollow rods equipped with a Hydropunch sampler. The initial 5 feet of each boring will be advanced with a hand auger and/or posthole digger to reduce the possibility of damaging underground utilities. Soil samples will be collected from the borings for the purposes of evaluating the off-site hydrocarbon impact in the shallow soil. Soil will be cored continuously from approximately 5 to 30 feet bgs using a direct-push boring rig equipped with a dual-tube apparatus equipped with acetate liners. Soil samples will be collected at depths of 5, 10, 15, and 20 feet bgs, and at the total depth of the boring from the continuous core. Each sample will be lined with Teflon sheets, capped, and sealed. Each sample will then be labeled, placed in a resealable plastic bag, and stored in an ice-chilled cooler. Strict chain-of-custody procedures will be followed from the time the samples are collected until the time the samples are relinquished to the laboratory. Soil contained in the remaining liners will be screened for volatile organic compounds (VOCs) using a PID. Stratus will record PID readings, soil types, and other pertinent geologic data on a borehole log.

### Task 2B: Hydropunch Borings

Stratus is proposing to collect groundwater samples at each location designated as HP-1 and HP-2 on Figure 2. At each general location, Stratus intends to collect groundwater samples from a Hydropunch sampler situated a few feet below first encountered groundwater (sampled from approximately 25 to 28 feet bgs), and across the sand layer, if found, which is often encountered at the site at approximately 25 to 30 feet bgs. The direct-push rig will advance the sampling rods to a depth of approximately 28 feet, as appropriate, and then retract the rods 2 to 3 feet to expose the Hydropunch sampler. A clean bailer will then be lowered through the rods to allow for collection of the groundwater sample. The water recovered from each borehole will be transferred to laboratory supplied glass vials (voas) containing a hydrochloric acid (HCL) preservative. Each sample will then be labeled, identified on a chain-of-custody form, and stored in an ice chilled cooler. Once the samples have been collected, each borehole will be grouted through the hollow rods to surface grade using neat cement. The ground surface will then be patched to match the surrounding area.

## Task 2C: Soil Vapor Sampling Point Installation

Eight soil vapor sampling points (VP-1 through VP-8) will be advanced at the approximate locations shown on Figure 2, in approximately the same locations as the temporary soil vapor sampling points that were installed and removed in 2009. Stratus will retain a C-57 licensed contractor to provide the drilling equipment and personnel necessary to advance the soil borings and install the soil vapor points. A Stratus representative will be onsite during all field activities. Soil borings will be advanced using a hand auger equipped with a 3-1/2 inch diameter bucket to 5 feet bgs. At the base of each soil boring, a soil sample will be collected using a slide-hammer sampler lined with a clean 6-inch brass tube. Each sample will be lined with Teflon sheets, capped, and sealed. Each sample will then be labeled, placed in a resealable plastic bag, and stored in an ice-chilled cooler. Strict chain-of-custody procedures will be followed from the time the samples are collected until the time the samples are relinquished to the laboratory. Following the collection of each soil sample, the boring will be reamed with the hand auger to 5.5 feet bgs.

Once the soil boring is completed, ¼-inch outside diameter Teflon tubing will be placed in the hole, capped by a ¾-inch long, ½-inch diameter porous stainless-steel vapor sampling implant. The implant will be placed at the center of a 1-foot layer of #3 sand. Following the sand, the borehole will be backfilled with crumbled bentonite, hydrated in 1-foot increments, to 6 inches below the surface. An airtight compression-fitting cap will be placed over the top of the vapor point tubing, and a traffic rated vault box will be installed around the top of each well.

#### Task 2D: Well Installation

A licensed well driller will advance soil borings IW-1 through IW-3 and MW-15 using a truck mounted or limited access drill rig equipped with 8-inch diameter hollow stem augers, in the presence of a Stratus Geologist. Well borings IW-1 through IW-3 and MW-15 will be advanced to approximately 35 feet bgs and converted to ozone injection or groundwater monitoring wells, as described below. The depth of borings IW-1 through IW-3 will be adjusted to install the ISCO diffuser into the coarse-grained layer found at approximately 30 to 35 feet bgs in most soil borings in the site vicinity. The initial 5 feet of the borings will be advanced with a hand auger and/or posthole digger to reduce the possibility of damaging underground utilities. Details regarding exploratory boring procedures are included in Appendix B.

Soil samples will be collected during the advancement of well borings IW-1 through IW-3 and MW-15 using a California-type, split-spoon sampler equipped with three precleaned brass or stainless steel sleeves, or using a core barrel fitted with acetate liners. While drilling the upper 25 feet of the subsurface, soil samples will be collected in 5-foot

intervals, and while drilling below 25 feet bgs, soil samples will be collected in 2.5-foot intervals.

The ends of the bottom-most, intact tube from each sample interval will be lined with Teflon sheets, capped, and sealed. Each sample will then be labeled, placed in a resealable plastic bag, and stored in an ice-chilled cooler. Strict chain-of-custody procedures will be followed from the time the samples are collected until the time the samples are relinquished to the laboratory. Additional soil recovered during sampling will be screened for VOCs using a PID. Stratus will record PID readings, soil types, and other pertinent geologic data on a borehole log. Stratus will select the number of soil samples for chemical analyses at the time of the investigation, based on the soil types encountered and field findings during this work.

Wells IW-1 through IW-3 will be constructed using 0.75-inch diameter schedule 80 PVC casing attached to a 24-inch length by 2 and 5/8-inch width ceramic gas diffuser sparge point. The exact depth of the sparge point installations will be determined at the time of the investigation, and based on soil lithologies encountered during drilling. A filter pack of #2/12 graded sand will be placed in the annular space around the sparge point. Well MW-15 will be constructed of 2-inch diameter schedule 40 PVC casing, with 15 feet of 0.020-inch slotted well screen, situated from 20 to 35 feet bgs. A filter pack of #3 graded sand will be placed from the bottom of the borehole to one foot above the filter pack.

Once the sand filter pack has been placed around the diffuser or well casing, approximately three feet of bentonite chips or pellets will be placed on top of the filter pack and hydrated with clean water to provide a transition seal for the well. Neat cement will be used to backfill the remaining annular space around the well casing. A slip cap will be placed over the top of the well casing, and a traffic rated vault box will be installed around the top of each well. The actual well construction may be modified in the field based on conditions encountered at the time of the investigation.

### Task 2E: Soil Vapor Sampling

Once the vapor points have been installed, Stratus will allow for a period of equilibration of subsurface conditions. Per California DTSC guidance, a minimum of 48 hours is needed. Prior to the proposed sampling event, weather reports will be referenced to verify that a significant rain event (e.g.,  $\geq 0.5$ -inch) does not occur within 48 hours before the sampling event. If significant rain is forecasted during the scheduled sampling event, the sampling will be rescheduled.

Prior to vapor point purging or sampling, a static vacuum test will be conducted to check for leaks in the sampling train. This test will be done by evacuating the system and observing no loss of vacuum for at least one minute (adjustment made if needed, then the sampling train will remain unaltered during the remainder of sampling).

Following the static vacuum test, the vapor sampling point will be purged. Based on the descriptions in the historical boring logs, low-flow conditions at the vapor sampling points are possible, so step purge tests will not be performed; the DTSC default of three purge volumes will be used. Purging will be conducted using expendable Summa canisters. One purge volume equals the volume of the inside of the entire length of Teflon tubing and the volume of void space in the sand pack around the probe tip.

A Summa canister will be used to collect each soil vapor sample. During filling of the canisters, the flow rate will be regulated to fill at a rate between 100 and 200 milliliters per minute. 1,1-difluoroethane (1,1-DFA) will be used to evaluate the integrity of the sample train and vapor point bentonite seal during collection. The vapor samples will be labeled, entered onto a chain-of-custody, and transported to the laboratory for analysis. The canisters will be protected from damage and exposure to excessive heat during transport.

# Task 2F: Installation and Operation of the Ozone Injection System

Stratus intends to utilize an H<sub>2</sub>O Engineering, Inc. OSU10-52 ozone injection system, or similar, to complete ISCO remediation at the site. The OSU10-52 system includes a self-contained cabinet housing an ozone generation system, an oxygen concentrator, an ozone delivery pump, and a distribution system with associated instrumentation. The OSU10-52 system operates on a 240-volt, 30 amps, and single-phase electrical requirement. The ozone generation system is capable of generating up to 2.7 pounds per day (lbs/day) at a concentration of 6% by weight, and can be injected at flow rates of up to 24 standard cubic feet per hour (scfh) at pressures up to 50 pounds per square inch (psi).

The well heads of IW-1 through IW-3 will be modified to allow for the injection of ozone. Tubing that allows for the delivery of ozone will be connected, through a sub-grade conveyance, from each of the 3 well casings to the remediation system. The tubing will be contained within a PVC piping extending through the length of the conveyance trenches.

Injection of ozone will be completed on a continuous basis (24-hour period). Stratus proposes to initiate injection of ozone-enriched air at a flow rate of 3 to 5 cubic feet per minute (cfm), at low injection pressures (approximately 100% to 125% of the static head breakthrough pressure or approximately 4 to 6 psi, depending on water levels). The operating parameters will be optimized to achieve steady state conditions based on data collected from the monitoring wells. The remediation system will be programmed to inject ozone for a 20-minute time period into the three wells connected to this system, completing a 60-minute injection cycle.

Stratus will continue to visit the site approximately twice per month to conduct operation and maintenance visits. During this time, Stratus will measure groundwater parameters (dissolved oxygen, pH, temperature, oxidation reduction potential, etc.) from the monitoring well network located near the remediation area (wells MW-2, MW-3, MW-8, MW-9 and MW-15).

Stratus is proposing to evaluate the performance of ISCO by evaluating the groundwater parameters collected during the site visits and the groundwater analytical data collected on a semi-annual basis. The samples will be analyzed for petroleum hydrocarbons, fuel oxygenates, and fuel additives, consistent with the current well sampling plan. Samples collected from wells MW-2, MW-3, MW-8, and MW-9 will be additionally analyzed for constituents that will be governed by the terms of the WDR. Based on previous experience obtaining a WDR for other sites where ozone injection was selected as the remedial alternative, Stratus anticipates that the samples from these wells will need to be analyzed for metals (arsenic, barium, cadmium, calcium, total chromium, copper, lead, magnesium, manganese, mercury, molybdenum, and nickel), hexavalent chromium, bromide, and bromate.

# **Task 3: Laboratory Analyses**

Soil and groundwater samples collected during this investigation will be forwarded to a certified analytical laboratory and analyzed for the presence of GRO, BTEX, and naphthalene by EPA Method 8260B.

Soil vapor samples collected during this investigation will be forwarded to a certified analytical laboratory and analyzed for the presence of GRO, BTEX, MTBE, 1,1-DFA, and naphthalene by EPA Modified Method TO-15 GC/MS.

### Task 4: Well Search

Stratus will conduct a search for private water wells within 2,000 feet of the site, using well completion records from DWR. In addition, Stratus will also attempt to locate any records related to the 1994 well search conducted by the city of San Leandro. If any wells are identified by the records searches within the radius, Stratus will attempt to confirm existence of the wells in the field. Finally, a questionnaire will be mailed to all addresses within the search radius, asking about the existence of any wells that may not be found in current records.

#### Task 5: Reporting

Stratus will prepare and submit a report to document all field activities. The report will include, but not be limited to, a scaled site plan, tabulated soil, groundwater, and soil vapor analytical data, and a discussion of the analytical results.

Mr. Mark Detterman, ACEHD Technical Memo/Work Plan 301 East 14<sup>th</sup> Street, San Leandro, California Page 20

March 5, 2014 Project No. 2076-0301-01

## **LIMITATIONS**

This document was prepared in general accordance with accepted standards of care that existed at the time. No other warranty, expressed or implied, is made. Conclusions and recommendations are based on field observations and data obtained from this work and previous investigations. It should be recognized that definition and evaluation of geologic conditions is a difficult and somewhat inexact science. Judgments leading to conclusions and recommendations are generally made with an incomplete knowledge of the subsurface conditions present. More extensive studies may be performed to reduce uncertainties. This document is solely for the use and information of our client unless otherwise noted.

SIONAL GEO

TREVOR

HARTWELL No. 8774

If you have any questions or comments concerning this report, please contact Trevor Hartwell at (530) 313-9966.

Sincerely,

STRATUS ENVIRONMENTAL. INC.

Allan Dudding **Project Geologist**  Trevor M. Hartwell, P.G. Senior Project Manager

Attachments:

Site Location Map Figure 1

Figure 2 Site Plan

Figure 3 Site Vicinity Map

Figure 4 Geologic Cross Section A to A'

Figure 5 Groundwater Elevation Contour Map, Fourth Quarter 1998

Figure 6 Groundwater Elevation Contour Map, First Quarter 2010

Figure 7 Groundwater Elevation Contour Map, First Quarter 2013

Figure 8

Historical Groundwater Flow Direction Rose Diagram

Figure 9 Well Location Map

Table 1 Well Construction Details

Table 2 Groundwater Elevation and Analytical Summary

Table 3 Historical Soil Vapor Analytical Results

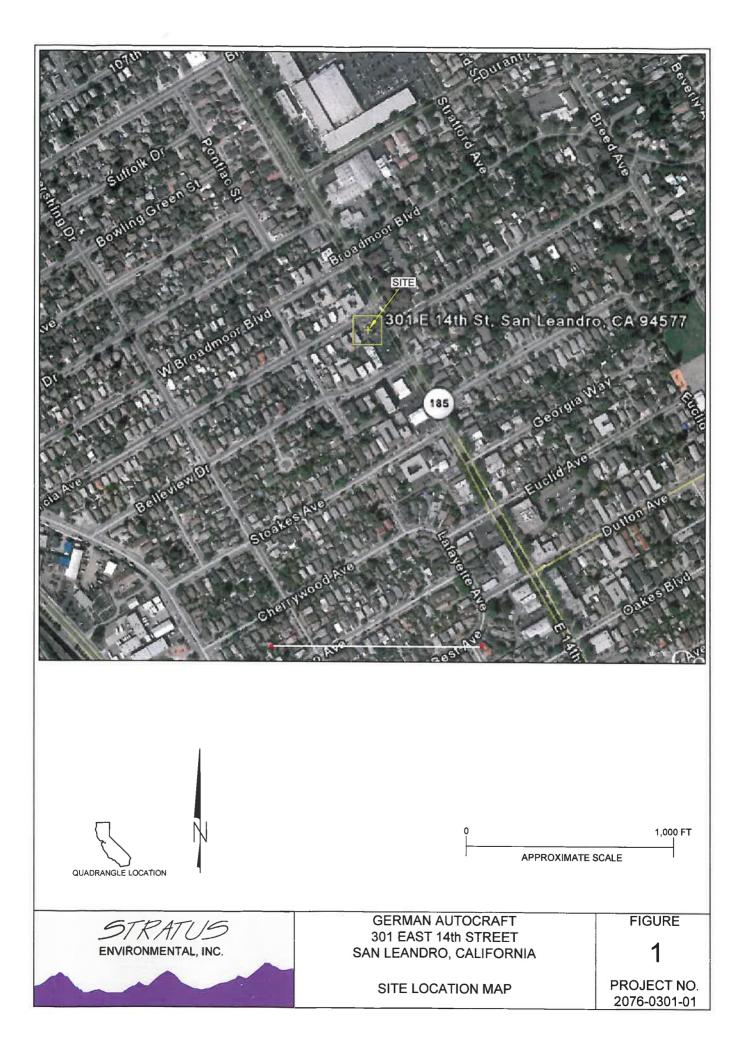
Appendix A Historical Soil Analytical Results

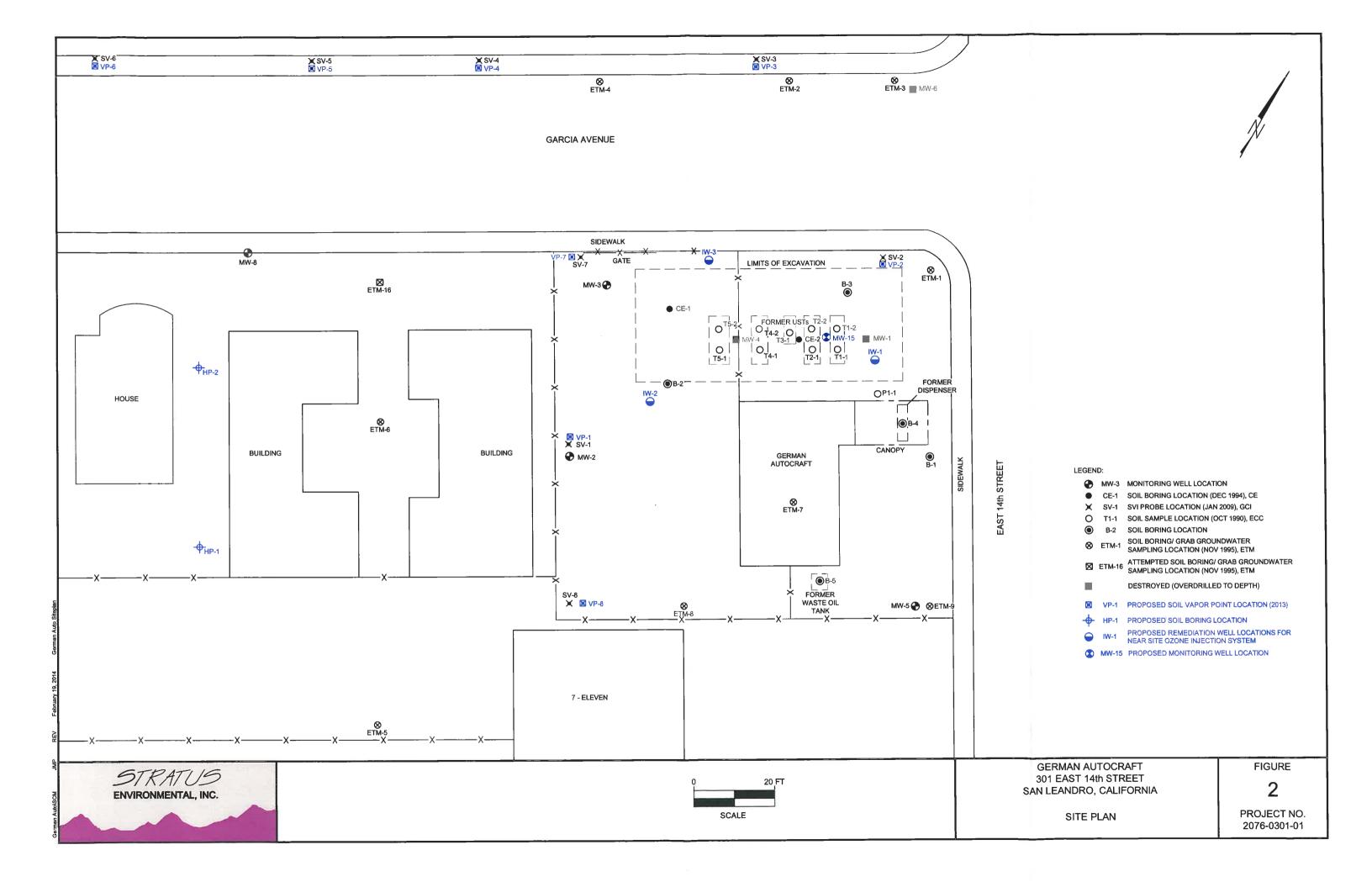
Appendix B Field Practices and Procedures

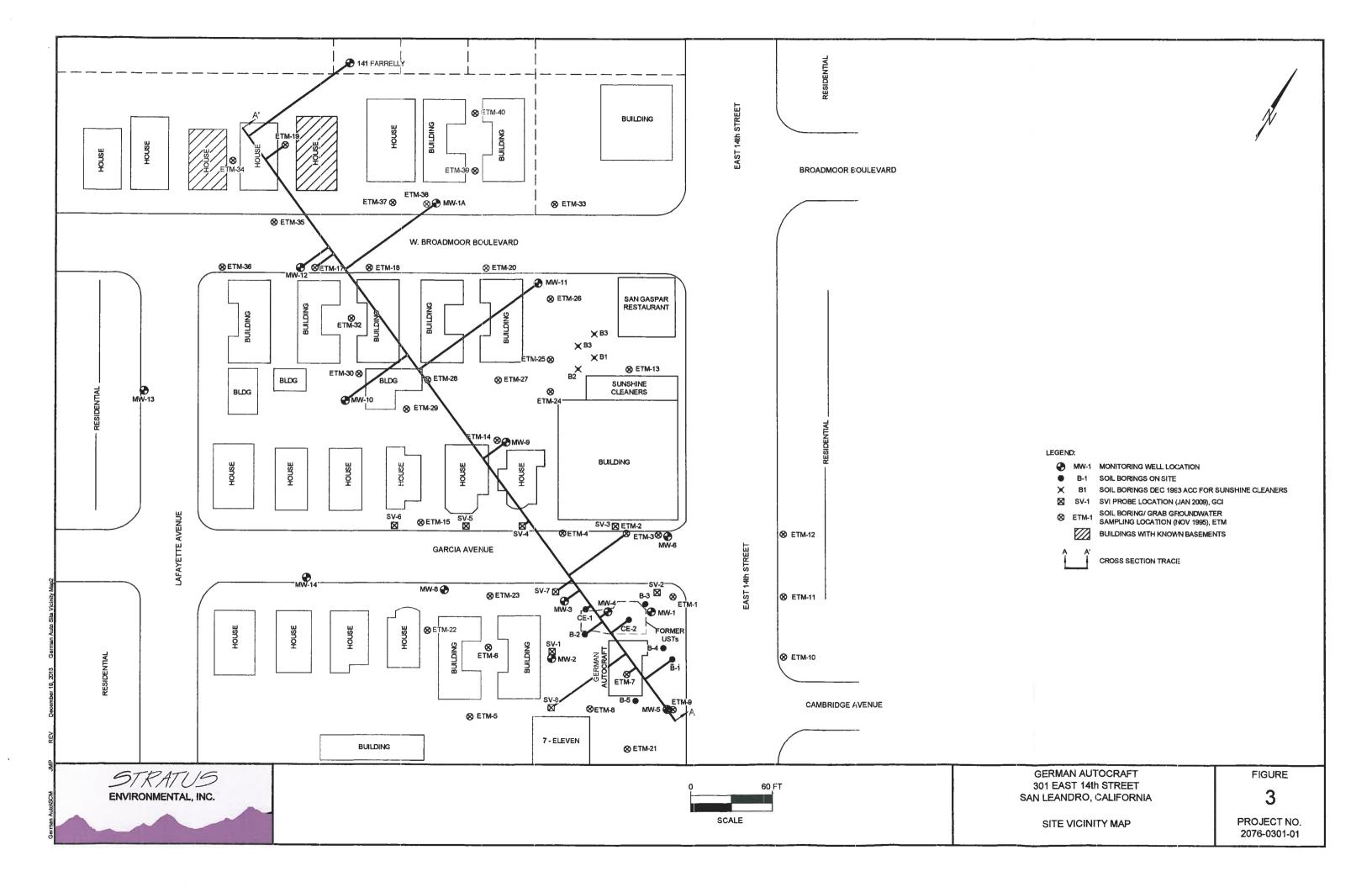
cc: Mr. Seung Lee, German Automotive

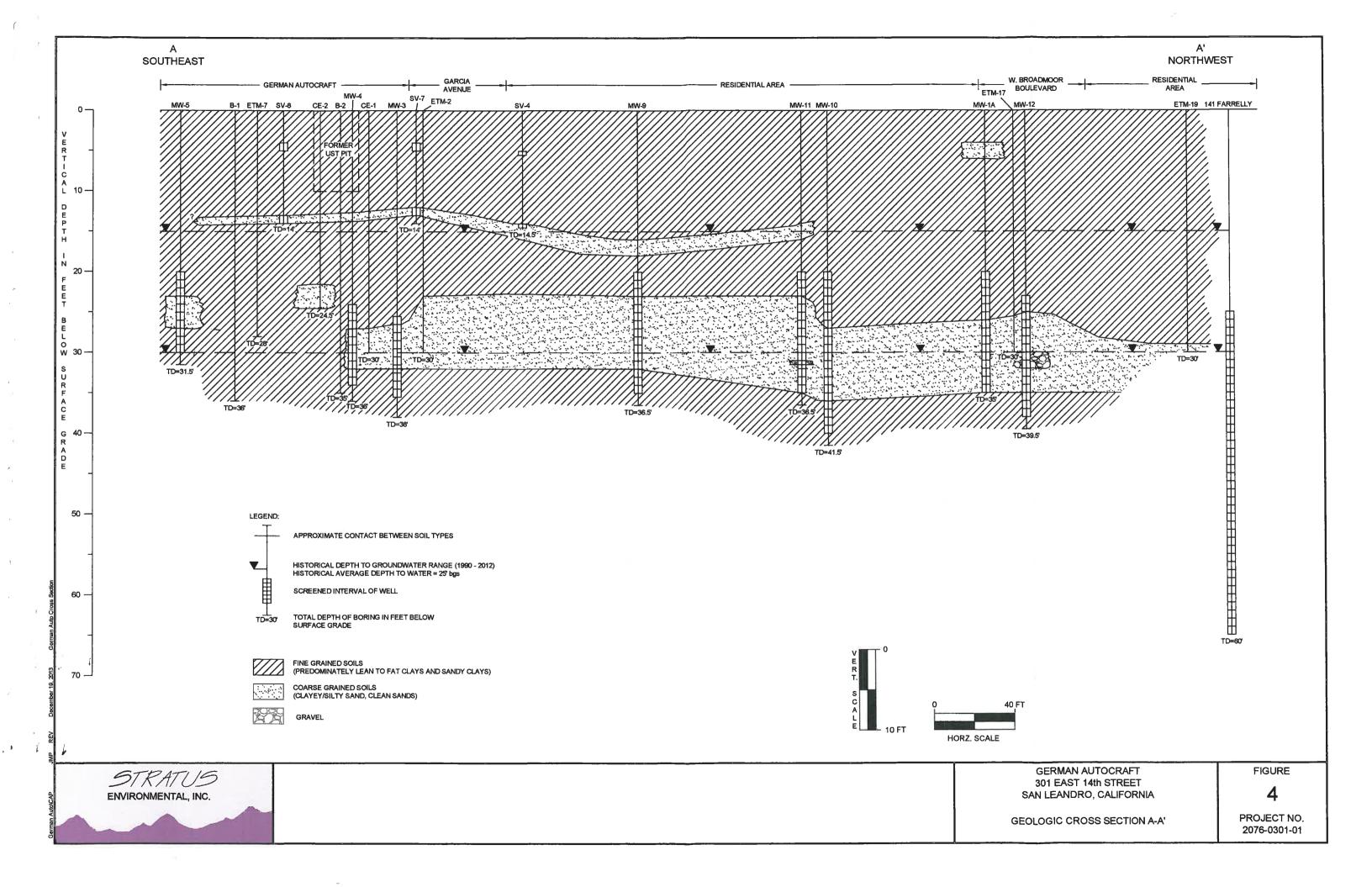
Mr. William Andrade

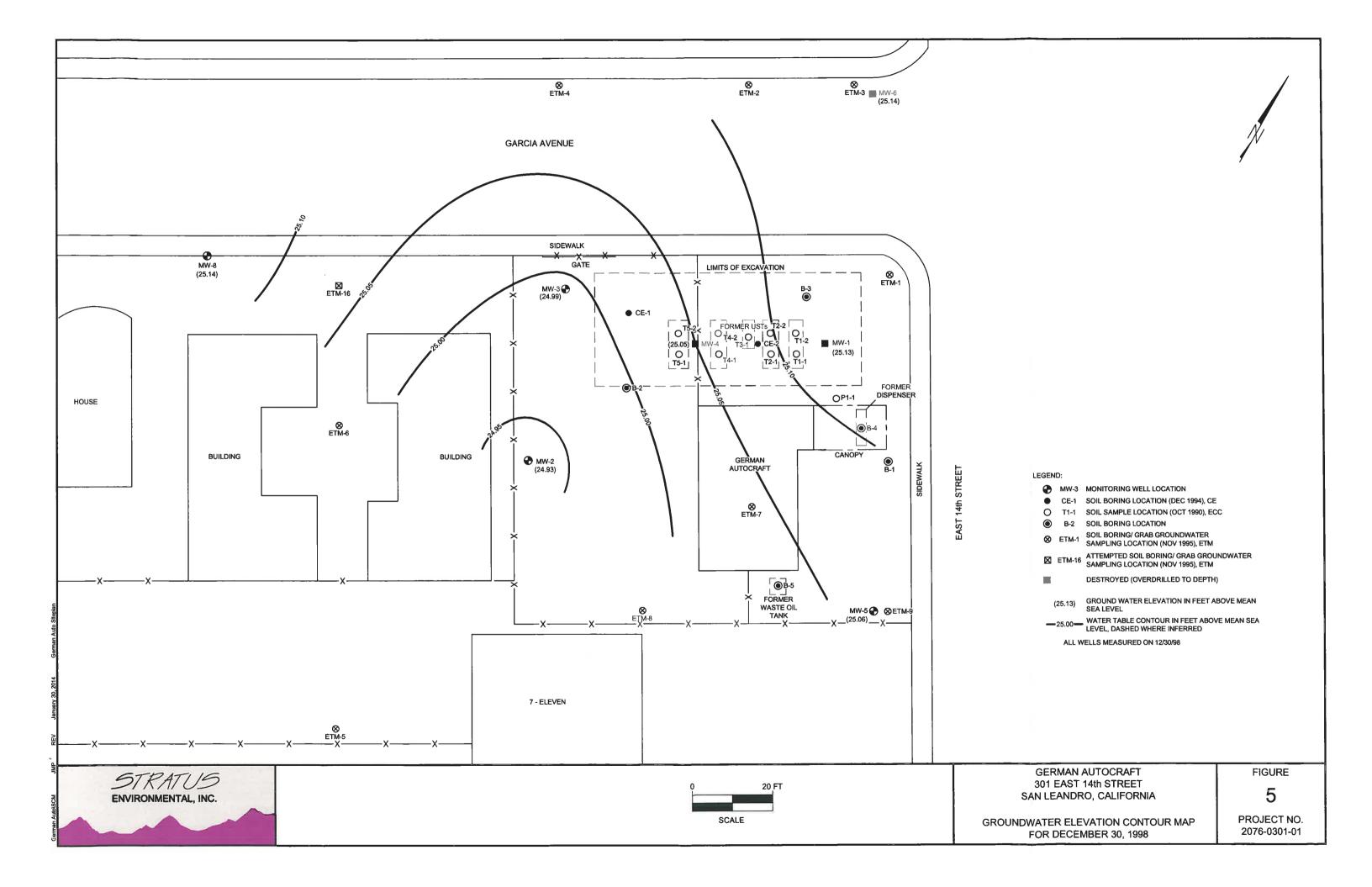
Mr. and Mrs. Steve Wilhelm

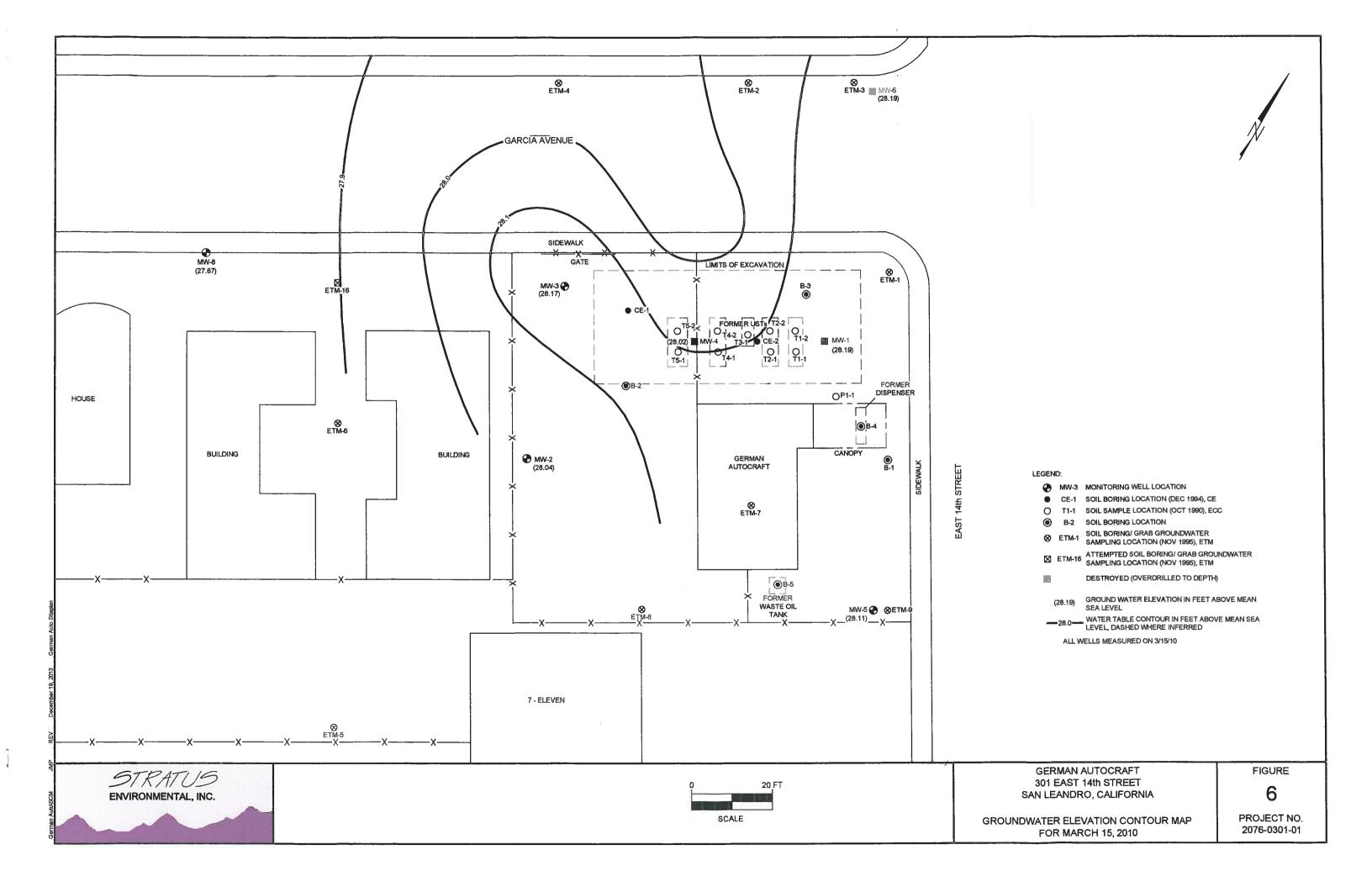












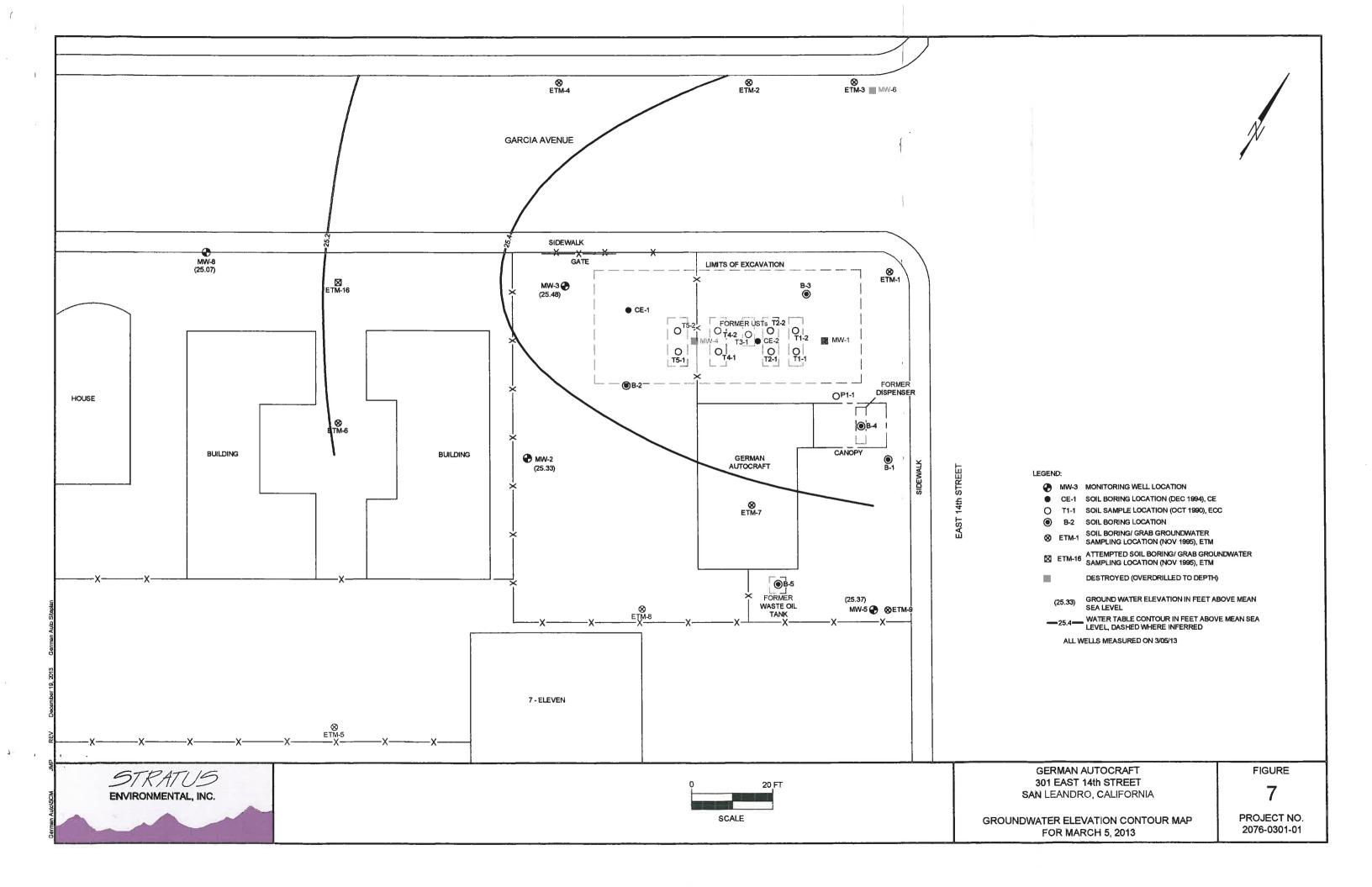
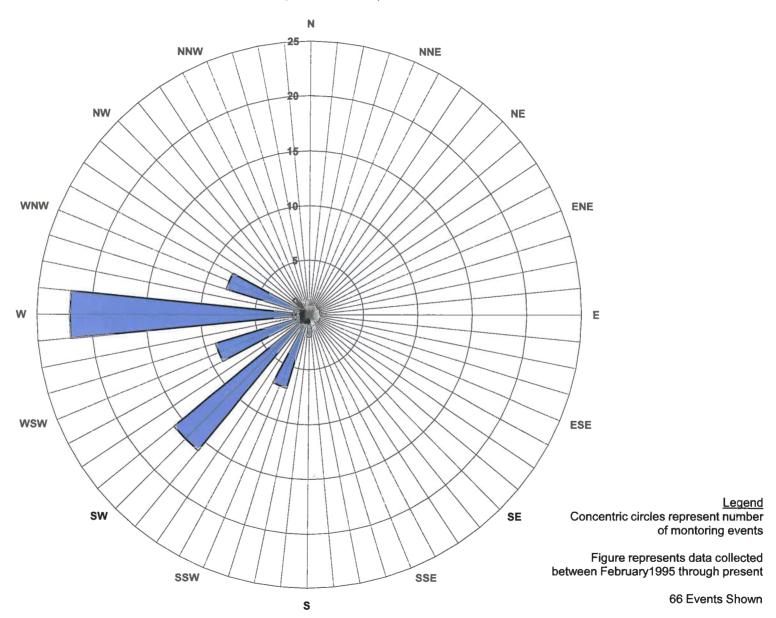
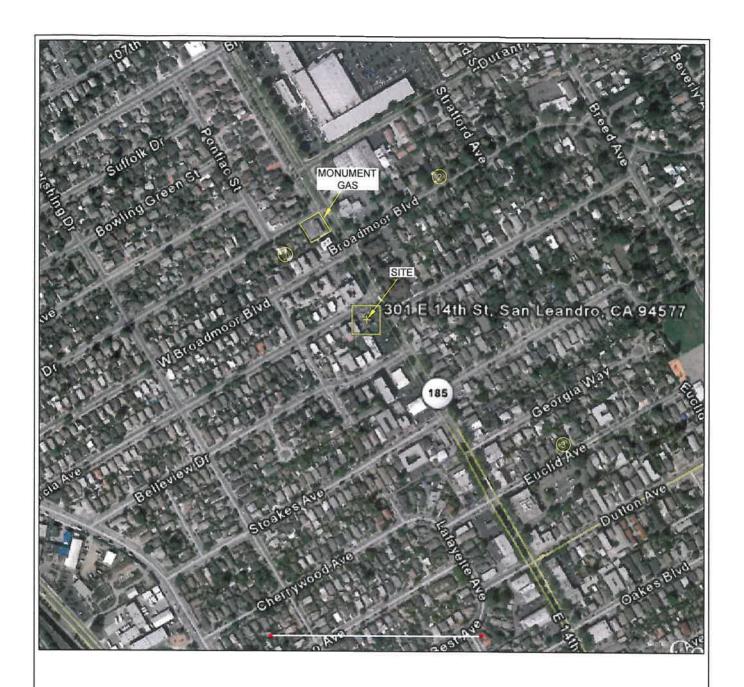


Figure 8
Historical Groundwater Flow Direction Rose Diagram
German Autocraft

301 East 14th Street, San Leandro, California





ITEM	WELL LOCATION
1	141 FARRELLEY DRIVE
2	92 BROADMOOR BOULEVARD
3	74 EUCLID AVENUE



0		1,000 FT
	APPROXIMATE SCALE	

STRATUS ENVIRONMENTAL, INC. GERMAN AUTOCRAFT 301 EAST 14th STREET SAN LEANDRO, CALIFORNIA

WELL LOCATION MAP

**FIGURE** 

9

PROJECT NO. 2076-0301-01

# TABLE 1 WELL CONSTRUCTION DETAILS

Boring/Well I.D.	Date	Boring Depth	Boring Diameter	Well Diameter	Well Depth	Screen Interval	Slot Size	Drilling Method	Consultant
		(feet bgs)	(inches)	(inches)	(feet)	(feet bgs)	(inches)		
Groundwater M	Ionitoring k	Vells							
MW-1*	12/17/91	45	8	2	45	25-45	0.02	HSA	Environmental Const. Co.
MW-2	12/12/94	38	8	2	34	24-34	0.010	HSA	Chemist Enterprises
MW-3	12/12/94	38	8	2	35.5	25.5-35.5	0.010	HSA	Chemist Enterprises
MW-4*	08/31/95	36.5	8	2	34	24-34	0.010	HSA	Chemist Enterprises
MW-1A	05/21/97	35	8	2	35	20-35	0.010	HSA	ALLCAL Prop. Serv. Inc.
MW-5	08/28/98	31.5	8	2	30	20-30	0.020	HSA	Env. Testing & Mgmt.
MW-6**	08/27/98	36.5	8	2	35	20-35	0.020	HSA	Env. Testing & Mgmt.
MW-8	08/27/98	31.5	8	2	30	20-30	0.020	HSA	Env. Testing & Mgmt.
MW-9	08/31/98	36.5	8	2	35	20-35	0.020	HSA	Env. Testing & Mgmt.
MW-10	08/28/98	41.5	8	2	40	20-40	0.020	HSA	Env. Testing & Mgmt.
MW-11	08/28/98	36.5	8	2	35	20-35	0.020	HSA	Env. Testing & Mgmt.
MW-12	01/30/01	39.5	8	2	38	23-38	0.020	HSA	Env. Testing & Mgmt.
MW-13	01/30/01	39.5	8	2	38	23-38	0.020	HSA	Env. Testing & Mgmt.
MW-14	01/31/01	31.5	8	2	30	20-30	0.020	HSA	Env. Testing & Mgmt.
141 Farrelly	1949			6	65	25-65	unknown	unknown	
Soil Borings 1									
B-1	12/11/90	35	8					HSA	Environmental Const. Co.
B-2	12/10/90	35	8					HSA	Environmental Const. Co.
B-3	12/10/90	35	8					HSA	Environmental Const. Co.
CE-1	12/13/94	30	8					HSA	Chemist Enterprises
CE-2	12/13/94	24.5	8					HSA	Chemist Enterprises
ETM-1	11/28/95	37	1					Geoprobe	Env. Testing & Mgmt.
ETM-2	11/28/95	30	1					Geoprobe	Env. Testing & Mgmt.
ETM-5	29/95	27	1					Geoprobe	Env. Testing & Mgmt.
ETM-6	11/29/95	29	1					Geoprobe	Env. Testing & Mgmt.
ETM-6	11/29/95	28	1					Geoprobe	Env. Testing & Mgmt.
ETM-10	11/30/95	27.3	1.5					Pneumatic	Env. Testing & Mgmt.
ETM-11	11/30/95	27.3	1.5					Pneumatic	Env. Testing & Mgmt.
ETM-17	03/25/96	30	1.5	••				Pneumatic	Env. Testing & Mgmt.
ETM-19	03/25/96	30	1.5					Pneumatic	Env. Testing & Mgmt.
ETM-21	03/26/96	24.5	1.5					Pneumatic	Env. Testing & Mgmt.
ETM-22	03/26/96	24.5	1.5					Pneumatic	Env. Testing & Mgmt.
B-4	01/24/11	32	1.5					Geoprobe	Stratus Environmental, Inc.
B-5	01/24/11	32	1.5					Geoprobe	Stratus Environmental, Inc.

TABLE 1 WELL CONSTRUCTION DETAILS

German Autocraft, 301 E. 14th Street, San Leandro, California

Boring/Well I.D.	Date	Boring Depth (feet bgs)	Boring Diameter (inches)	Well Diameter (inches)	Well Depth (feet)	Screen Interval (feet bgs)	Slot Size (inches)	Drilling Method	Consultant
Soil Vapor Poi	nts								
SV-1	01/06/09	30	2	0.25	6.0 13.5	5.5-6.0 13.0-13.5	 	Stratoprobe	Groundwater Cleaners, Inc.
SV-2	01/06/09	30	2	0.25	6.0 13.0	5.5-6.0 12.5-13.0		Stratoprobe	Groundwater Cleaners, Inc.
SV-3	01/08/09	30	2	0.25	5.5 13.5	5.0-5.5 13.0-13.5		Stratoprobe	Groundwater Cleaners, Inc.
SV-4	01/08/09	14.5	2	0.25	5.25 14.5	4.75 <b>-</b> 5.25 14.0-14.5		Stratoprobe	Groundwater Cleaners, Inc.
SV-5	01/07/09	24	2	0.25	5.25 14.0	4.75-5.25 13.5-14.0		Stratoprobe	Groundwater Cleaners, Inc.
SV-6	01/07/09	35	2	0.25	5.5 12.0	5.0-5.5 11.5-12.0		Stratoprobe	Groundwater Cleaners, Inc.
SV-7	01/06/08	30	2	0.25	6.0 13.0	5.5-6.0 12.5-13.0	 	Stratoprobe	Groundwater Cleaners, Inc.
SV-8	01/08/09	14	2	0.25	5.25 14.0	4.75-5.25 13.5-14.0		Stratoprobe	Groundwater Cleaners, Inc.

Notes:

ft bgs = feet below ground surface

HSA = hollow stem auger

<sup>\* =</sup> monitoring wells properly destroyed on January 25, 2011

<sup>\*\* =</sup> monitoring well properly destroyed on November 21, 2011

1 = soil borings without existing boring logs and/or construction details have been omitted.

# TABLE 2 GROUNDWATER ELEVATION AND ANALYTICAL SUMMARY

Well Number	Date Collected	Depth to Water (feet)	Top of Casing Elevation (ft msl)	Grouwater Elevation (ft msl)	GRO[1] (μg/L)	Benzene (μg/L)	Toluene (μg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE [3,4] (μg/L)	TBA (μg/L)	DIPE (μg/L)	TAME (μg/L)	1,2-DCA (μg/L)	EDB (µg/L)	Lead (Pb) (µg/L)
MW-1	12/21/90	30.25	49.61	19.15									 			
	12/31/90		49.61		51,000	2,200	1,200	< 0.5	760				 			
1	01/06/95		49.61		110,000	13,000	15,000	4,800	13,000				 			
	01/06/95		49.61		580,000	29,000	41,000	17,000	43,000				 			
	02/10/95	20.02	49.61	29.59									 			
	07/07/95	22.77	49.40	26.63	49,000	8,000	17,000	1,900	9,700				 			
	08/10/95	23.82	49.40	25.58									 			
	09/11/95	24.72	49.40	24.68									 			
	10/02/95	25.28	49.40	24.12	120,000	16,000	36,000	3,300	17,000				 			
	10/02/95		49.40		160,000	20,000	47,000	5,000	23,000				 			
	11/07/95	26.04	49.40	23.36									 			
	12/08/95	18.77	49.40	22.77									 			
	01/12/96	25.05	49.40	24.35	1,100,000	11,000	18,000	15,000	51,000	18,000 [2]			 			
	01/12/96		49.40		98,000	2,100	4,600	2,500	10,000	<5,000			 			
	02/12/96	20.36	49.40	29.04									 			
	03/12/96	17.65	49.40	31.75									 			
	04/13/96	19.97	49.40	29.43	53,000	1,300	2,900	2,100	10,000	<5,000			 			
	04/13/96		49.40		58,000	820	3,600	2,800	12,000	<5,000			 			
	05/14/96	21.51	49.40	27.89									 			
	06/20/96	22.21	49.40	27.19									 			
	07/26/96	23.45	49.40	25.95	91,000	2,600	7,200	2,900	14,000	<5,000			 			
	07/26/96		49.40		67,000	2,300	5,500	2,500	11,000	<5,000			 			
	08/19/96	24.24	49.40	25.16									 			
	09/17/96	24.96	49.40	24.44									 			
	10/21/96	25.77	49.40	23.63	210,000	4,800	17,000	2,300	15,000				 			
	10/21/96		49.40		210,000	5,400	18,000	2,600	11,000				 			
	11/27/96	25.12	49.40	24.28									 			
	12/27/96	21.17	49.40	28.23									 			
	01/28/97	16.38	49.40	33.02	120,000	5,600	15,000	2,100	11,000				 			
	01/28/97		49.40		130,000	5,500	15,000	2,300	12,000				 			
	04/25/97	22.26	49.40	27.14	180,000	6,900	20,000	2,600	13,000				 			
	04/25/97		49.40		170,000	6,500	20,000	2,500	13,000				 			
	07/17/97	24.85	49.40	24.55	220,000	8,300	41,000	2,700	16,000				 			
	10/21/97	26.55	49.40	22.85	240,000	9,400	33,000	3,300	22,000				 			
	03/10/98	15.05	49.40	34.35	120,000	11,000	46,000	3,700	21,000				 			
	06/06/98	18.71	49.40	30.69	110,000	7,600	32,000	4,800	23,000				 			
	09/30/98	23.45	49.40	25.95	140,000	5,800	29,000	3,500	18,000				 			
	12/30/98	24.27	49.40	25.13	78,000	5,200	24,000	3,200	19,000				 			

# TABLE 2 GROUNDWATER ELEVATION AND ANALYTICAL SUMMARY

Well Number	Date Collected	Depth to Water (feet)	Top of Casing Elevation (ft msl)	Grouwater Elevation (ft msl)	GRO[1] (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE [3,4] (μg/L)	TBA (μg/L)	DIPE (μg/L)	ETBE (µg/L)	1,2-DCA (μg/L)	EDB (μg/L)	Lead (Pb) (µg/L)
MW-1	03/13/99	19.42	49.40	29.98		-								 		
(con't)	03/23/99		49.40		250,000	8,000	43,000	5,200	27,000			•		 		
	09/29/99	25.01	49.40	24.39	140,000	6,100	35,000	5,400	27,000					 		
	12/29/99	25.65	49.40	23.75										 		
	03/18/00	17.48	49.40	31.92	120,000	5,100	33,000	4,600	24,000					 		
	07/18/00	23.19	49.40	26.21										 		
	09/26/00	24.39	49.40	25.01										 		
	12/28/00	24.77	49.40	24.63										 		
	03/20/01		49.40	••	100,000	3,600	41,000	4,700	25,000	<1,250				 		
	03/30/01	21.93	49.40	27.47										 		
	10/05/01	25.58	49.40	23.82										 		
	03/28/02	20.74	49.40	28.66	100,000	2,800	24,000	5,400	28,900					 		
	03/31/03	22.72	49.40	26.68	100,000	2,200	19,000	4,900	21,000					 		
	06/19/03	23.17	49.40	26.23										 		
	09/30/03	25.35	49.40	24.05										 		
	02/10/04	22.44	49.40	26.96										 		
	03/31/04		49.40		100,000	2,100	21,000	6,200	36,000					 		
	06/30/04	24.67	49.40	24.73										 		
	09/14/04	27.89	49.40	21.51	160,000	1,800	16,000	5,500	30,000					 		
	03/29/06	18.84	49.40	30.56	69,000	1,400	16,000	4,900	28,000					 		
	06/24/06	20.57	49.40	28.83										 		
	09/30/06	23.53	49.40	25.87	120,000	1,400	13,000	5,200	29,000	<500				 		
	12/11/06	22.78	49.40	26.29										 		
	03/16/07		49.40											 		
	06/10/07	24.36	49.40	25.04										 		
	09/14/07	25.92	49.40	23.48	92,000	1,000	9,400	4,300	23,000	<250				 		
	12/14/07	26.22	49.40	23.18										 		
	03/12/08	22.4	49.40	27										 		
	06/11/08	24.97	49.40	24.43							••			 		
	09/05/08	26.44	49.40	22.96	110,000	1,000	11,000	4,200	21,000	<250				 		
	12/13/08	27.16	49.40	22.24										 		
	03/14/09	21.82	49.40	27.58	110,000	1,000	14,000	3,700	21,000	<1,000				 		
	12/07/09	26.42	49.40	22.98	49,000	540	5,500	2,000	9,400	<100				 		
	03/15/10	21.21	49.40	28.19										 		
	09/13/10 03/01/11	25.25	49.40	24.15	75,000	670	9,400	3,700	19,000 estroyed	<50[5]				 <100[5]	<200[5]	89

# TABLE 2 GROUNDWATER ELEVATION AND ANALYTICAL SUMMARY

Well Number	Date Collected	Depth to Water (feet)	Top of Casing Elevation (ft msl)	Grouwater Elevation (ft msl)	GRO[1] (μg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE [3,4] (μg/L)	TBA (μg/L)	DIPE (µg/L)	TAME (µg/L)	1,2-DCA (μg/L)	EDB (μg/L)	Lead (Pb) (µg/L)
MW-2	01/06/95			••	980,000	9,400	5,600	19,000	42,000				 			
	02/10/95	20.52	50.14	29.62									 			
	07/07/95	23.55	50.02	26.47	71,000	5,300	1,800	6,100	9,000				 			
	08/10/95	24.62	50.02	25.4									 			
	09/11/95	25.53	50.02	24.49									 			
	10/02/95	26.08	50.02	23.94	40,000	2,900	200	2,800	3,600				 			
	11/07/95	26.89	50.02	23.13									 			
	12/08/95	27.47	50.02	22.55									 			
	01/12/96	25.82	50.02	24.2	260,000	2,600	2,200	6,300	7,800	<12,500			 			
	02/12/96	20.99	50.02	29.03									 			
	03/12/96	18.42	50.02	31.6									 			
	04/13/96	20.77	50.02	29.25	30,000	1,900	370	2,300	2,400	520 [2]			 			
	04/29/96		50.02			930	<25	1,200	1,400				 			
	05/14/96	22.34	50.02	27.68									 			
	06/20/96	23.05	50.02	26.97									 			
	07/26/96	24.28	50.02	25.74	180,000	1,400	640	2,100	5,000	<5,000			 			
	08/19/96	25.05	50.02	24.97		·							 			
	09/17/96	25.8	50.02	24.22									 			
•	10/21/96	26.59	50.02	23.43	62,000	2,100	< 0.5	2,100	2,700				 			
•	11/27/96	25.93	50.02	24.09		´							 			
	12/27/96	21.99	50.02	28.03									 			
	01/28/97	17.31	50.02	32.71	46,000	1,500	94	1,800	2,000				 			
	04/25/97	23.14	50.02	26.88	23,000	790	26	820	730				 			
	07/17/97	25.71	50.02	24.31	95,000	2,200	<0.5	3,100	4,300				 			
	10/21/97	27.33	50.02	22.69	31,000	2,000	<0.5	2,100	1,900				 			
	03/10/98	15.82	50.02	34.2	19,000	730	44	820	1,000				 			
	06/06/98	19.61	50.02	30.41	16,000	670	1,100	510	1,200				 			
	09/30/98	24.34	50.02	25.68	24,000	600	77	680	580				 			
	12/30/98	25.09	50.02	24.93	9,300	510	96	450	480				 			
	03/13/99	20.22	50.02	29.8									 			
	03/23/99		50.02		5,700	580	9.4	400	280				 			
	09/29/99	25.9	50.02	24.12	17,000	880	240	830	1,000				 			
	12/29/99	26.5	50.02	23.52	11,000	800	11	860	780				 			
	03/18/00	18.15	50.02	31.87	11,000	790	14	520	450				 			
	03/18/00	24.01	50.02	26.01	10,000	560	27	630	530				 			
		25.33	50.02	24.69	6,800	450	7.4	290	200				 	-		
	09/26/00 12/28/00	25.63	50.02	24.69	12,000	540	30	420	330				 			
	03/30/01	23.63	50.02	24.39	3,500	230	<10	<10	<10	<100			 			

Well Number	Date Collected	Depth to Water (feet)	Top of Casing Elevation (ft msl)	Grouwater Elevation (ft msl)	GRO[1] (µg/L)	Benzene (µg/L)	Toluene (μg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE [3,4] (μg/L)	TBA (μg/L)	DIPE (µg/L)		TAME (μg/L)	1,2-DCA (μg/L)	EDB (µg/L)	Lead (Pb) (µg/L)
MW-2	10/05/01	26.38	50.02	23.64													
(con't)	03/28/02	21.59	50.02	28.43	7,000	570	16	170	71								
	09/30/02	25.84	50.02	24.18													
	03/31/03	23.63	50.02	26.39	5,000	620	<12.5	71	<25								
	06/19/03	23.98	50.02	26.04													
	09/30/03	26.19	50.02	23.83													
ļ	02/10/04	23.27	50.02	26.75													
	03/31/04		50.02		8,200	500	<12.5	65	<25								
ĺ	06/30/04	25.45	50.02	24.57													
	09/14/04	26.7	50.02	23.32	9,000	560	<13	57	<25								
	03/29/06	19.61	50.02	30.41	5,200	1,400	<20	52	<20								
	06/24/06	21.41	50.02	28.61													
	09/30/06	24.37	50.02	25.65	4,800	900	64	22	110	<50							
ĺ	12/11/06	23.92	50.02	26.1													
	03/16/07	22.78	50.02	27.24													
	06/10/07	25.12	50.02	24.9													
	09/14/07	26.63	50.02	23.39	11,000	2,200	53	72	150	<50							
	12/14/07	26.58	50.02	23.44													
	03/12/08	23.1	50.02	26.92													
	06/11/08	25.71	50.02	24.31													
	09/05/08	27.14	50.02	22.88	10,000	1,000	49	120	120	<100							
	12/13/08	27.83	50.02	22.19													
	03/14/09	22.38	50.02	27.64	9,800	270	28	210	110	<110							
	06/03/09	25.27	50.02	24.75													
	12/07/09	27.11	50.02	22.91	9,000	150	48	170	110	< 50							
	03/15/10	21.98	50.02	28.04													
	09/13/10	26.11	50.02	23.91	9,900	93	<5.0[5]	100	13[5]	<5.0[5]					<10[5]	<20[5]	18
	03/01/11	21.55	50.02	28.47													
	09/08/11	24.98	50.02	25.04	7,500	680	13	17	7.4[5]				~~				
	03/06/12	26.11	50.02	23.91													
	07/11/12	24.86	50.02	25.16	6,100	31	2.2	33	3.0								
	03/05/13	24.69	50.02	25.33													
	09/09/13	27.64	50.02	22.38	7,400	5.3	<4.0[5]	84	11								

Well Number	Date Collected	Depth to Water (feet)	Top of Casing Elevation (ft msl)	Grouwater Elevation (ft msl)	GRO[1] (µg/L)	Benzene (µg/L)	Toluene (μg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE [3,4] (μg/L)	TBA (μg/L)	DIPE (µg/L)	TAME (μg/L)	1,2-DCA (μg/L)	EDB (µg/L)	Lead (Pb) (µg/L)
MW-3	01/06/95		49.32		740,000	11,000	2,300	8,300	28,000				 			
ľ	02/10/95	19.75	49.32	29.57									 			
	07/07/95	22.82	49.32	26.5	86,000	12,000	8,600	4,900	19,000				 			
	08/10/95	23.88	49.32	25.44									 			
	09/11/95	24.78	49.32	24.54									 			
	10/02/95	25.32	49.32	24	100,000	15,000	11,000	6,000	20,000				 			
	11/07/95	26.11	49.32	23.21									 			
	12/08/95	26.7	49.32	22.62									 			
	01/12/96	25.07	49.32	24.25	84,000	6,500	4,100	3,200	12,000	<5,.000			 			
	02/12/96	20.32	49.32	29									 			
	03/12/96	17.65	49.32	31.67									 			
	04/13/96	20.06	49.32	29.26	48,000	7,600	3,600	2,800	9,400	<2,500			 			
	05/14/96	21.61	49.32	27.71									 			
	06/20/96	22.32	49.32	27									 			
	07/26/96	23.65	49.32	25.67	62,000	6,400	3,100	3,000	11,000	<2,500			 			-
	08/19/96	24.31	49.32	25.01									 			
	09/17/96	25.05	49.32	24.27									 			
	10/21/96	25.84	49.32	23.48	110,000	5,400	2,400	2,500	9,800				 			
i	11/27/96	25.19	49.32	24.13									 			
	12/27/96	21.21	49.32	28.11									 			
	01/28/97	16.54	49.32	32.78	130,000	5,500	15,000	2,300	12,000				 			
	04/25/97	22.38	49.32	26.94	180,000	6,900	20,000	2,600	13,000				 			
	07/17/97	24.95	49.32	24.37	69,000	5,100	1,100	1,800	8,600				 			
	10/21/97	26.59	49.32	22.73	58,000	4,300	1,300	2,100	8,000				 			
	03/10/98	15.19	49.32	34.13	25,000	3,000	1,300	1,100	3,700				 			
	06/06/98	18.85	49.32	30.47	52,000	4,400	1,900	2,300	6,900				 			
	09/30/98	23.57	49.32	25.75	42,000	4,300	1,400	1,800	6,600				 			
	12/30/98	24.33	49.32	24.99	34,000	4,200	770	2,300	9,000				 			
	03/13/99	19.49	49.32	29.83	44,000	3,500	1,000	1,700	5,200				 			
	09/29/99	25.12	49.32	24.2	39,000	6,000	840	2,400	8,100				 			
	12/29/99	25.72	49.32	23.6	39,000	4,600	790	2,400	8,100				 			
	03/18/00	17.5	49.32	31.82	21,000	3,100	550	1,400	4,100				 			
	07/18/00	23.28	49.32	26.04	30,000	5,000	950	2,000	5,700				 			
	09/26/00	24.52	49.32	24.8	36,000	5,300	640	2,400	9,900				 			
	12/28/00	24.87	49.32	24.45	33,000	4,700	450	2,100	6,400				 			
	03/20/01	24.07	49.32	27.73	21,000	2,000	260	570	3,000	<500			 			
	03/20/01	21.93	49.32	27.39	21,000	2,000			J,000				 			
	10/05/01	25.62	49.32	23.7									 			

Well Number	Date Collected	Depth to Water (feet)	Top of Casing Elevation (ft msl)	Grouwater Elevation (ft msl)	GRO[1] (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE [3,4] (μg/L)	TBA (μg/L)	DIPE (μg/L)	ETBE (μg/L)	1,2-DCA (μg/L)	EDB (µg/L)	Lead (Pb) (µg/L)
MW-3	03/28/02	20.83	49.32	28.49										 		
(con't)	09/30/02	25.2	49.32	24.12										 		/
	03/31/03	22.82	49.32	26.5	25,000	3,200	280	1,600	4,200					 		
	06/19/03	23.29	49.32	26.03										 		
	09/30/03	25.5	49.32	23.82										 		
	02/10/04	22.53	49.32	26.79										 		
	03/31/04		49.32		11,000	1,000	940	550	1,900					 		
	06/30/04	24.73	49.32	24.59										 		
	09/14/04	27.93	49.32	21.39	42,000	3,600	190	2,200	4,800					 		
	03/29/06	18.87	49.32	30.45	7,200	180	17	460	680					 		
	06/24/06	22.65	49.32	26.67										 		
	09/30/06	24.49	49.32	24.83	7,100	130	94	500	820	< 50				 		
	12/11/06	23.03	49.32	26.29										 		
	03/16/07	21.97	49.32	27.35										 		
	06/10/07	24.28	49.32	25.04										 		
	09/14/07	25.75	49.32	23.57	6,700	16	44	200	400	<10				 		
	12/14/07	25.96	49.32	23.36										 		
	03/12/08	22.31	49.32	27.01										 		
	06/11/08	24.8	49.32	24.52										 		
	09/05/08	26.23	49.32	23.09	6,300	7.6	82	92	290	<5.0				 		
	12/13/08	26.93	49.32	22.39										 		
	03/14/09	21.65	49.32	27.67	3,300	13	17	56	140	<50				 		
	12/07/09	26.2	49.32	23.12	2,800	13	43	74	150	<50				 		
	03/15/10	21.15	49.32	28.17										 		
	09/13/10	25.20	49.32	24.12	1,400	< 0.50	< 0.50	5.3	2.9	< 0.50				 <1.0	<2.0	22
	03/01/11	20.66	49.32	28.66										 		
	09/08/11	24.19	49.32	25.13	1,000	29	2.1	29	6.7					 		
	03/06/12	25.22	49.32	24.10										 		
	07/11/12	24.06	49.32	25.26	460	< 0.50	< 0.50	< 0.50	< 0.50					 		
	03/05/13	23.84	49.32	25.48										 		
	09/09/13	26.62	49.32	22.70	1,100	<0.50	<0.50	0.98	< 0.50					 		

Well Number	Date Collected	Depth to Water (feet)	Top of Casing Elevation (ft msl)	Grouwater Elevation (ft msl)	GRO[1] (μg/L)	Benzene (µg/L)	Toluene (μg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE [3,4] (μg/L)	TBA (μg/L)	DIPE (µg/L)	TAME (μg/L)	1,2-DCA (μg/L)	EDB (µg/L)	Lead (Pb) (µg/L)
MW-4	12/30/98	24.56	49.61	25.05	12,000	1,200	1,100	290	1,400				 			
	03/13/99	19.72	49.61	29.89									 			
	03/23/99		49.61		89,000	5,900	8,700	2,000	9,200				 			
	09/29/99	25.34	49.61	24.27	48,000	5,300	6,800	1,700	7,700				 			
	12/29/99	25.97	49.61	23.64									 			
	03/18/00	17.76	49.61	31.85	44,000	4,500	7,500	2,200	11,000				 			
	12/28/00	25.09	49.61	24.52									 			
	03/30/01	22.21	49.61	27.4	10,000	700	620	<10	1,900	<100			 			
	10/05/01	25.84	49.61	23.77									 			
	03/28/02	21.03	49.61	28.58	30,000	3,700	3,100	1,100	4,100				 			
	09/30/02	25.29	49.61	24.32									 			
	03/31/03	23.02	49.61	26.59	25,000	2,000	2,100	820	2,900				 			
	06/19/03	23.45	49.61	26.16									 			
	09/30/03	25.65	49.61	23.96									 			
	03/31/04		49.61		24,000	2,500	200	1,400	2,800				 			
	09/14/04	28.16	49.61	21.45	14,000	760	550	430	1,600				 			
[	03/29/06	19.87	49.61	29.74	17,000	2,000	1,200	910	2,400				 			
	06/24/06	22.86	49.61	26.75									 			
	09/30/06	23.94	49.61	25.67	4,000	440	120	240	360	<50			 			
	12/11/06	23.36	49.61	26.25									 			
	03/16/07	22.26	49.61	27.35									 			
	06/10/07	24.6	49.61	25.01									 			
	09/14/07	26.11	49.61	23.5	10,000	1,300	96	440	560	<50			 			
	12/14/07	26.39	49.61	23.22									 			
1	03/12/08	22.62	49.61	26.99									 			
	06/11/08	25.19	49.61	24.42									 			
	09/05/08	26.64	49.61	22.97	12,000	1,400	110	960	840	<300			 			
	12/13/08	27.36	49.61	22.25									 			
	03/14/09	21.96	49.61	27.65	44,000	1,700	1,000	2,600	6,700	<250			 		~-	
	12/07/09	26.6	49.61	23.01	26,000	920	160	2,100	3,200	<250			 			
	03/15/10	21.59	49.61	28.02				_,					 			
	09/13/10	25.70	49.61	23.91	9,900	660	56	550	465	<2.5[5]			 	<5.0[5]	<10[5]	<5.0[5]
	03/01/11				- 3				Destroyed	[]						

Well Number	Date Collected	Depth to Water (feet)	Top of Casing Elevation (ft msl)	Grouwater Elevation (ft msl)	GRO[1] (μg/L)	Benzene (μg/L)	Toluene (μg/L)	Ethyl- benzene (µg/L)	Total Xylenes (μg/L)	MTBE [3,4] (μg/L)	TBA (μg/L)	DIPE (µg/L)		1,2-DCA (μg/L)	EDB (µg/L)	Lead (Pb) (µg/L)
MW-5	12/30/98	24.51	49.57	25.06	170	1.1	<0.5	<0.5	4.8				 			
	03/13/99	19.64	49.57	29.93									 	~~		
	03/22/99		49.57		470	3.8	0.51	2	< 0.5				 			
	09/29/99	25.31	49.57	24.26	1,200	13	4.2	2.7	4.2				 	~-		
	03/18/00	25.93	49.57	23.64	660	5.5	0.62	1.6	1.7				 			
	03/28/02	17.63	49.57	31.94									 			
	03/29/06		49.57		190	< 0.5	< 0.5	< 0.5	< 0.5				 			
	09/30/06	Dry	49.57	n/a									 			
	09/14/07	Dry	49.57	n/a									 			
	12/14/07	Dry	49.57	n/a									 			
	06/11/08	Dry	49.57	n/a							<del></del>		 			
	09/05/08	Dry	49.57	n/a									 			
	12/13/08	Dry	49.57	n/a									 			
	03/14/09	Dry	49.57	n/a									 			
	12/07/09	Dry	49.57	n/a									 			
	03/15/10	21.46	49.57	28.11							•		 			
	09/13/10	25.62	49.57	23.95	260	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50			 	<1.0	<2.0	18
	03/01/11	21.05	49.57	28.52									 			
	09/08/11	24.46	49.57	25.11	210	< 0.50	< 0.50	< 0.50	< 0.50				 			
	03/06/12	25.64	49.57	23.93									 			
	07/11/12	24.38	49.57	25.19	170	< 0.50	< 0.50	< 0.50	< 0.50				 			
	03/05/13	24.20	49.57	25.37									 			
	09/09/13		49.57										 			

Well Number	Date Collected	Depth to Water (feet)	Top of Casing Elevation (ft msl)	Grouwater Elevation (ft msl)	GRO[1] (μg/L)	Benzene (μg/L)	Toluene (μg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE [3,4] (μg/L)	TBA (μg/L)	DIPE (µg/L)		1,2-DCA (μg/L)	EDB (µg/L)	Lead (Pb) (µg/L)
MW-6	12/30/98	22.92	48.06	25.14	400	1	<0.5	<0.5	4.8				 			
	03/13/99	18.09	48.06	29.97									 			
	03/22/99		48.06		390	< 0.5	< 0.5	< 0.5	< 0.5				 			
	09/29/99	23.68	48.06	24.38	330	1.8	1.4	1.5	< 0.5				 			
	12/29/99	24.31	48.06	23.75									 			
	03/18/00	16.2	48.06	31.86	200	1.3	< 0.5	< 0.5	< 0.5				 			
	07/18/00	21.84	48.06	26.22									 			
	09/26/00	23.11	48.06	24.95	240	1.5	< 0.5	< 0.5	< 0.5				 			
l.	12/28/00	23.45	48.06	24.61									 			
	03/20/01		48.06		160	< 0.5	< 0.5	< 0.5	< 0.5	<5.0			 			
ľ	03/30/01	20.65	48.06	27.41									 			
	10/05/01	24.24	48.06	23.82									 			
	03/28/02	19.41	48.06	28.65	88	0.89	< 0.5	< 0.5	< 0.5				 			
	09/30/02	23.65	48.06	24.41									 			
	03/29/06		48.06										 			
	09/30/06	22.33	48.06	25.73	280	5.5	24	14	69	< 5.0			 			
l	09/14/07	24.58	48.06	23.48	<50	< 0.5	< 0.5	< 0.5	< 0.5	<5.0			 			
	12/14/07	24.88	48.06	23.18									 			
li l	03/12/08	21.03	48.06	27.03									 			
1	06/11/08	23.62	48.06	24.44									 			
	09/05/08	25.1	48.06	22.96	84	0.92	0.76	1.7	3.5	<5.0			 			
	12/13/08	25.81	48.06	22.25									 			
	06/03/09	23.2	48.06	24.86									 			
	03/15/10	19.87	48.06	28.19									 			
	09/13/10	23.92	48.06	24.14	<50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50			 	<1.0	<2.0	30
	03/01/11		48.06										 			
	09/08/11		48.06										 			
	03/06/12							Well D	Destroyed							

Weil Number	Date Collected	Depth to Water (feet)	Top of Casing Elevation (ft msl)	Grouwater Elevation (ft msl)	GRO[1] (µg/L)	Benzene (µg/L)	Toluene (μg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE [3,4] (μg/L)	TBA (μg/L)	DIPE (µg/L)	ETBE (μg/L)	TAME (µg/L)	1,2-DCA (μg/L)	EDB (µg/L)	Lead (Pb) (µg/L)
MW-8	12/30/98	24.21	49.35	25.14	2,200	70	0.94	26	15								
	03/13/99		49.35						•-								
	03/23/99		49.35		2,300	34	1.1	15	13								
	09/29/99		49.35		8,800	140	<50	53	<50								
	12/29/99		49.35		1,900	64	1	22	23								
	03/18/00		49.35		1,400	36	< 0.5	12	9.3								
	07/18/00		49.35		3,000	67	9.8	38	38								
	09/26/00		49.35		1,200	24	3	24	15								
	12/28/00		49.35		1,200	47	3.7	17	18								
	03/20/01		49.35		1,300	7.8	<2.5	<2.5	14	<25							
	03/30/01		49.35														
	10/05/01		49.35		1,800	28	<2.5	20	23								
	03/28/02		49.35		1,100	12	1.7	11	10.8								
	09/30/02		49.35		1,400	15	24	32	22								
	09/30/06	24.07	49.35	25.28	760	4.9	31	13	64	<5.0							
	03/16/07		49.35		370	< 0.5	8.1	0.52	0.94	< 5.0							
	09/14/07	26.12	49.35	23.23	1,300	1.3	20	3	1.6	<5.0							
	12/14/07	26.35	49.35	23													
	03/12/08	22.65	49.35	26.7	520	1.4	11	3.9	5.6	<5.0							
'	06/11/08	25.23	49.35	24.12													
	09/05/08	26.62	49.35	22.73	1,800	1.9	30	5	4	<25							
	12/13/08	27.3	49.35	22.05													
	03/14/09	21.8	49.35	27.55	950	3.1	42	36	180	< 5.0							
	06/03/09	24.83	49.35	24.52													
	12/07/09	26.58	49.35	22.77	2,200	2.2	42	10	19	<5.0							
	03/15/10	21.48	49.35	27.87	90	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50							
	09/13/10	25.58	49.35	23.77	550	< 0.50	< 0.50	1.7	< 0.50						<1.0	<2.0	<5.0
	03/01/11	21.12	49.35	28.23	120	< 0.50	< 0.50	< 0.50	< 0.50								
	09/08/11	24.58	49.35	24.77	150	< 0.50	< 0.50	< 0.50	< 0.50								
	03/06/12	25.65	49.35	23.70	410	< 0.50	< 0.50	1.0	< 0.50								
	07/11/12	24.47	49.35	24.88	130	< 0.50	< 0.50	< 0.50	< 0.50								
	03/05/13	24.28	49.35	25.07	160	< 0.50	< 0.50	< 0.50	< 0.50								
	09/09/13	27.11	49.35	22.24	880	< 0.50	< 0.50	1.7	< 0.50								

Well Number	Date Collected	Depth to Water (feet)	Top of Casing Elevation (ft msl)	Grouwater Elevation (ft msl)	GRO[1] (μg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE [3,4] (μg/L)	TBA (μg/L)	DIPÉ (μg/L)	TAME (μg/L)	1,2-DCA (μg/L)	EDB (µg/L)	Lead (Pb) (µg/L)
MW-9	12/30/98	23.98	48.77	24.79	25,000	23	<10	180	620				 			
	03/13/99	19.19	48.77	29.58									 			
	03/23/99	••	48.77		27,000	35	<20	600	920	••			 			
	09/29/99	24.72	48.77	24.05	42,000	140	130	1,000	1,700				 			
	12/29/99	25.32	48.77	23.45	1,100,000	1,200	1,300	4,300	8,700				 			
	03/18/00	17.31	48.77	31.46	17,000	89	46	10	600				 			
	07/18/00	22.94	48.77	25.83	12,000	39	8.2	540	760				 			
	09/26/00	24.16	48.77	24.61	11,000	19	<5	470	610				 			
	12/28/00	24.48	48.77	24.29	22,000	100	<100	610	770				 			
	03/20/01		48.77		8,200	40	<10	14	210	<100			 			
	03/30/01	21.65	48.77	27.12									 			
	10/05/01	25.23	48.77	23.54	77,000	<100	110	780	850				 			
	03/28/02	20.45	48.77	28.32	11,000	34	6.1	220	180				 			
	09/30/02	24.66	48.77	24.11	34,000	<125	140	240	370				 			
	03/31/03	22.44	48.77	26.33	6,200	<12.5	<12.5	130	87				 			
	06/19/03	22.87	48.77	25.9									 			
	09/30/03	25	48.77	23.77	9,700	52	<25	160	87				 			
	02/10/04	22.13	48.77	26.64									 			
	06/30/04	24.55	48.77	24.22									 			
	09/14/04	25.69	48.77	23.08	9,500	48	<25	93	<50				 			
	03/29/06	16.74	48.77	32.03	6,200	< 0.5	< 0.5	57	11				 			
	06/24/06	22.43	48.77	26.34									 			
	09/30/06	23.4	48.77	25.37	2,200	3.7	31	37	40	<17			 			
	12/11/06	22.78	48.77	25.99									 			
	03/16/07	21.76	48.77	27.01	3,200	2.2	37	18	2.9				 			
	09/14/07	25.5	48.77	23.27	2,600	1.4	28	13	3.2	<5.0			 			
	12/14/07	25.83	48.77	22.94	, 								 			
	03/12/08	22.08	48.77	26.69	2,800	2.3	32	12	5.3	<5.0			 			
	06/11/08	24.61	48.77	24.16									 			
	09/05/08	26.04	48.77	22.73	3,800	2.5	40	6.1	2.8	<100			 			
	12/13/08	26.74	48.77	22.03									 			
	03/14/09	21.46	48.77	27.31	7,100	11	63	50	120	<50			 			
	06/03/09	24.21	48.77	24.56									 			
	12/07/09	26.03	48.77	22.74	3,600	4	34	18	22	<5.0			 			
	03/15/10	20.91	48.77	27.86	2,900	1.1	<1.0	11	<1.0	<1.0			 			
	09/13/10	24.93	48.77	23.84	4,500	<2.0[5]	<2.0[5]	15	<2.0[5]				 	<4.0[5]	<8.0[5]	9.3
	03/01/11	20.40	48.77	28.37	4,100	<1.0[5]	<1.0[5]	10	<1.0[5]				 			
	09/08/11	23.90	48.77	24.87	3,800	<1.0[5] <1.0[5]	<1.0[5]	7.7	<1.0[5]				 			
	03/06/11	25.02	48.77	23.75	3,800	<1.5[5]	<1.5[5]	6.6	<1.5[5]				 			
		23.81	48.77	23.73 24.96	5,800	<2.0[5]	<2.0[5]	6.2	<2.0[5]				 			
	07/11/12 03/05/13	23.64	48.77 48.77	25.13	2,100	<2.0[5] <2.0[5]	<2.0[5] <2.0[5]	4.2	<2.0[5] <2.0[5]				 			
					•			4.2	<1.5[5]				 			
	09/09/13	26.52	48.77	22.25	4,400	<1.5[5]	<1.5[5]	4.1	71.5[5]				 _ <b>=</b>			

Well Number	Date Collected	Depth to Water (feet)	Top of Casing Elevation (ft msl)	Grouwater Elevation (ft msl)	GRO[1] (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE [3,4] (μg/L)	TBA (μg/L)	DIPE (μg/L)		1,2-DCA (μg/L)	EDB (µg/L)	Lead (Pb) (µg/L)
MW-10	12/30/98	25.15	49.93	24.78	6,900	130	19	140	210				 			
	03/13/99	20.62	49.93	29.31		+-							 			
	03/23/99		49.93		6,600	150	33	240	170				 			
	09/29/99	26.13	49.93	23.8	9,300	60	38	280	150				 			
	12/29/99	26.7	49.93	23.23	5,800	87	10	420	180				 			
	03/18/00	18.67	49.93	31.26	3,800	180	11	220	120				 			
	07/18/00	24.38	49.93	25.55	9,100	120	33	210	130				 			
	09/26/00	25.59	49.93	24.34	4,500	22	8.8	1.3	18				 			
	12/28/00	25.9	49.93	24.03	3,900	55	13	98	38				 			
	03/30/01	23.14	49.93	26.79	4,500	48	6	<5	23	81 / < 5.0			 			
	10/05/01	26.6	49.93	23.33	5,200	70	28	41	30				 			
	03/28/02	21.87	49.93	28.06	7,400	45	20	210	66				 			
	09/30/02	26.05	49.93	23.88	670	54	5.9	76	23				 			
	03/31/03	23.87	49.93	26.06	5,700	31	38	67	27				 			
	06/19/03	24.28	49.93	25.65									 			
	09/30/03	26.37	49.93	23.56	7,400	61	<50	<50	<100				 			
	02/10/04	23.54	49.93	26.39									 			
	06/30/04	25.71	49.93	24.22									 			
	09/14/04	26.85	49.93	23.08	9,100	47	<25	51	<50				 			
	03/29/06	20.18	49.93	29.75	6,800	140	18	270	160				 			
	06/24/06	23.87	49.93	26.06									 			
	09/30/06	24.8	49.93	25.13	5,700	61	30	78	120	<100			 			
	03/16/07	23.09	49.93	26.84	10,000	71	15	46	25	<50			 			
	09/14/07	26.87	49.93	23.06	5,800	55	18	22	15	<10			 			
	12/14/07	27.14	49.93	22.79									 			
	03/12/08	23.48	49.93	26.45	9,300	240	23	48	37	<50			 			
	06/11/08	25.98	49.93	23.95									 			
	09/05/08	27.38	49.93	22.55	8,400	120	12	18	16	<250			 			
	12/13/08	28.04	49.93	21.89									 			
	03/14/09	22.73	49.93	27.2	8,100	300	25	36	72	<250			 			
	12/07/09	27.33	49.93	22.6	8,400	160	26	32	34	<100			 			
	03/15/10	22.27	49.93	27.66	5,200	110	4.1	29	16	<2.0			 			
	09/13/10	26.88	49.93	23.05	6,800	43	2.5	31	13[5]				 	<4.0[5]	<8.0[5]	<5.0
	03/01/11	21.77	49.93	28.16	8,100	32	3.2	53	11[5]				 			
	09/08/11	25.27	49.93	24.66	7,700	13	<2.5[5]	30	9.0[5]				 			
	03/06/12	26.37	49.93	23.56	5,300	9.8	2.5	25	7.0				 			
	07/11/12	25.19	49.93	24.74	7,400	13	3.1	34	7.1				 			
	03/05/13	25.03	49.93	24.90	6,200	41	5.8	27	8.3	••			 			
	09/09/13	27.84	49,93	22.09	4,400	16	<4.0[5]	14	5.8				 			

Well Number	Date Collected	Depth to Water (feet)	Top of Casing Elevation (ft msl)	Grouwater Elevation (ft msl)	GRO[1] (μg/L)	Benzene (μg/L)	Toluene (μg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE [3,4] (μg/L)	TBA (μg/L)			1,2-DCA (μg/L)	EDB (µg/L)	Lead (Pb) (µg/L)
MW-11	12/30/98	23.15	47.93	24.78	80	<0.5	<0.5	0.93	1.6				 			
	03/13/99	18.37	47.93	29.56									 			
1	03/23/99		47.93		<50	< 0.5	< 0.5	< 0.5	< 0.5				 			
	09/29/99	23.9	47.93	24.03	94	< 0.5	< 0.5	< 0.5	< 0.5				 			
	12/29/99	24.5	47.93	23.43								*~	 			
	03/18/00	16.55	47.93	31.38	<50	< 0.5	< 0.5	< 0.5	< 0.5				 			
1	07/18/00	22.12	47.93	25.81									 			
1	09/26/00	23.35	47.93	24.58	<50	< 0.5	< 0.5	< 0.5	< 0.5				 			
	12/28/00	23.67	47.93	24.26									 			
	03/20/01		47.93		<50	< 0.5	< 0.5	< 0.5	< 0.5	<5.0			 			
	03/30/01	20.9	47.93	27.03									 			
	10/05/01	24.41	47.93	23.52									 			
	03/28/02	19.62	47.93	28.31	<50	< 0.5	< 0.5	< 0.5	<1.5				 			
	09/30/02	23.84	47.93	24.09									 			
	09/30/06	22.58	47.93	25.35	160	1.8	12	7.6	40	< 5.0			 			
	09/14/07	24.72	47.93	25.21	<50	< 0.5	< 0.5	< 0.5	< 0.5	<5.0			 			
	12/14/07	25	47.93	22.93									 			
	06/11/08	23.81	47.93	24.12									 			
	09/05/08	25.23	47.93	22.7	150	0.93	0.6	1.6	2.5	<5.0			 			
1	12/13/08	25.93	47.93	22									 			
l	03/15/10	20.10	47.93	27.83									 			
	09/13/10	24.11	47.93	23.82	<50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50			 	<1.0	< 2.0	22
	03/01/11	19.57	47.93	28.36									 			
	09/08/11	23.08	47.93	24.85	<50	< 0.50	< 0.50	< 0.50	< 0.50				 			
	03/06/12	24.18	47.93	23.75									 			
	07/11/12	23.00	47.93	24.93	<50	< 0.50	< 0.50	< 0.50	< 0.50				 			
	03/05/13	22.82	47.93	25.11									 			
	09/09/13	25.71	47.93	22.22	<50	<0.50	<0.50	<0.50	<0.50				 			

Well Number	Date Collected	Depth to Water (feet)	Top of Casing Elevation (ft msl)	Grouwater Elevation (ft msl)	GRO[1] (µg/L)	Benzene (µg/L)	Toluene (μg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE . [3,4] (μg/L)	TBA (μg/L)	DIPE (µg/L)		1,2-DCA (μg/L)	EDB (µg/L)	Lead (Pb) (µg/L)
MW-12	03/20/01		48.46		4,100	28	6.2	<5	16	90 / <5.0			 			
	03/30/01	21.43	48.46	27.03									 			
	06/29/01		48.46		4,200	26	25	19	29				 			
	10/05/01	24.94	48.46	23.52									 			
	12/21/01		48.46		5,300	9.7	<2.5	41	14				 			
	03/28/02	20.15	48.46	28.31	4,900	20	<2.5	69	23				 			
	06/28/02		48.46		2,600	29	<12.5	30	<25				 			
	09/30/02	24.37	48.46	24.09	700	16	4.9	19	9.8				 			
	09/30/06	22.58	48.46	26.18	2,100	6.2	15	16	38	<10			 			
	12/11/06	23.88	48.46	24.88	5,500	13	24	16	23	<17			 			
	03/16/07	21.77	48.46	26.99	4,900	11	24	16	8.5	<50			 			
	06/10/07	24.06	48.46	24.7	2,600	<2.5	<2.5	13	9.5	<25			 			
	09/14/07		48.46										 			
	12/14/07	25.77	48.46	22.99									 			
	03/12/08		48.46										 			
	06/11/08	24.6	48.46	23.86	6,200	11	21	26	8.1	<50			 			
	09/05/08	25.97	48.46	22.49	5,000	7.3	15	12	5.9	<25			 			
	12/13/08	26.66	48.46	21.8	4,400	7.6	19	12	9.4	<25			 			
	03/14/09	21.36	48.46	27.1	6,800	16	19	20	60	<50			 			
	06/03/09	24.2	48.46	24.26	6,400	6.5	24	25	6.1	<50			 			
	12/07/09		48.46										 			
	03/15/10	20.89	48.46	27.57	5,100	5.0	<2.0	15	4.3	<2.0			 			
	09/13/10	24.91	48.46	23.55	5,400	<2.0[5]	<2.0[5]	10	3.5				 	<4.0[5]	<8.0[5]	14
	03/01/11	20.40	48.46	28.06	5,900	<2.0[5]	<2.0[5]	18	3.9[5]				 			
	09/08/11		48.46										 			
	03/06/12	25.01	48.46	23.45	4,100	<1.5[5]	<1.5[5]	6.9	2.5				 			
	07/11/12	23.85	48.46	24.61	3,500	<1.0[5]	<1.0[5]	7.4	1.8				 			
	03/05/13		48.46										 			
	09/09/13		48.46		1,600	< 0.50	< 0.50	0.70	0.69				 			

Well Number	Date Collected	Depth to Water (feet)	Top of Casing Elevation (ft msl)	Grouwater Elevation (ft msl)	GRO[1] (μg/L)	Benzene (μg/L)	Toluene (μg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE [3,4] (μg/L)	TBA (μg/L)	DIPE (µg/L)		1,2-DCA (μg/L)	EDB (μg/L)	Lead (Pb) (µg/L)
MW-13	03/20/01		49.51		<50	<0.5	<0.5	<0.5	<0.5	<5.0				 		
	03/30/01	22.48	49.51	27.03										 		
	06/29/01		49.51		<50	< 0.5	< 0.5	< 0.5	< 0.5					 		
	10/05/01	25.99	49.51	23.52	<50	< 0.5	< 0.5	< 0.5	< 0.5				~*	 		
	12/21/01		49.51		<50	< 0.5	< 0.5	< 0.5	< 0.5					 		
	03/28/02	21.2	49.51	28.31	<50	< 0.5	< 0.5	< 0.5	<1.5					 		
	06/28/02		49.51		<50	< 0.5	< 0.5	< 0.5	<1.0					 		
1	09/30/02	25.42	49.51	24.09	<50	< 0.5	< 0.5	< 0.5	<1.0					 		
	12/21/02		49.51		<50	< 0.5	< 0.5	< 0.5	<1.0					 		
	09/30/06	22.58	49.51	26.93	170	2.1	13	8.1	43	<5.0				 		
	12/11/06	25.33	49.51	24.18	110	4.6	6.5	4.6	17	<5.0				 		
	03/16/07	23	49.51	26.51	<50	< 0.5	< 0.5	< 0.5	< 0.5	<5.0				 		
	06/10/07	25.5	49.51	24.01	54	0.8	0.84	1.3	5.4	<5.0				 		
	09/14/07	26.85	49.51	22.66	<50	< 0.5	< 0.5	< 0.5	< 0.5	<5.0				 		
	12/14/07	27.11	49.51	22.4	<50	0.76	< 0.5	2.3	2.6	<5.0				 		
	03/12/08	23.5	49.51	26.01	<50	< 0.5	< 0.5	0.66	2.2	<5.0				 		
	06/11/08	26.02	49.51	23.49	120	0.58	0.97	1.1	2	<5.0				 		
	09/05/08	27.29	49.51	22.22	78	< 0.5	0.6	0.98	2.1	<5.0				 		
	12/13/08	27.96	49.51	21.55	59	0.93	< 0.5	2.5	3.8	<5.0				 		
	03/14/09	22.48	49.51	27.03	260	1.1	8.8	10	46	<5.0				 		
	06/03/09	25.61	49.51	23.9	<50	< 0.5	< 0.5	0.65	0.69	< 5.0				 		
	12/07/09	27.40	49.51	22.11	190	1.2	1.6	5.8	13	< 5.0				 		
	03/15/10	22.26	49.51	27.25	<50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50				 		
	09/13/10	26.40	49.51	23.11	<50	< 0.50	< 0.50	< 0.50	< 0.50					 <1.0	<2.0	8.0
	03/01/11	21.82	49.51	27.69	<50	< 0.50	< 0.50	< 0.50	< 0.50					 		
	09/08/11	25.38	49.51	24.13	<50	< 0.50	< 0.50	< 0.50	< 0.50					 		
	03/06/12	26.49	49.51	23.02	<50	< 0.50	< 0.50	< 0.50	< 0.50					 		
	07/11/12	25.31	49.51	24.20	<50	< 0.50	< 0.50	< 0.50	< 0.50					 		
	03/05/13	25.17	49.51	24.34	<50	< 0.50	< 0.50	< 0.50	< 0.50					 		
	09/09/13	27.87	49.51	21.64	<50	<0.50	<0.50	<0.50	<0.50					 		

Well Number	Date Collected	Depth to Water (feet)	Top of Casing Elevation (ft msl)	Grouwater Elevation (ft msl)	GRO[1] (μg/L)	Benzene (μg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE [3,4] (μg/L)	TBA (μg/L)	DIPE (μg/L)	ETBE (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	Lead (Pb) (µg/L)
MW-14	03/20/01		49.54		200	<0.5	<0.5	<0.5	<0.5	<5.0		*~		 		
	03/30/01	22.51	49.54	27.03										 		
	06/29/01		49.54	••	660	< 0.5	< 0.5	< 0.5	4.6					 		
	10/05/01	26.02	49.54	23.52	770	1.7	1.5	0.91	8.3					 		
	12/21/01	~~	49.54		1,500	3.1	13	1.9	22					 		
	03/28/02	21.23	49.54	28.31	390	1.7	< 0.5	< 0.5	0.74					 		
	06/28/02		49.54		120	< 0.5	< 0.5	< 0.5	<1					 		
	09/30/02	25.45	49.54	24.09	210	< 0.5	1.7	< 0.5	1.1					 		
	12/21/02		49.54		53	< 0.5	< 0.5	< 0.5	<1.0					 		
	09/30/06	22.58	49.54	26.96	210	2.5	15	9.1	48	<5.0				 		
	12/11/06	24.9	49.54	24.64	190	6.7	9.9	5.4	19	< 5.0				 		
	03/16/07	22.67	49.54	26.87	<50	< 0.5	1.1	< 0.5	< 0.5	<5.0				 		
	06/10/07	25.11	49.54	24.43	73	1.1	1.3	1.8	7.2	<5.0				 		
	09/14/07	26.56	49.54	22.98	<50	< 0.5	< 0.5	< 0.5	< 0.5	<5.0				 		
	12/14/07	26.8	49.54	22.74	69	1.1	0.57	3.5	4.5	<5.0				 		
	03/01/08	23.03	49.54	26.51										 		
	03/12/08		49.54		110	0.61	1.2	1.2	3.6	<5.0				 		
	06/11/08	25.69	49.54	23.85	52	< 0.5	0.68	< 0.5	1	<5.0				 		
	09/05/08	27.04	49.54	22.5	95	< 0.5	1.3	0.61	2.3	<5.0				 		
	12/13/08	27.72	49.54	21.82	220	1.5	4.3	3.2	5.1	<5.0				 		
	03/14/09	22.22	49.54	27.32	360	1.4	12	13	61	< 5.0				 		
	06/03/09	25.3	49.54	24.24	68	< 0.5	1.9	0.81	1.1	<5.0				 		
	12/07/09	27.1	49.54	22.44	220	1.3	2.7	6.9	15	<5.0				 		
	03/15/10	21.94	49.54	27.60	<50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50				 		
	09/13/10	26.05	49.54	23.49	<50	< 0.50	< 0.50	< 0.50	< 0.50					 <1.0	<2.0	11
	03/01/11	21.50	49.54	28.04	<50	< 0.50	< 0.50	< 0.50	< 0.50					 		
	09/08/11	25.02	49.54	24.52	<50	< 0.50	< 0.50	< 0.50	< 0.50					 		
	03/06/12	26.13	49.54	23.41	<50	< 0.50	< 0.50	< 0.50	< 0.50					 		
	07/11/12	24.92	49.54	24.62	<50	< 0.50	< 0.50	< 0.50	< 0.50					 		
	03/05/13	24.75	49.54	24.79	<50	< 0.50	< 0.50	< 0.50	< 0.50					 		
	09/09/13	27.57	49.54	21.97	<50	< 0.50	< 0.50	< 0.50	< 0.50					 		

Well Number	Date Collected	Depth to Water (feet)	Top of Casing Elevation (ft msl)	Grouwater Elevation (ft msl)	GRO[1] (μg/L)	Benzene (μg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE [3,4] (μg/L)	TBA (μg/L)	DIPE (µg/L)	TAME (μg/L)	1,2-DCA (μg/L)	EDB (µg/L)	Lead (Pb) (µg/L)
MW-1A	05/30/97		48.24		12,000	18	8.7	90	540				 			
	12/30/98	23.6	48.24	24.64	51	< 0.5	< 0.5	< 0.5	< 0.5				 			
	03/13/99	18.85	48.24	29.39									 			
	03/23/99		48.24	•-	1,800	4	< 0.5	3	7.5				 			
	03/23/99		48.24		2,200	10	0.52	3.1	7.1				 			
	09/29/99	24.35	48.24	23.89	13,000	63	26	30	72				 			
	12/29/99	24.95	48.24	23.29									 			
	03/08/00		48.24		6,100	36	<5	9.7	45				 			
	03/18/00	16.99	48.24	31.25									 			
	07/18/00	22.6	48.24	25.64									 			
	09/26/00	23.76	48.24	24.48	11,000	14	<5	65	150				 			
	12/28/00	24.11	48.24	24.13									 			
	03/30/01	21.22	48.24	27.02	4,800	30	6	<5	7	51 / < 5.0			 			
	10/05/01	24.86	48.24	23.38	15,000	76	41	36	140				 			
	03/28/02	20.1	48.24	28.14	9,300	35	<12.5	17	32				 			
	09/30/02	24.28	48.24	23.96	23,000	<50	63	77	230				 			
	09/30/06	23.03	48.24	25.21	2,500	4.1	25	22	49	<5.0			 			
	03/16/07		48.24		1,800	1.8	17	6.4	4.4	< 5.0			 			
	09/14/07	25.13	48.24	23.11	1,500	1.1	15	2.8	1.8	<5.0			 			
	12/14/07	25.43	48.24	22.81									 			
	03/12/08	21.75	48.24	26.49	1,200	2.1	12	5	3.6	<5.0			 			
	06/11/08	24.24	48.24	24									 			
	09/05/08	25.62	48.24	22.62	1,900	2.4	14	10	5.4	< 5.0			 			
	12/13/08	26.33	48.24	21.91									 			
	03/14/09	21.07	48.24	27.17	1,700	2.5	13	11	32	<5.0			 			
	03/15/10	20.52	48.24	27.72	2,400	< 0.50	< 0.50	5.5	2.3	< 0.50			 			
	09/13/10	24.55	48.24	23.69	2,800	< 0.50	< 0.50	7.6	2.4				 	<1.0	<2.0	6.9
	03/01/11	20.02	48.24	28.22	2,600	< 0.50	< 0.50	6.2	2.3		••		 			
	09/08/11	23.52	48.24	24.72	2,200	<1.0[5]	<1.0[5]	7.4	2.3	••			 			
	03/06/12	24.60	48.24	23.64	2,100	<1.0[5]	<1.0[5]	9.0	2.2				 			
	07/11/12	23.45	48.24	24.79	4,200	<2.0[5]	<2.0[5]	6.4	2.6				 			
	03/05/13	23.28	48.24	24.96	1,200	<1.0[5]	<1.0[5]	4.8	<1.0[5]				 			
	09/09/13	26.11	48.24	22.13	3,200	<1.0[5]	<1.0[5]	9.7	2.2				 			

Well Number	Date Collected	Depth to Water (feet)	Top of Casing Elevation (ft msl)	Grouwater Elevation (ft msl)	GRO[1] (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE [3,4] (μg/L)	TBA (μg/L)	DIPE (μg/L)			1,2-DCA (μg/L)	EDB (μg/L)	Lead (Pb) (µg/L)
141	04/06/96		48.76		<50	<0.5	<0.5	< 0.5	< 0.5								
Farrelly	10/02/99		48.76		<50	<0.5	< 0.5	< 0.5	< 0.5								
	03/18/00	17.9	48.76	30.86	<50	<0.5	< 0.5	< 0.5	< 0.5								
	07/13/00		48.76		<50	< 0.5	< 0.5	< 0.5	< 0.5								
	09/26/00	24.66	48.76	24.1	<50	< 0.5	< 0.5	< 0.5	< 0.5								
	12/29/00		48.76		<50	< 0.5	< 0.5	< 0.5	< 0.5	<5.0 [3]	<20	< 5.0	< 5.0	<5.0	<5.0	<5.0	<5.0
	03/20/01		48.76							<5.0 [3]	<20	< 5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	03/30/01	22.25	48.76	26.51													
	12/21/01		48.76		<50	< 0.5	< 0.5	< 0.5	< 0.5								
	09/30/02	25.34	48.76	23.42	<50	< 0.5	< 0.5	< 0.5	<1.0								
	12/21/02	20.07	48.76	28.69	<50	< 0.5	< 0.5	< 0.5	<1.0								
	06/19/03	23.55	48.76	25.21	<50	< 0.5	< 0.5	< 0.5	<1.0								
	09/14/04	26.12	48.76	22.64	<50	< 0.5	< 0.5	< 0.5	<1.0								
	03/16/07	22.28	48.76	26.48	<50	< 0.5	< 0.5	< 0.5	< 0.5	<5.0							
	09/14/07	25.98	48.76	22.78	<50	< 0.5	< 0.5	< 0.5	< 0.5	<5.0							
	03/12/08		48.76														
	06/11/08		48.76														
	09/05/08	26.48	48.76	22.28	<50	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0							
	12/13/08	27.2	48.76	21.56	<50	< 0.5	< 0.5	< 0.5	< 0.5	<5.0							
	03/14/09		48.76														
	06/03/09	25.83	48.76	22.93	<50	< 0.5	< 0.5	< 0.5	< 0.5	<5.0							
	12/07/09		48.76														
	03/15/10		48.76		<50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50							
	09/13/10		48.76		<50	< 0.50	< 0.50	< 0.50	< 0.50						<1.0	<2.0	<5.0
	03/01/11		48.76														
	09/08/11	24.50	48.76	24.26	<50	< 0.50	< 0.50	< 0.50	< 0.50								
	03/06/12	25.57	48.76	23.19	<50	< 0.50	< 0.50	< 0.50	< 0.50								
	07/11/12		48.76		<50	< 0.50	< 0.50	< 0.50	< 0.50								
	03/05/13		48.76		<50	< 0.50	< 0.50	< 0.50	< 0.50								
	09/09/13		48.76														

Well Number	Date Collected	Depth to Water (feet)	Top of Casing Elevation (ft msl)	Grouwater Elevation (ft msl)	GRO[1] (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE [3,4] (μg/L)	TBA (μg/L)	DIPE (μg/L)			1,2-DCA (μg/L)	EDB (µg/L)	Lead (Pb) (µg/L)
Legend/Key:					Analytical M	ethods:											
GRO = Gasoli	ne Range Orga	nics C4-C13			GRO analyzed	according to	EPA Method 80	015B									
MTBE = Meth	yl tertiary buty	ether			BTEX and M	TBE analyzed a	according to EP	A Method 802	0/8021B prior	to 2010							
TBA = Tertiar	y butyl alcohol				Beginning in 2	2010, BTEX, N	ITBE, TBA, D	IPE, ETBE, an	d TAME analy	zed by EPA N	fethod 826	0B					
DIPE = Di-iso	propyl ether																
ETBE = Ethyl	tertiary butyl e	ther			Laboratory C	)ualifiers/Flag	s/Notes:										
TAME = Terti	ary amyl methy	l ether			[1] GRO repor	rted as Total Po	etroleum Hydro	carbons as Gas	soline (TPHg) p	rior to 2010							
1,2-DCA = 1,2	2-Dichloroethar	ie			[2] This value	may be inaccu	rate. Second O	uarter 1996 Er	vironmental A	ctivities Repo	ri, dated A	ugust 8, 19	96 by Envi	ironmental	Testing & M	anagement	casts doubt
EDB = 1,2-Di	ibromoethane				[2] This value may be inaccurate. Second Quarter 1996 Environmental Activities Report, dated August 8, 1996 by Environmental Testing & Management casts doubt on the validity of this laboratory result.												
= not measu	red, not analyza	d, or not avai	lable		[3] When two	MTBE results	listed, the first	is by EPA 802	0/8021 and seco	ond is confirm	nation by 8	260. If onl	ly one resul	t, by 8260			
ft msl = feet al	bove mean sea	evel			[4] All MTBE	results by EPA	A 8020, except	where qualified	i by [3] and dur	ring 3/15/10 e	vent when	analyzed by	y 8260				
μg/L = micro							reased due to hi	-	-	-							
Analytical data	a present here p	rior to first qu	arter 2010 prov	rided by Groundw	ater Cleaners,	Inc. Stratus ha	s not reviewed l	laboratory repo	rts and makes r	10 representat	ions regard	ing accurac	y of these	data.			

TABLE 3
HISTORICAL SOIL VAPOR ANALYTICAL RESULTS

German Autocraft, 301 East 14th Street, San Leandro, California

Sample ID	Date	Sample Depth (ft. bgs)	TPHg (μg/m³)	Benzene (μg/m³)	Toluene (μg/m³)	Ethylbenzene (μg/m³)	Xylenes (μg/m³)	MTBE (μg/m³)	Isopropyl Alcohol (μg/m³)
	ESL <sup>1</sup>		50,000	42	160,000	490	52,000	4,700	none
SV-1	1/13/2009	5.5	7,600	<37	78	230	890	<42	<110
	1/13/2009	13.0	<950	<37	<44	<50	<50	<42	<110
SV-2	1/13/2009	5.5	7,600	270	50	<50	<50	<42	<110
	1/13/2009	12.5	8,300	<37	<44	<50	<50	<42	<110
SV-3	1/14/2009	5.0	9,500	<37	<44	<50	<50	<42	<110
	1/14/2009	13.0	<950	40	67	<50	60	<42	<110
QCSV-3 <sup>2</sup>	1/14/2009	13.0							110,000 <sup>3</sup>
SV-4	1/14/2009	5.0	<970	<38	<45	<52	<52	<43	<120
	1/14/2009	14.0	<950	<37	<44	<50	<50	<42	<110
SV-5	1/14/2009	5.0	<970	<38	<45	<52	<52	<43	<120
	1/14/2009	13.0	<970	76	120	<52	75	<43	<120
SV-6	1/14/2009	5.0	<990	<39	63	<52	85	<44	<120
	1/14/2009	11.5	3,900	44	130	<52	83	<44	<120
QCSV-6 <sup>2</sup>	1/14/2009	11.5						-	79,000 <sup>3</sup>
SV-7	1/13/2009	5.5	2,400	<36	280	270	950	<41	<110
	1/13/2009	12.5	660,000	67	170	440	1,440	<42	<110
SV-8	1/13/2009	5.0 <sup>4</sup>	17,000	<36	340	530	2,090	<41	<110
	1/13/2009	5.0 <sup>4</sup>	19,000	<36	320	500	1,870	<41	<110
	1/13/2009	13.5	35,000	<37	<44	<50	530	<42	<110

#### Legend:

TPHg = Total petroleum hydrocarbons ref to gasoline (molecular weight = 100)

MTBE = Methyl tertiary butyl ether

#### ft. bgs = feet below ground surface

μg/m<sup>3</sup> = micrograms per cubic meter

- 1 = RWQCB-SF 2013 Tier I ESLs http://www.waterboards.ca.gov/rwqcb2/water\_issues/programs/ESL/Lookup\_Tables\_Dec\_2013\_Summary.pdf
- 2 = Sample collected from the sampling shroud atmosphere for quality control purposes.
- 3 = Result exceeds instrument calibration range.
- 4 = Laboratory duplicate samples.

#### Analytical Laboratory

Air Toxics, LTD. (NELAP 02010CA)

#### Analytical Methods

Samples analyzed by Modified EPA Method TO-15 GC/MS. Samples collected in 1L SUMMA canisters.

# APPENDIX A HISTORICAL SOIL ANALYTICAL RESULTS

TABLE 2
HISTORICAL SOIL ANALYTICAL SUMMARY

German Autocraft

301 East 14th Street, San Leandro, California

			<del></del>	301 East 14	in Street, San I	Leandro, Califo	mia			
Sample ID	Date Collected	Sample Depth (feet bgs)	Oil and Grease (mg/kg)	DRO (mg/kg)	GRO (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl- benzene (mg/kg)	Total Xylenes (mg/kg)	Total Lead (mg/kg)
T-1-1	10/1/1990	10			840	0.51	5.4	6.8	12	
T-1-2	10/1/1990	10			360	2.6	2.9	3.2	13	
T-2-1	10/1/1990	10			33	0.35	0.43	0.55	5.1	~-
T-2-2	10/1/1990	10			11	0.057	0.038	0.33	0.93	
T-3-1	10/1/1990	10			360	0.41	0.27	1.7	0.26 3.9	
T-4-1	10/1/1990	10			7.1	0.018	0.011	0.10		
T-4-2	10/1/1990	10		~-	35	0.047	0.014	0.17	0.21 0.85	
T-5-1	10/1/1990	10			47	0.013	0.017	0.15	0.46	
T-5-2	10/1/1990	10			<2.5	< 0.005	< 0.005	< 0.005	< 0.005	
T-6-1	10/1/1990	7	<10	<5	<2.5	< 0.005	< 0.005	<0.005	<0.005	
PI-1	11/2/1990	3			<2.5	< 0.005	< 0.005	< 0.005	< 0.005	~-
CGS-1	10/1/1990				2.5				<0.003	-
CGS-2	10/1/1990				36	< 0.005	0.10	1.4	0.31	
CGS-3	10/1/1990		970	<5	75 -2.6	< 0.005	0.059	0.13	0.39	
			270	<b>\</b> 3	<2.5	0.0098	0.010	0.043	0.0083	~-
B1	12/11/1990	12			1.7	< 0.005	< 0.005	0.0098	0.029	
		35			510	4.8	1.7	9.6	9.6	
В2	12/10/1990	12			4.7	0.070			2.0	
	12/10/1//0	35			4.7	0.010	0.060	0.083	0.012	
					10	0.86	0.90	0.31	0.38	
B3	12/10/1990	28			2,100	63	130	50	70	
		35			1,700	1.4	1.9	11	8.2	
MW-1	12/17/1990	25			40	0.004			0.2	
	12/11/1990	35			40	0.021	0.290	0.150	0.280	
					6.6	< 0.005	0.035	0.011	0.027	
MW-2	12/12/1994	31			6,300	110	65	190	310	4.5
		36			0.77	0.015	0.006	0.038	0.085	4.5
MW-3	12/12/1994	211			0.074				0.005	4.9
141 44 3	12/12/17/7				0.074	0.024	0.013	< 0.005	0.007	6.5
		211			< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	5.5
		26			6.8	0.16	0.033	0.16	0.21	6.2
		31			420	7.0	3.9	13	37	5.5
		36			0.86	0.10	0.007	0.037	0.078	6.2
		37.5			<0.5	0.058	0.009	0.018	0.035	<4.0
CEI	12/13/1994	6			< 0.5	< 0.005	< 0.005	<0.00s		
		11			<0.5	< 0.005	<0.005	<0.005	<0.005	6.0
		16			<0.5	< 0.005	0.003	< 0.005	<0.005	7.9
		21			94	1.1	1.3	< 0.005	<0.005	7.1
		26			160	5.6	6.6	2.4	5.1	7.0
CE2	12/12/1004	5						7.3	16	6.3
CE2	12/13/1994	5			<0.5	< 0.005	< 0.005	< 0.005	< 0.005	23.5
		10			<0.5	< 0.005	< 0.005	< 0.005	< 0.005	5.7
		15			57	< 0.005	< 0.005	0.59	1.8	4.1
		20			1,600	7.1	75	41	170	12.4
MW-4	8/31/1995	0-36.5 <sup>2</sup>			540	6.2	3.1	6.8	19	<0.40

TABLE 2
HISTORICAL SOIL ANALYTICAL SUMMARY

German Autocraft

301 East 14th Street, San Leandro, California

Sample ID	Date Collected	Sample Depth (feet bgs)	Oil and Grease (mg/kg)	DRO (mg/kg)	GRO (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl- benzene (mg/kg)	Total Xylenes (mg/kg)	Total Lead (mg/kg)
MW-1A	5/21/1997	20			<1	<0.005	<0.005	<0.005	<0.005	
ETM-1	11/28/1995	17 22			16	< 0.05	< 0.05	< 0.05	<0.05	•••
		24			8.4	0.029	< 0.005	0.055	0.067	
		25.5			76	0.82	1.8	2.8	3.8	
		23.3			370	9.6	10	11	18	_
ETM-2	11/28/1995	22			0.54	0.026	< 0.005	0.012	0.010	
ETM-7	11/28/1995	23			< 0.50	< 0.005	< 0.005	< 0.005	0.011	
		26			1.1	0.019	0.017	0.029	0.011	
MW-5	8/28/1998	21			<1	< 0.005	<0.005	<0.005	< 0.005	
MW-8	8/27/1998	21			<1	< 0.005	< 0.005	<0.005	10.00#	
		31			1.3	0.0052	< 0.005	<0.005	< 0.005	
MW-9	8/31/1998	21					10.005	<0.005	0.006	
	0/31/17/0	36			<1	< 0.005	< 0.005	< 0.005	< 0.005	
		30			<1	< 0.019	< 0.005	< 0.005	< 0.005	
MW-10	8/28/1998	21.5			<1	< 0.005	< 0.005	< 0.005	-0.005	
		31			<1	0.0054	< 0.005		< 0.005	
MW-11	8/28/1998	21					·0.005	< 0.005	<0.005	
		41			<1	< 0.005	< 0.005	< 0.005	< 0.005	••
MW-12	1/30/2001	26.5			<1	< 0.005	< 0.005	<0.005	< 0.005	
MW-13	1/30/2001	26.5			<1	< 0.005	< 0.005	< 0.005	< 0.005	
MW-14	1/30/2001	26.5			<1	< 0.005	< 0.005	< 0.005	<0.005	

Legend

DRO = Diesel range organics (C9-C24)

GRO = Gasoline range organics (C4 - C13)

BTEX = Benzene, toluene, ethylbenzene, and xylenes

mg/kg = milligrams per kilogram

#### Notes

1 = Split sample.

2 = Soil sample composited from drill cuttings.

TABLE 3 SOIL ANALYTICAL RESULTS

German Autocraft, 301 East 14th Street, San Leandro, California

Sample ID	Date Collected	Sample Depth (feet)	DRO (mg/Kg)	ORO (mg/Kg)	GRO (mg/Kg)	Oil & Grease (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	benzene	Total Xylenes (mg/Kg)	TBA (mg/Kg)	MTBE (mg/Kg)	DIPE (mg/Kg)	ETBE (mg/Kg)	TAME (mg/Kg)	EDB (mg/Kg)	1,2-DCA (mg/Kg)	Total Lead (mg/Kg)
B-4-4	01/24/11	4			<1.0		<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<0.0050	<0.020	<0.020	<0.020	<0.040	<0.020	4.2
B-4-8	01/24/11	8			<1.0		<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<0.0050	<0.020	<0.020	<0.020	<0.040	<0.020	7.0
B-4-12	01/24/11	12			<1.0		<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<0.0050	<0.020	<0.020	<0.020	<0.040	<0.020	5.7
B-4-24	01/24/11	24			1.0		<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<0.0050	<0.020	<0.020	<0.020	<0.040	<0.020	8.8
B-4-32	01/24/11	32			2,400		<0.50 [1]	<0.50 [1]	27	89.6	<50 [1]	<0.50 [1]	<1.0[1]	<1.0 [1]	<1.0 [1]	<4.0[1]	<1.0 [1]	13.0
B-5-4	01/24/11	4	23 [2]	150	<1.0	95	<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<0.0050	<0.020	<0.020	<0.020	<0.040	<0.020	14.0
B-5-8	01/24/11	8	<10	<10	<1.0	<50	<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<0.0050	<0.020	<0.020	<0.020	<0.040	<0.020	7.3
B-5-12	01/24/11	12	<10	<10	<1.0	<50	<0.0050	<0.0050	<0.0050	0.0055	<0.50	<0.0050	<0.020	<0.020	<0.020	<0.040	<0.020	5.2
B-5-24	01/24/11	24	<10	<10	<1.0	<50	<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<0.0050	<0.020	<0.020	<0.020	<0.040	<0.020	7.9
B-5-32	01/24/11	32	<10	<10	9.0	<50	<0.0050	<0.0050	<0.0050	0.0061	<0.50	<0.0050	<0.020	<0.020	<0.020	<0.040	<0.020	6.9

--- = not measured or not analyzed

DRO = Diesel Range Organics C13-C22

ORO = Oil Range Organics C22-C40+

GRO = Gasoline Range Organics C4-C13

MTBE = Methyl tertiary butyl ether

TBA = Tertiary butyl alcohol

DIPE = Di-isopropyl ether

ETBE = Ethyl tertiary butyl ether

TAME = Tertiary amyl methyl ether

1,2-DCA = 1,2-Dichloroethane

EDB - 1,2-Dibromoethane

mg/Kg miligrams per kilogram

#### Analytical Methods:

DRO, ORO & GRO analyzed according to EPA Method 8015B

BTEX, MTBE, TBA, DIPE, ETBE, TAME, 1,2-DCA and EDB analyzed according to EPA Method 8260B

Total lead analyzed according to EPA Method SW6020

Oil & Grease analyzed according to EPA Method 1664A

#### Laboratory Qualifiers/Flags/Notes:

- [1] Reporting limits were increased due to high concentrations of target analytes.
- [2] DRO concentration may include contributions from heavier-end hydrocarbons that elute in the DRO range

# APPENDIX B FIELD PRACTICES AND PROCEDURES

#### FIELD PRACTICES AND PROCEDURES

General procedures used by Stratus in site assessments for drilling exploratory borings, collecting samples, and installing monitoring wells are described herein. These general procedures are used to provide consistent and reproducible results; however, some procedure may be modified based on site conditions. A California state-registered geologist supervises the following procedures.

#### PRE-FIELD WORK ACTIVITIES

#### **Health and Safety Plan**

Field work performed by Stratus at the site is conducted according to guidelines established in a Site Health and Safety Plan (SHSP). The SHSP is a document which describes the hazards that may be encountered in the field and specifies protective equipment, work procedures, and emergency information. A copy of the SHSP is at the site and available for reference by appropriate parties during work at the site.

#### **Locating Underground Utilities**

Prior to commencement of any work that is to be below surface grade, the location of the excavation, boring, etc., is marked with white paint as required by law. An underground locating service such as Underground Service Alert (USA) is contacted. The locating company contacts the owners of the various utilities in the vicinity of the site to mark the locations of their underground utilities. Any invasive work is preceded by hand augering to a minimum depth of five feet below surface grade to avoid contact with underground utilities.

#### FIELD METHODS AND PROCEDURES

#### **Exploratory Soil Borings**

Soil borings will be drilled using a truck-mounted, hollow stem auger drill rig. Soil samples for logging will be obtained from auger-return materials and by advancing a modified California split-spoon sampler equipped with brass or stainless steel liners into undisturbed soil beyond the tip of the auger. Soils will be logged by a geologist according to the Unified Soil Classification System and standard geological techniques. Drill cuttings well be screened using a portable photoionization detector (PID) or a flame ionization detector (FID). Exploratory soil borings not used for monitoring well installation will be backfilled to the surface with a bentonite-cement slurry pumped into the boring through a tremie pipe.

Soil sampling equipment will be cleaned with a detergent water solution, rinsed with clean water, and equipped with clean liners between sampling intervals. Augers and

samplers will be steam cleaned between each boring to reduce the possibility of cross contamination. Steam cleaning effluent will be contained in 55-gallon drums and temporarily stored on site. The disposal of the effluent will be the responsibility of the client.

Drill cuttings generated during the drilling procedure will be stockpiled on site. Stockpiled drill cuttings will be placed on and covered with plastic sheeting. The stockpiled soil is typically characterized by collecting and analyzing composite samples from the stockpile. Stratus Environmental will recommend an appropriate method for disposition of the cuttings based on the analytical results. The client will be responsible for disposal of the drill cuttings.

#### **Soil Sample Collection**

During drilling, soil samples will be collected in cleaned brass, two by six inch tubes. The tubes will be set in an 18-inch-long split-barrel sampler. The sampler will be conveyed to bottom of the borehole attached to a wire-line hammer device on the drill rig. When possible, the split-barrel sampler will be driven its entire length, either hydraulically or by repeated pounding a 140-pound hammer using a 30-inch drop. The number of drops (blows) used to drive the sampler will be recorded on the boring log. The sampler will be extracted from the borehole, and the tubes containing the soil samples will be removed. Upon removal, the ends of the lowermost tube will be sealed with Teflon sheets and plastic caps. Soil samples for chemical analysis will be labeled, placed on ice, and delivered to a state-certified analytical laboratory, along with the appropriate chain-of-custody documentation.

#### Soil Classification

As the samples are obtained in the field, they will be classified by the field geologist in accordance with the Unified Soil Classification System. Representative portions of the samples will be retained for further examination and for verification of the field classification. Logs of the borings indicating the depth and identification of the various strata and pertinent information regarding the method of maintaining and advancing the borehole will be prepared.

#### Soil Sample Screening

Soil samples selected for chemical analysis will be determined from a head-space analysis using a PID or an FID. The soil will be placed in a Ziploc® bag, sealed, and allowed to reach ambient temperature, at which time the PID probe will be inserted into the Ziploc® bag. The total volatile hydrocarbons present are detected by the PID and reported in parts per million by volume (ppmv). The PID will be calibrated to an isobutylene standard.

Generally two soil samples from each soil boring will be submitted for chemical analysis unless otherwise specified in the scope of work. Soil samples selected for analysis typically represent the highest PID reading recorded for each soil boring and the sample just above first-encountered groundwater.

#### Stockpiled Drill Cuttings and Soil Sampling

Soil generated during drilling operations will be stockpiled on-site. The stockpile will be set on and covered by plastic sheeting in a manner to prevent rain water from coming in contact with the soil. Prior to collecting soil samples, Stratus personnel will calculate the approximate volume of soil in the stockpile. The stockpile will then divided into sections, if warranted, containing the predetermined volume sampling interval. Soil samples will be collected at 0.5 to 2 feet below the surface of the stockpile. Four soil samples will be collected from the stockpile and composited into one sample by the laboratory prior to analysis. The soil samples will be collected in cleaned brass, two by six inch tubes using a hand driven sampling device. To reduce the potential for cross-contant ination between samples, the sampler will be cleaned between each sampling event. Upon recovery, the sample container will be sealed at each end with Teflon sheeting and plastic caps to minimize the potential of volatilization and cross-contant ination prior to chemical analysis. The soil sample will be labeled, placed on ice, and delivered to a state-certified analytical laboratory, along with the appropriate chain-of-custody documentation.

### Direct Push Technology, Soil Sampling

GeoProbe<sup>TM</sup> is a drilling method of advancing small diameter borings without generating soil cuttings. The GeoProbe<sup>TM</sup> system consists of a 2-inch diameter, 5-feet long, stainless steel soil sampling tool that is hydraulically advanced into subsurface soils by a small, truck-mounted rig. The sampling tool is designed similar to a California-modified split-spoon sampler, and lined with a 5-foot long, clear acrylic sample tube that enables continuous core sampling.

To collect soil samples, the sampler is advanced to the desired sampling depth. The mouth of the sampling tool is plugged to prevent soil from entering the sampler. Upon reaching the desired sampling depth, the plug at the mouth of the sample tool is disengaged and retracted, the sampler is advanced, and the sampler is filled with soil. The sample tool is then retrieved from the boring, and the acrylic sample tube removed. The sample tool is then cleaned, a new acrylic tube is placed inside and the sampling equipment is advanced back down the borehole to the next sample interval.

The Stratus geologist describes the entire interval of soil visible in the acrylic tube. The bottom-most 6-inch long section is cut off and retained for possible chemical analysis. The ends of the chemical sample are lined with Teflon sheets, capped, labeled, and placed in an ice-chilled cooler for transport to California Department of Health Services-certified analytical laboratory under chain-of-custody.

#### **Direct Push Technology, Water Sampling**

A well known example of direct push technology for water sampling is the Hydropunch<sup>®</sup>. For the purpose of this field method the term hydropunch will be used instead of direct push technology for water sampling.

The hydropunch is typically used with a drill rig. A boring is drilled with hollow stemaugers to just above the sampling zone. In some soil conditions the drill rig can push directly from the surface to the sampling interval. The hydropunch is conveyed to the bottom of the boring using drill rods. Once on bottom the hydropunch is driven a maximum of five feet. The tool is then opened by lifting up the drill rod no more than four feet. Once the tool is opened, water enters and a sample can be collected with a bailer or tubing utilizing a peristaltic pump. Soil particles larger than silt are prevented from entering the tool by a screen within the tool. The water sample is collected, labeled, and handled according to the Quality Assurance Plan.

#### **Monitoring Well Installation**

Monitoring wells will be completed by installing 2 to 6 inch-diameter Schedule 40 polyvinyl chloride (PVC) casing. The borehole diameter for a monitoring well will be a minimum of four inches larger than the outside diameter of the casing. The 2-inch-diameter flush-threaded casing is generally used for wells dedicated for groundwater monitoring purposes.

A monitoring well is typically cased with threaded, factory-perforated and blank Schedule 40 PVC. The perforated interval consists of slotted casing, generally with 0.01 or 0.02 inch-wide by 1.5-inch-long slots, with 42 slots per foot. The screened sections of casing are factory machine slotted and will be installed approximately 5 feet above and 10 feet below first-encountered water level. The screened interval will allow for seasonal fluctuation in water level and for monitoring floating product. A threaded or slip PVC cap is secured to the bottom of the casing. The slip cap can be secured with stainless steel screws or friction; no solvents or cements are used. Centering devices may be fastened to the casing to ensure even distribution of filter material and grout within the borehole annulus. The well casing is thoroughly washed and/or steam cleaned, or may be purchased as pre-cleaned, prior to completion.

A filter pack of graded sand will be placed in the annular space between the PVC casing and the borehole wall. Sand will be added to the borehole through the hollow stem of the augers to provide a uniform filter pack around the casing and to stabilize the borehole. The sand pack will be placed to a maximum of 2 feet above the screens, followed by a minimum 1-foot seal consisting of bentonite pellets.

Cement grout containing 5 percent bentonite or concrete will be placed above the bentonite seal to the ground surface. A concrete traffic-rated vault box will be installed over the monitoring well(s). A watertight locking cap will be installed over the top of the

Field Practices and Procedures Page 5

well casing. Reference elevations for each monitoring well will be surveyed when more than two wells will be located on site. Monitoring well elevations will be surveyed by a California licensed surveyor to the nearest 0.01-foot relative to mean sea level (MSL). Horizontal coordinates of the wells will be measured at the same time.

Exploratory boring logs and well construction details will be prepared for the final written report.