FURTHER ASSESSMENT, INSTALLATION OF BRIGHTON AVENUE RECEPTOR TRENCH AND 3RD QUARTER 1999 GROUNDWATER MONITORING

FOR

DP 793
4035 PARK BOULEVARD
OAKLAND, CALIFORNIA

OCTOBER 20, 1999

BY

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICIES

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October 20, 1999

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Dear Mr. Rutherford:

The following report documents the Third Quarter 1999 collection and certified laboratory analysis of groundwater samples. This report also includes the Further Assessment which includes; the completion of the receptor trench; the installation of three additional groundwater monitoring wells; the natural attenuation sampling; and a Risk Base Corrective Action (RBCA Tier2) study for former Desert Petroleum Station #793.

1.0 SITE LOCATION AND DESCRIPTION

Former Desert Petroleum #793 is a non-active service station, located on the northwest corner of the intersection of Park Boulevard and Hampel Street at 4035 Park Blvd., Oakland, California (Figure 1). The site is located in projected section 32; T1S; R3W; MDB&M at an elevation ranging between 230 and 227 feet above mean sea level (Figure 2).

2.0 LOCAL GEOLOGY

2.1 Geomorphology

The site is located on the western slope of the Berkeley Hills. The Berkeley Hills are a northwest-southeast trending range within the Coastal Range Province of California. Erosion of the Coastal Ranges has filled the valleys within and bordering the Coastal Range with sequences of gravels, silts, sands, and clays. The Hayward Fault, an active strike slip fault, is located approximately 7280 feet east of the site.

2.2 Stratigraphy

Station Property, 4035 Park Blvd., Oakland, CA.

The native soil from surface to 13 feet below ground surface (bgs) consists of dark brown silty clay. The dark brown clay is underlain by light brown stiff clay that includes sub-rounded to rounded meta-volcanic gravel. This clay extends to approximately 23 feet bgs at the northwest corner of the site. A fine to medium sand, clayey sand, and silty sand underlies the gravel and clay.

Brighton Avenue – Receptor Trench in front of 4026, 4032 and 4038 Brighton Ave., Oakland, California

The receptor trench excavation revealed two distinct sequences of subsurface soils: a sandy sequence north of the storm water catch basin and a clay sequence south of the storm water catch basin, see Figure 10.

North of the storm water catch basin: The excavation was dug to a maximum depth of 15.5 feet below the surface just north of the catch basin and then averaged between 9.5 and 10 feet deep to the northern extent of the trench. The surface soil below the asphalt surface was brown stiff clay that graded into silty clay at approximately 3 feet bgs. A silty sand is at 6 feet bgs. At 7.5 feet bgs the silty sand grades into fine sand that is approximately one foot thick. Below this sand is a firm brown clay, approximately a half foot thick. A thin gravel lense approximately one-inch thick was encountered at the 11.5 feet bgs. Below this gravel lens, silty sand extends to the 15.5-feet bgs.

Just south of the stormwater catch basin the excavation was dug to a maximum depth of 14.5 feet bgs. Further south the trench averaged 9 to 10.5 feet deep. The southern portion of the trench revealed soils comprised of silty clay at the surface grading to stiff clay at approximately 2 feet bgs, to a silty clay at the 6 feet bgs and to a stiff clay at 8.5 feet bgs.

Groundwater was noted entering the excavation between 7 and 9 feet bgs.

3.0 INSTALLATION OF ADDITIONAL GROUNDWATER MONITORING WELLS.

To further define the extent of the groundwater and soil plumes and to help evaluate future remediation efforts, three additional groundwater wells were installed. Wells RS-8 and RS-10 were installed in the backyards of residences located at 4006 and 4026 Brighton Avenue respectively. Well RS-9 was installed within the City of Oaklands easement between the sidewalk and curb area, west side of Brighton Avenue, see Figure 3. Western Geo-Engineers geologists working directly under California Registered Geologist #3037 hand augered, and sampled the three borings. Each bucket of the hand auger was field screened for volatile organic vapors using a hand held photo-

ionizing detector organic vapor meter (PID-OVM) with a 10.6 e.v. bulb. Recovered soils were also used for lithologic description. Selected samples were placed into 2" X 6" clean brass sleeves, sealed, labeled, and place on ice for later Chain of Custody delivery to a State of California certified laboratory. RS-8 and RS-9 were hand augered with an 8" bucket and RS-10 was hand augered with a 6" bucket. All augering equipment was cleaned between borings with tri-sodium phosphate and clean water rinse, see Appendix E – Borehole logs. Excavated soils were placed with the stockpile of soil removed during the installation of the receptor trench. These soils were later profiled and transported to Vacaville Landfill for disposal, see Appendix L – excavated soil profile.

Two-inch schedule 40 PVC casing was used to install groundwater monitoring in the above-mentioned borings, see Appendix E – Well Construction Logs for installation details.

4.0 INSTALLATION OF RECEPTOR TRENCH

Previous investigations delineated an area along Brighton Avenue where free product (gasoline) was floating on the shallow groundwater. To collect this product and to expedite the remediation of the site (sewer lateral) a receptor trench was installed along the eastern gutter area of Brighton Avenue that would intercept the sewer lateral as it enters Brighton Avenue after leaving the residences' backyards. A workplan was approved by Alameda County Health, with SB2004 pre-approval of estimated costs. The workplan defined a 6 to 8 feet deep, 160 feet long trench to be dug within the curb area of Brighton Avenue. It was to have a sump eight feet deep, with four-inch vertical casing installed, near the sewer lateral. This well would be for monitoring and recovery of free product and contaminated groundwater.

A Western Geo-Engineers geologist working directly under California Registered Geologist #3037 supervised the excavating contractor, collected documentation soil samples and provided the health and safety monitoring during the trench excavating and installation. The trench was installed in phases.

4.1 Phase 1 - Notifications and staging in of equipment.

Notice was given to Alameda County Health, City of Oakland, and the residence owners and occupants two weeks prior to moving in the construction equipment; Underground Service Alert (USA) was notified 48 hours in advance.

4.2 Phase 2 - Discovery of underground utilities.

The road surface was saw cut and removed from the area of the proposed receptor trench. Discovery (exposure) of all underground utilities was accomplished by hand digging the areas that USA had marked (home service for gas and electric) and suspected areas for the home service sewer laterals. Once all known and suspected areas had been hand dug and the underground utilities exposed the excavation for the receptor trench proceed using an extend-a-hoe with a two foot wide bucket.

4.3 Phase 3 - Excavate area around sewer main for vertical extent.

The receptor trench excavation was initiated in the area that would be used to de-water the excavation. This area included the sewer main and the areas north and south of the storm drain outfall. Originally this area was to be excavated to the seven-foot depth. Field screen of the soils as excavating progressed indicated that the contaminated soils started below the three-foot depth and proceeded deeper than the seven-foot depth. Also no groundwater was encountered above the seven-foot depth. The excavation was advanced to the 10.5-foot depth, with water entering (slowly seeping) into the excavation at the 8-foot depth. Field screening with a PID-OVM indicated that the contaminated soils extended to the 10.5-foot depth. The support for the storm water catch basin was constructed of redbrick and mortar. This support extended to the 8-foot depth. To connect the northside of the trench to the southside of the trench the brick support would have to be undercut with the backhoe bucket. The excavation was deepened to the 15.5-foot depth and the northside of the storm water catch basin was undercut.

The south side of the storm water catch basin was then excavated to the 15-foot depth and the brick support was undercut, connecting the north side to the southside. Geoliner was then installed along with 4 inch PVC slotted casing north (T1) and south (T2) of the storm water catch basin. These areas were then backfilled with clean half inch pea gravel to within 3 feet of surface.

4.4 Phase 4 - Excavate and install receptor trench north of the storm catch basin

In order to limit the inconvenience to the residence of the neighborhood the receptor trench was dug to the appropriate depth in 15-foot long segments. A WEGE geologist obtained documentation samples and provided the air monitoring using a PID-OVM with 10.6 ev bulb. After field screening of the soils indicated that the vertical extent of tainted soils had been reached, geofabric was placed on the bottom and on the sides of the trench, along with support shoring. The excavation was then backfilled to within three feet of the surface with clean half-inch pea gravel. When the pea gravel was in place, that section of the finished trench was covered with steel traffic plates. To prevent undermining of the sidewalls, the trench was de-watered using WEGE's water purging truck and the four inch PVC wells placed near the storm drain catch basis portion of the excavation. This water was then transported and transferred to a holding tank (Baker Vapor-Tight 22,000-gallon capacity tank) located at 4035 Park Blvd.

A two-inch PVC monitor well was installed, at the north end of the receptor trench excavation prior to backfilling with pea gravel (T3).

4.5 Phase 5 - Installation of the south portion of receptor trench

Once the north half of the receptor trench had been completely filled with half inch pea gravel, half inch electrical conduit and two-inch PVC pipe were connected to the traffic rated boxes installed at T1 recovery well and T3 monitor well. Road base material was then compacted backfilled along the north trench area to finish grade prior to placement of the concrete gutter and asphalt surface. A Kleinfelder technician conducted the compaction testing, see Appendix M – Kleinfelder daily

field report, City of Oakland excavation and encroachment permits and the November 6, 1998 letter from Alameda County Health Care Service further approval of receptor trench workplan with additional groundwater monitoring wells.

The southern portion of the trench excavation was constructed similarly to the northern section, with the exception that a four-inch PVC pipe was used to connect T1 to T2 recovery well traffic rated boxes and T2 traffic rated box to the T4 two-inch PVC monitoring well traffic rated box, see Figure 10-As Built Receptor Trench cross section view and Figure 11, Plan view of receptor trench.

4.6 Phase 6 - Resurfacing receptor trench area

Mr. Brian Tino Granados, Constructin Inspector City of Oakland conducted the inspections of the installation of the receptor trench and the resurfacing of Brighton Avenue gutter/street area. During inspections it was noted that the concrete curb was not attached to the badly decomposed concrete gutter and the curb would not have to be replaced. A 12-inch wide by 4-inch deep concrete gutter was installed abutting the curb. Asphalt was then placed ontop of the concrete gutter to resurface the area to meet precondition requirements, see Appendix F – Excavation Field Notes and Appendix M – City of Oakland Permit Conditions.

4.7 Phase 7 - De-watering receptor trench

During construction of the receptor trench it was important to remove any groundwater that could accumulate within the trench. This was accomplished using the four-inch PVC wells (T1 and T2) that were installed north and south of the storm water catch basin. A centrifugal pump was used to remove the water from the wells and into WEGE's 300-gallon truck tank. Prior to pumping water from the wells, a WEGE technician gauged the top of groundwater. Depth to water measurements were also obtained after each holding tank volume removed. The holding tank water was then transported back to 4035 Park Blvd. and transferred into a 22,000 gallon Baker tank for storage. De-watering of the trench was performed daily until the trench had been backfilled with half-inch clean pea gravel.

Once the trench was completed weekly de-watering of the trench was performed. A WEGE technician would obtain depth to water in all wells associated with the site and trench wells T1, T2, T3 and T4. As usual and standard, depth to water measurements were made using the top of the casing as the reference datum. Once the depth to water measurements were obtained, the WEGE technician would de-water the receptor trench, record the amount of water removed and again obtain depth to water measurements from all of the monitor wells. De-watering for the installation of the receptor trench occurred on August 9, 10, 11, 12, 13, 1999. Weekly de-watering of the receptor trench after completion occurred on September 2, 16, 23, and 30, 1999. On October 7, 1999 an estimated 293 gallons of water was purged from the receptor trench for the purpose of a treatability study using activated carbon for treatment. This water was sampled prior to pumping it through the carbon and another sample was obtained from the effluent of the carbon as it was pumped to the Baker tank. A total of 19,451 gallons of water was removed from the receptor trench, see Table 5 and Appendix K – Trench purge field notes.

5.0 COLLECTION AND ANALYSIS OF SOIL SAMPLES

Soil samples were collected along the length of the receptor trench and from the boring of three additional groundwater-monitoring wells, see Table 2 and Appendix E – Borehole and Well Construction Logs and Appendix G – Soil Sample Laboratory Reports.

The excavation was extended in depth until the PID-OVM showed less than 10 parts per million vapors (ppmv). Trench samples B-10, E-5 and G-7 were obtained to document the contamination concentrations prior to removing those soils. B-10 was obtained from 10 feet bgs and contained Total Petroleum Hydrocarbons gasoline range (TPHg) at 140 mg/Kg. E-5 was obtained from 5 feet bgs and contained TPHg at 4000 mg/Kg. G-7 was obtained from 7 feet bgs and contained TPHg at 1100 mg/Kg, see Table 2 for complete soil sample analysis results, see Appendix F – excavation field notes and Figure11 - sample locations.

Documentation soil samples were obtained from hand augered borings used to install groundwater-monitoring wells RS8, RS9 and RS10. These soil samples showed relatively clean soils above the six-foot depth, with contaminated soils associated with the groundwater and capillary fringe, at approximately the 10-foot depth, see Table 2.

Relatively undisturbed soil samples were collected from various depths in the trench, using the backhoe bucket, and from the well borings using the auger bucket. A two-inch by six-inch clean brass sleeve was then driven into the collected soil completely filling the sleeve, with no headspace. Teflon liners were then fitted on each exposed end of the sample sleeve. A plastic cap was then placed over the teflon liner and then the sample was labeled and placed into an ice chest containing enough ice to cool the sample to 4^0C. North State Environmental Laboratories analyzed all soil samples for concentrations of TPH-G, BTEX, and MTBE using EPA methods 5030/8015M/8020 (Appendix G – soil sample laboratory reports).

Figure 10 represents the as built receptor trench cross-section view.

Figure 11 represents the plan view of the receptor trench and soil sample locations.

6.0 SOURCE REMOVAL

6.1 Unauthorized Release Background

November 30, 1989

Mr. Ariu Levi of Alameda County Health Department notified Desert Petroleum that gasoline was trickling into a sewer manway on Brighton Avenue. In response to Mr. Levis notification, that same day, a Desert Petroleum area manager conducted tank inventory audit and found overages on all tanks.

December 5, 1989
The retail fueling facility is closed.

December 6, 1989
The underground storage tanks were tested. The results of these tests were inconclusive.

December 7, 1989
All fuel was removed from the underground storage tanks. The supply lines are pressure tested by Walton Engineering. The regular leaded and the super-unleaded lines passed the tests; the regular unleaded line failed. Further investigation located a half-inch hole in the two inch unleaded supply line beneath the eastern pump island.

December 8, 1989
Desert Petroleum filed an Unauthorized Release Report.

6.2 Site Assessment – Source Removal

December 11, 1989
Drilling and soil sampling was initiated. Groundwater monitoring wells RS-1, RS-5 and RS-6 and vapor extraction well RS-2 were installed.

December 13,1989
A backhoe excavated along the sewer lateral on Brighton Avenue. During excavating a six-inch water main was broken. A vacuum truck was used to collect the water from the excavation and the broken water main. RS-7 was installed into the excavation and the vacuum truck used to pump water from RS-7 for one week. Approximately 7,200 gallons of fuel/wastewater from the excavation was manifest transported to H & H Shipyard for treatment and disposal.

December 15, 1989
A Internal Combustion Unit Vapor Extraction System (ICUVES) was connected to wells RS-1, RS-2, RS-5 and RS-6 and operated 24 hours a day for the first week, then only during daylight hours thereafter, due to noise complaints. A second portable ICUVES was connected to RS-7 and operated during daylight hours for gasoline vapor recovery. No estimates of source removal amounts can be located from the ICUVES operations.

July 24, 1990
Conducted soil-boring investigation near the sewer lateral in residential backyard 1227 Hampel Avenue.

August 21, 1990
Conducted soil-boring/sampling investigation near the sewer lateral in residential backyards 4006 Brighton Avenue and 4010/4012 Brighton Avenue.

December 1990
Commenced groundwater quarterly monitoring, see Table 1.

September 8, 1993
Conducted soil-boring/sampling investigation at residences 4003 Park Blvd. and 4006 Brighton Avenue. Constructed groundwater monitoring well LF1 at 4003 Park Blvd.

June 23,1994
Excavated and removed the regular leaded steel underground storage tank (UST), the unleaded steel UST, the unleaded fiberglass UST, the waste oil steel UST, and all associated product dispensing piping and drain pipes. Performed documentation sampling under the direction of Jennifer Eberly, Alameda County Health Department. The excavated soil was placed back into the excavations for later removal with the concurrence of Ms. Eberly.

August 14, 1995
Completion of over-excavation of gasoline tainted soils associated with the UST and product dispensing system. An estimated 1700 cubic yards of non-hazardous gasoline [redacted] was [redacted] profiled, transported and disposed to Forward Landfill, Stockton, California. Installed recovery/injection well R3 in the excavation south of the station building.

August 16,1995
Removed hydraulic hoists from station building.

August 31, 1995
Exploratory excavating at former waste oil UST area, north of the station building and area west of the station building. Installation of recovery/injection wells R1 and R2 into the excavations.

September 5, 1995
Installation of MW-1, upgradient well, to replace RS-1 which was destroyed during over-excavation of the UST/Product dispensing area.

May 2,1996
Completion of [redacted] and soil sample boring investigation along the sewer lateral that leaves 4036 Park Blvd. and travels through residential backyards, see [redacted]

January 17, 1997

Completion of free product SPS investigation along Brighton Avenue, including soil boring/sampling.

August 12, 1999

Completion of the receptor trench along Brighton Avenue, with installation of additional groundwater monitoring wells RS-8, RS-9 and RS-10. An estimated 148 cubic yards of non-hazardous gasoline tainted soils were removed, profiled, transported to Vacaville Landfill for disposal.

October 7, 1999

The completion of receptor trench de-watering and weekly purging. An estimated 19451 gallons of gasoline tainted groundwater was removed from the receptor trench and temporarily stored on site in a 22000 gallon Baker tank, awaiting the results of a treatability study for proper disposal.

Table 1 – Groundwater monitoring sample results.

Table 2 – Excavations and borings soil sample results.

Table 3 - Excavated soil sample results.

Table 4 – Natural attenuation sample results.

Table 5 – Receptor trench groundwater removal.

Figure 12 represents all known sample points associated with the assessment of this site and the areas over-excavated at 4035 Park Blvd.

Figure 13 represents the TPHg soil plume 7 to 15 feet below the surface. This elevation of the plume represents the lateral movement and is associated with the top of groundwater/capillary fringe depth.

Figure 14 represents the shallow Total Petroleum Hydrocarbons as gasoline (TPHg) soil plume. Samples were obtained from five to six feet below the surface. This elevation of the plume is limited in extent showing contaminated soils in the backyards near the sewer lateral at 4006 and 4010/4012 Brighton Avenue and along the eastern curb gutter area of Brighton Avenue (receptor trench excavation).

Figure 15 represents the TPHg soil plume 15 to 25 feet below the surface. This elevation of the plume is limited to the station proper and probably represents groundwater fluctuation smear zone.

7.0 GROUNDWATER SAMPLES

7.1 August 26, 1999

The third quarter sampling occurred on August 26,1999. Water samples were collected from on-site wells MW1, RS-2, RS-5, RS-6, R-1, R-2 and R-3 and off site wells RS-7, RS-8, RS-9, RS-10, and the receptor trench well T-1 (Figure 3), see Table 1. Appendix B contains QA/QC, details, methods, procedures, abbreviations, and acronyms used in sampling and analysis.

7.2 Depth to Water Measurements.

Trench wells T2, T3 and T4, had cars were parked over them and they could not be accessed. The depth to water measurements were obtained using a product/water interface probe. Measurements are referenced to surveyed elevation at the top of casing at each well. A licensed land surveyor surveyed all the new wells, resurveyed all old wells and produced a topographic contour map (contour interval 1 foot) of the area encompassing the station, the backyard sewer lateral and Brighton Avenue on August 26, 1999, see Appendix A. Table 1 shows the elevation of groundwater with respect to mean sea level for all monitor wells through August 26, 1999.

7.3 Purging of Monitor Wells

David Pittman Well Purge (DPWP), using a truck mounted vacuum lift pump and one-inch diameter dedicated PVC tubing purged the monitor wells of three volumes of water. This is the same truck and operator as had been regularly used under the name of Lawrence Tank Testing. The specific volume of water removed from each well is recorded on the well sampling data sheets (Appendix B).

7.4 Collection and Certified Analysis of Groundwater Samples

After purging, the wells were allowed to recover to at least 80% of their original well volumes. A groundwater sample was then collected from each well with a disposable polyethylene bailer and decanted, with no headspace, into two 40 ml VOA vials containing 0.5 ml HCL acid as a preservative. North State Environmental Laboratories analyzed all water samples for concentrations of TPH-G, BTEX, and MTBE using EPA methods 5030/8015M/8020 (Appendix C). Method 8020 presence of MTBE from the November 24, 1998 sampling was verified with EPA Method 8260; Method 8020 presence of MTBE from the May 5, 1999 was verified with EPA Method 8260 for sample RS-5. This latest sampling (August 26, 1999) analyzed all of the water samples using EPA Method 8260 for the Fuel Oxygenants.

7.5 MTBE

The November 24, 1998 was the first occurrence of MTBE and was associated with the upgradient wells MW-1 and RS-2. This indicates an upgradient source for the MTBE may exist (a Chevron

Station is located approximately 0.4 miles upslope and east of the site along Park Blvd.). Previous sample results and the February 23, 1999 sample results showed all wells below laboratory lower detection limits for MTBE using standard methods and the September 1998 samples from all wells were also analyzed for the Fuel Oxygenants using EPA Method 8260. All wells tested below laboratory lower detection limits, see Chart and Figures Appendix D.

Fuel Oxygenants	Laboratory Lower Detection Limits
Ethanol	500 ug/L
Methyl-t-Butyl Ether (MTBE)	1 ug/L
Di Isopropyl Ether (DIPE)	5 ug/L
Tertiary Bútyl Alcohol (TBA)	5 ug/L
Ethyl t Butyl Ether (ETBE)	5 ug/L
t-Amyl Methyl Ether (TAME)	1 ug/L

7.6 Disposition of Waste Water

The wastewater generated from the purging of the monitor wells during sampling, de-watering of the receptor trench and development of wells RS8, RS9 and RS10 is contained on-site in a 21,000 gallon Baker Tank. This wastewater will undergo a treatability study using a 50-gallon activated carbon water scrub that will treat and restore approximately 300 gallons of water recovered from the receptor trench. Once the treatability study has been accomplished, the stored water will be disposed of appropriately.

8.0 RESULTS OF QUARTERLY GROUNDWATER MONITORING

8.1 Groundwater Gradient and Flow Direction

Figure 4 shows the groundwater elevation gradients and flow directions that were derived from the depth to water measurements of the monitor wells on August 26, 1999. The groundwater elevation has dropped approximately 3 feet for onsite wells MW-1, RS-2, RS-5, RS-6, R1, R2 and R3 and approximately 0.3 feet for the offsite well RS-7, since the last sampling (May 5,1999). All of the monitoring wells have shown increases in groundwater elevation since October 1995 (Table 1 and charts).

The current flow direction is west and northwest. The hydraulic gradient averages 0.06 feet/linear foot downgradient from the overexcavated area to MW-5 and 0.09 feet/linear foot from backyard well RS-10 to the receptor trench well T-1, see Figure 4. The current flow direction and hydraulic gradient are consistent with previous determinations by WEGE.

8.2 Results of Certified Analysis of Groundwater Samples

The results of the certified analyses of groundwater samples collected on August 26, 1999 are shown in Table 1 and Figure 5. Copies of the laboratory reports are included as Appendix C of this report.

TPH-G concentrations in water samples from the eight monitor wells, the receptor trench well and three recovery wells ranged from a maximum of 160,000 ug/l at monitor well RS-8 to below the laboratory lower detection limits (50 ug/L) in wells MW-1 and R-3. Benzene concentrations ranged from a maximum of 24,000 ug/L in well RS-8 to 2.0 ug/L in well R-3.

Analysis for Oxygenant Methyl-t-Butyl Ether (MTBE) was confirmed with EPA Method 8260 for sample MW-1, RS-2, RS-9, RS-10, T-1, R1, R2, and R3 from the August 26, 1999 sampling. MTBE ranged between below laboratory detection limits for wells MW-1, R1, R2, R3, RS5, RS6, RS7 and RS8 to a high of 53 ug/L at T1. During the September 16, 1998 sampling, all Fuel Oxygenants; MTBE, Di-isopropyl Ether (DIPE), tertiary Butyl Alcohol (TBA), Ethyl-t-Butyl Ether (ETBE) and t-Amyl Methyl Ether (TAME) were confirmed with EPA Method 8260. These analytes were below laboratory lower detection limits. Prior to and since that time, MTBE analysis has shown elevated spikes between non-detect events indicating that an offsite/upgradeint source for MTBE may exist, see Table 1 and Appendix D - Chart of MTBE occurrence.

Figure 5 shows the lateral distribution of the hydrocarbon plume in groundwater as determined from groundwater samples collected from the monitor wells and from non-certified results from the Soil Probe Surveys.

9.0 NATURAL ATTENUATION STUDY – BIODEGRADATION

9.2 Bioremediation Sampling

Bacteria native to the soil at hydrocarbon contamination sites normally degrade hydrocarbons. The most effective hydrocarbon degraders (eaters) are the aerobic (oxygen using) bacteria. Usually the factor controlling the rate that these bacteria degrade the gasoline is the amount of available dissolved oxygen.

A much slower degradation process starts when the dissolved oxygen is consumed. The plume begins to become anaerobic and the bacteria commence to reduce nitrate, ferric iron, and sulfate to further degrade the hydrocarbons. Eventually, as these compounds and the oxygen are depleted, the bacteria begin methogenesis, in which the hydrocarbons are converted to methane.

In order to determine the site potential for natural Bioremediation, the wells were sampled during the August 26,1999 sampling round for the following electron acceptors:

1. Dissolved Oxygen, O_2
2. Nitrate, NO_3^-
3. Sulfate, SO_4^{--}
4. Ferrous Iron, Fe^{++}. The actual electron acceptor is Ferric Iron Fe^{+++} but it is insoluble, so the reaction product Fe^{++} is measured.
5. Additionally, the wells were sampled for TPHg/MBTEX.

During the August 26, 1999 sampling field measurements were obtained from all of the monitoring wells and the receptor trench well T1 to evaluate the natural attenuation occurring at this time. A WEGE geologist, using a HACH spectrophotometer, analyzed water samples for Dissolved Oxygen (DO), and the electron acceptors Sulfate, Nitrate, and Ferrous Iron, see Table 4 and Figures 6, 7, 8 and 9.

On September 2,1999 selected wells were sampled for carbon dioxide, methane, aerobic hydrocarbon degrading bacteria, orthophsphate and ammonia as nitrogen, see Table 4.

9.2 Results of Bioremediation Sampling

Figure 6 represents DO measurements. This figure shows depletion of DO beneath the station property and along the receptor trench.

Figure 7 represents the field measurements for the electron acceptor Nitrate. This figure shows elevated nitrate in groundwater near the building at the station property, extending along the backyard sewer lateral to the receptor trench at Brighton Avenue.

Figure 8 represents the field measurements for the electron acceptor Sulfate. This figure shows elevated sulfate near the building at the station property and at monitor well RS-7 within the street of Brighton Avenue.

Figure 9 represents the field measurements for the electron acceptor Ferrous Iron. Fe2 does not occur naturally in the environment but is a byproduct of reducing environments. The Fe2 plume shows the area that is actively consuming available oxygen.

Figures 6 and 9 demonstrate that active bio-degradation is occurring at the site, along the sewer lateral and within the receptor trench with reductions of DO and elevated levels of Fe2 occurring in the same areas.

Figures 7 and 8 demonstrate that active bio-degradation is occurring along the parameters of the groundwater plume with reductions of NO3 and SO4 compared to levels within the groundwater plumes higher TPHg concentration, where NO3 and SO4 still exist.

Subsequent samples were obtained on September 2,1999 to further define the natural attenuation study. These samples were obtained from wells MW-1, RS-5, RS-6, RS-8, RS-9, RS-10 and T-1

were analyzed for biological indicators; Carbon Dioxide, Methane, and Aerobic Hydrocarbon Degrading Bacteria (AHDB) along with the nutrients Ortho Phosphate, and Ammonia as Nitrogen, see Table 4.

Comparing the Carbon Dioxide to Methane results indicates that the degradation is primarily oxygen based in nature, but some methogenic conditions exist with the presence of methane. The bacteria study shows that there are AHDB present within the hydrocarbon plume with the highest count at downgradient well RS-9 and the lowest count at upgradient well MW-1. The nutrients Orthophosphate and nitrogen have been depleted.

10.0 RBCA TIER 2 RISK BASE CORRECTIVE ACTION

In order to help determine the risks associated with this site a Risk Base Corrective Action (RBCA) Tier 2 Risk Assessment was performed on three separate segments of the groundwater plume. Segment 1 is the station proper Site Name DP 793, see Appendix H, Segment 2 is the backyards along the sewer lateral Site Name DP 793-Backyards, see Appendix I, and Segment 3 is Brighton Avenue, see Appendix J.

During the Tier 2 Assessment, Site-Specific Target Levels (SSTLs) were calculated, using the RBCA Spread Sheet System, for the following compounds of concern (COCs):

- Benzene in groundwater and subsurface soils
  using the current California Cancer Slope Factor (SF) for Benzene.
- Toluene in groundwater and subsurface soils
- Ethylbenzene in groundwater and subsurface soils
- Xylenes in groundwater and subsurface soils
- MTBE in groundwater and subsurface soils
- TPHg as Hexane in groundwater and subsurface soils

Two potential transport pathways were considered during the Tier Two investigation of this site: Vapor Inhalation and Groundwater Ingestion. The third major pathway, soil ingestion, was not considered because there is no documented contamination in the upper three feet of soil and the site has been over-excavated to a minimum of 12 feet below the surface where tainted soils have been found, limiting the probability of the ingestion of contaminated soil.

10.1 Vapor Inhalation:

1. Volatilization to onsite inside air.
2. Volatilization to onsite outside air.

At the direction of Alameda County Health and the City of Oakland Fire Department. A Western Geo-Engineers geologist on September 20, 1996 obtained permission and collect air samples from the crawl spaces of the residences at 4006, 4026 and 4032 Brighton Avenue, from 1211, 1215, 1221, and 1227 Hampel Street and from 4003 Park Boulevard. At that time air samples were obtained from the sewer manways at Brighton Avenue, 4035 Park Boulevard and the backyard of 1221 Hampel Street. The samples were analyzed for Total Petroleum Hydrocarbons gasoline range (TPHg), Benzene, Toluene, Ethylbenzene, Xylenes and Methane. All but the methane were below laboratory lower detection limits of TPHg <50 ug/L, Benzene <0.5 ug/L, Toluene <0.6 ug/L, Ethylbenzene <0.5 ug/L and Xylenes <1.2 ug/L.

Methane concentrations are as follows:
Basements/crawlspaces
1211 Hampel Street 0.4 ug/L, 1215 Hampel Street 1.5 ug/L, 1221 Hampel Street 3.8 ug/L, 1227 Hampel Street 0.4 ug/L, 4006 Brighton Avenue 0.7 ug/L, 4026 Brighton Avenue 0.6 ug/L, 4032 Brighton Avenue 1.1 ug/L, and 4003 Park Blvd. 11.3 ug/L.

Sewer manways
1215 Hampel Street 0.7 ug/L, Brighten Avenue 0.4 ug/L and 4035 Park Blvd. 0.3 ug/L.

The lower explosion limit for gasoline in air is 52,000 ug/L.

The lower explosion limit for methane in air is [illegible] ug/L.

10.2 Groundwater Ingestion:

1. Onsite groundwater ingestion, commercial. **The groundwater located in the shallow aquifer beneath this site is not suitable for commercial or domestic use due to the likelihood of biological and non-petroleum contaminants from leaking sewer and storm drain systems throughout the neighborhood.**

2. Off-site ingestion, Domestic. There are no known domestic and or commercial wells within a half mile radius of the site. Because there is no down gradient well in the area various downgradient points were used for each Tier 2, ie. Station proper – resident at 4010/4012 Brighton Avenue. Backyard sewer – T1 well in receptor trench and Brighton Avenue west side – where sewer enters beneath Greenwood Street, distances of 2000 cm (65 feet), 5600 cm (182 feet) and 6900 cm (224.6 feet) respectively were used to calculate off-site ingestion.

10.3 Toxicity Assessment

Of the compounds currently found at the site, the primary driver of risk at this site is the benzene.

Cancer Toxicity

Benzene, a class A carcinogen, has been shown in work place studies to cause Leukemia in humans. The current California Cancer risk slope factor (SF) is 0.1 (1/(mg/kg-day)).

Non-cancer Toxicity.

Five compounds were considered for the non-cancer toxicity, Ethlybenzene, Hexane, MTBE, Toluene, and Xylenes (which includes, meta, para and orto xylenes). See Appendies H, I and J, RBCA Spreadsheet, RBCA Chemical Data, and Toxicity Data for current EPA.

Hexane was used to represent the alkane (non-aromatic) portion of gasoline. Hexane was chosen because its properties represent the light, faster moving, end of the alkanes and as such represents the worst case for alkane migration.

At the concentrations currently found at this site, the risk of most importance is the chronic or long-term risk. Two types of chronic risk have to be assessed: cancer risk and non-cancer chronic exposure risk.

These two types of risk are treated differently because of the way they effect people. Carcinogens are modeled as if any amount of the compound will produce some possibility of causing cancer. Non carcinogens will not cause health effects until they reach a threshold value at which concentration they may have some adverse effect on the population. Below the threshold value, a high-risk compound may even have a beneficial effect, e.g., vitamin A and sodium chloride (table salt).

Because of these different effect models, the risk is calculated differently. The cancer risk is calculated as a probability of causing cancer using a slope factor (SF). The SF expresses the probability of developing cancer from the intake of 1 mg of compound per kg of body weight over a 70-year lifetime.

The non-cancer risk is calculated by comparing the chance of exceeding the threshold limit of the compound. In order to insure that no sensitive person will be effected by the chemical, the Reference Dose (Rfd) that is used to calculate the risk of exposure is given an uncertainty factor of 10 to 1000 times less than the No-Observed-Adverse-Effect-Level (NOAEL). The NOAEL is the concentration at which no adverse effect was found in human and/or animal studies. The non-cancer risk is calculated by dividing the long-term ingestion rate by the Rfd. If the result is less than one, the threshold limit above which health effects will occur should not be reached.

10.4 Exposure Assessment

Three primary routes of exposure that must be considered at any site are:

1. Ingestion of compounds in soil.
2. Ingestion of compounds in groundwater.
3. Inhalation of compounds in vapor form.

Of these three routes of exposure, only inhalation is a likely route of exposure to be encountered at this site.

Ingestion of compounds in soil was not considered because there is no documented contamination in the upper three feet of soil. The majority of contaminated soils have been removed by over-excavation of the USTs and associated piping dispensing area at 4035 Park Blvd. (to the 17 foot depth) and the Brighton Avenue eastern gutter area (to the 15.5 foot depth). Where contaminated soils still exists, these areas are paved over or are deeper than five feet below the surface, limiting the probability of the ingestion of contaminated soil.

On-site ingestion of compounds in groundwater was considered in order to determine the probability of adverse effects to off-site wells. Ingestion of groundwater at the site is unlikely, as it would require turning RS-5 into a domestic well and proceeding to drink the water therefrom.

Off-site ingestion was considered in order to determine the probability of adverse effects to off-site downgradient receptor points (RS-9) and where the sewer main is below Greenwood.

10.5 Concentrations Used

RBCA Tier 2 – Station proper

In order to test the probable impact of the current groundwater plume the upper confidence level (UCL) concentrations were calculated for the Monitor Wells within the plume, from the August 26, 1999 sampling round.

The values used to determine the soil impacts were the highest values from samples of the sidewall over-excavation of the UST and product dispensing system August 1995.

COMPOUND	MILLIGRAMS/LITER MILLIGRAMS/KILOGRAM	WELL
Benzene Water	0.94	R2
Benzene Soil	8.8	14.5 feet Hoist Area
Ethylbenzene Water	1.9	RS5
Ethylbenzene Soil	18	14.5 feet Hoist Area
TPHg water represented in the RBCA by Hexane .	35	RS5
TPHg soil represented in the RBCA by Hexane .	2000	Excavation sidewall sample I-SW building 8 feet.
MTBE Water	0.002	RS2
MTBE Soil	0.005	Detection limit
Toluene Water	4.0	RS5
Toluene Soil	35	Excavation sidewall sample I-SW building 8 feet.
Xylenes Water	8.3	RS5
Xylenes Soil	130	Excavation sidewall sample I-SW building 8 feet.

RBCA Tier 2 – Backyards

In order to test the probable impact of the current groundwater plume the upper confidence level (UCL) concentrations were calculated for the Monitor Wells (RS8 and RS10) in the backyards, from the August 26, 1999 sampling round.

The values used to determine the soil impacts were the highest values from the soil samples obtained during installation of the backyard wells (RS8 and RS10).

COMPOUND	MILLIGRAMS/LITER MILLIGRAMS/KILOGRAM	WELL
Benzene Water	24	RS8
Benzene Soil	11	9.5 feet RS10
Ethylbenzene Water	4.2	RS8
Ethylbenzene Soil	21	9.5 feet RS10
TPHg water represented in the RBCA by Hexane .	160	RS8
TPHg soil represented in the RBCA by Hexane .	870	9.5 feet RS10
MTBE Water	0.032	RS10
MTBE Soil	0.005	Detection limit
Toluene Water	35	RS8
Toluene Soil	62	9.5 feet RS10
Xylenes Water	24	RS8
Xylenes Soil	120	9.5 feet RS10

RBCA Tier 2 – West Brighton Avenue (RS9)

In order to test the probable impact of the current groundwater plume the upper confidence level (UCL) concentrations were calculated for the Monitor Well RS9 located at the western easement of Brighton Avenue, just north of the sewer main route, from the August 26, 1999 sampling round.

The values used to determine the soil impacts were the highest values from the soil samples obtained during installation of monitor well RS9.

COMPOUND	MILLIGRAMS/LITER MILLIGRAMS/KILOGRAM	WELL
Benzene Water	3.5	RS9
Benzene Soil	0.41	10 feet RS9
Ethylbenzene Water	0.36	RS9
Ethylbenzene Soil	0.87	10 feet RS9
TPHg water represented in the RBCA by Hexane .	17	RS9
TPHg soil represented in the RBCA by Hexane .	67	10 feet RS9
MTBE Water	0.18	RS9
MTBE Soil	0.005	Detection limit
Toluene Water	1.2	RS9
Toluene Soil	2	10 feet RS9
Xylenes Water	1.6	RS9
Xylenes Soil	4.9	10 feet RS9

10.6 Results

The results of a Tier 2 RBCA calculation are expressed as SSTLs. This is the concentration at which, the calculated cancer risk will not exceed the 1/1,000,000 residential or 1/100,000 commercial cancer risk and the non-cancer threshold limit is less than one.

Surface Soils <3.3 feet bgs

RBCA Tier 2 – Station proper (Appendix H Worksheet 9.1)

None of the compounds exceeded the SSTLs for soil leaching to groundwater or ingestion, inhalation and dermal contact.

Volatilization to indoor air: Air sample obtained from the sewer manway was below laboratory lower detection limits for TPHg, BTEX

RBCA Tier 2 – Backyards (Appendix I Worksheet 9.1)

None of the compounds exceeded the SSTLs for soil leaching to groundwater or ingestion, inhalation and dermal contact.

Volatilization to indoor air: Air samples obtained from the basements/crawl spaces beneath 4006, 4026 and 4032 Brighton Avenue, from 1211, 1215, 1221, and 1227 Hampel Street and from 4003 Park Boulevard were below laboratory lower detection limits for TPHg, BTEX. Soil gas samples obtained from two locations in the backyard of 4006 Brighton Avenue were below laboratory lower detection limits for TPHg, BTEX.

RBCA Tier 2 – West Brighton Avenue (RS9) (Appendix J Worksheet 9.1)

None of the compounds exceeded the SSTLs for soil leaching to groundwater or ingestion, inhalation and dermal contact.

Volatilization to indoor Air: Air sample obtained from the sewer manway in Brighton Avenue was below laboratory lower detection limits for TPHg, BTEX

Subsurface soils >3.3 feet bgs

RBCA Tier 2 – Station proper (Appendix H Worksheet 9.2)

Benzene and gasoline (hexane) exceeded the SSTLs for soil leaching to groundwater, volatilization to indoor air and volatilization to outdoor air; the corrective reduction factor (CRF) indicates that benzene needs to be reduced by 46X's and gasoline (hexane) by 40X's.

RBCA Tier 2 – Backyards (Appendix I Worksheet 9.2)

Benzene and gasoline (hexane) exceeded the SSTLs for soil leaching to groundwater, volatilization to indoor air and volatilization to outdoor air; the corrective reduction factor (CRF) indicates that benzene needs to be reduced by 110X's and gasoline (hexane) by17X's.

RBCA Tier 2 – West Brighton Avenue (RS9) (Appendix J Worksheet 9.2)

Benzene and gasoline (hexane) exceeded the SSTLs for soil leaching to groundwater, volatilization to indoor air and volatilization to outdoor air; the corrective reduction factor (CRF) indicates that benzene needs to be reduced by 4X's and gasoline (hexane) by1X's.

Groundwater

RBCA Tier 2 – Station proper (Appendix H Worksheet 9.3)

Benzene, gasoline (hexane), Methyl t-Butyl Ether, Toluene and Xylenes exceeded the SSTLs for groundwater ingestion, volatilization to indoor air and volatilization to outdoor air; the corrective reduction factor (CRF) indicates that benzene needs to be reduced by 6200X's, gasoline (hexane) by 41X's, MTBE by 11X's, toluene by 4X's and Xylenes by 2X's.

RBCA Tier 2 – Backyards (Appendix I Worksheet 9.3)

Benzene and gasoline (hexane exceeded the SSTLs for groundwater ingestion, volatilization to indoor air and volatilization to outdoor air; the corrective reduction factor (CRF) indicates that benzene needs to be reduced by 56X's and gasoline (hexane) by 2X's.

RBCA Tier 2 – Brighton Avenue (Appendix J Worksheet 9.3)

Benzene and gasoline (hexane exceeded the SSTLs for groundwater ingestion, volatilization to indoor air and volatilization to outdoor air; the corrective reduction factor (CRF) indicates that benzene needs to be reduced by 1200X's and gasoline (hexane) by 3X's.

10.7 Discussion

By definition, the SSTLs determine the concentrations at which the site will not pose a significant risk to the public or the workers at or near the site. On site, the SSTLs were exceeded for indoor air, soil exposure pathways and groundwater exposure pathways. The sewer lateral backyard study indicates that the SSTLs were exceeded for indoor air, soil exposure pathways and groundwater exposure pathways. The Brighton Avenue study indicates that the SSTLs were exceeded for indoor air, soil exposure pathways and groundwater exposure pathways.

Indoor Air

The RBCA Tier 2 studies indicated that the indoor air pathway has been exceed. Subsurface lithology is composed of clays which would hinder the vertical/lateral migration of vapors which was substantiated by an earlier study that obtained air samples for analysis from sewer manways at Brighton Avenue, at the site (4035 Park Blvd) and along the backyard sewer later at 1215 Hampel Street and from the basement/crawl spaces of the following residences: 4006, 4026 and 4032 Brighton Avenue, from 1211, 1215, 1221, and 1227 Hampel Street and from 4003 Park Boulevard. Soil gas samples were also obtained from the backyard (3-foot depth) of 4006 Brighton Avenue. All samples were below lower laboratory detection limits for TPHg, BTEX, and MTBE.

Soil Exposure Pathways

No contaminated soils were found in the upper 3.3 feet of the studied areas. The station was extensively over-excavated removing the majority of contaminated soils to the 17-foot depth. Where free phase floating product was discovered along Brighton Avenue, the installation of the receptor trench removed contaminated soils that where discovered between the 3 and 10 foot depth. In the backyards and along Brighton Avenue, the contaminated subsurface soils are associated with groundwater movement and the capillary fringe, which is deeper than the underground utility trenches, reducing the chance of dermal exposure from construction practices. The upper soils are composed of clay, which restricts the vertical and horizontal migration of vapors produced from the gasoline contaminant.

Groundwater pathway

There are no known private, municipal or industrial wells within a half mile radius of the known extent of the groundwater gasoline plume. This groundwater is shallow and is not suited for domestic or industrial use. Of greater concern would be biological constituents in the groundwater from leaking sewers and storm drains. At the site (DP 793) groundwater is located between 5 and 20 feet below the surface. At Brighton Avenue (RS-7) groundwater is located between 3.7 and 4.7 feet below the surface. As shown during the various assessments of this site, the groundwater plume is associated with the sewer lateral that leaves DP 793 north along the backyards of 4006, 4010/4012, 4026, and 4032 Brighton Avenue, then west along the northern property line of 4032 Brighton Avenue, and then west across Brighton Avenue. This plume route shows migration along the route of least resistance, backfill of the sewer. And a damming effect that has retarded the downgradient migration of the plume along Brighton Avenue by water filled underground utility fill of the gas and water services. The native subsurface soils that contain the groundwater are very fine silty clays and clayey sands that do not typically allow for much of a downgradient extent of gasoline type plumes.

11.0 CONCLUSIONS

- With the data produced from the additional groundwater monitoring wells RS8, RS9, and RS10, the groundwater gradient is shown to follow the local topography; leaving the site (DP793), flowing in a west northwesterly direction to Brighton Avenue, and then flowing west across Brighton Avenue. It follows a coarse similar to the sewer main along the backyard property lines of 4006, 4010/4012, 4026 and 4032 Brighton Avenue.

- Risk Base Corrective Action Tier 2 Studies of the Site (DP793), the Backyards and Brighton Avenue indicate that corrective actions are needed to reduce the soil and groundwater contaminant levels.

- A natural attenuation study indicates that natural attenuation is occurring and aerobic hydrocarbon degrading bacteria do exist along the perimeter of the groundwater plume. The

groundwater within the plume is depleted of oxygen and the nutrients containing nitrogen and ortho phosphate.

- Weekly purging of the receptor trench showed that a one day purge could remove between 2700 to 5100 gallons of water, emptying the trench, but did not significantly lower the local water table beyond the trench.

12.0 RECOMMENTATIONS

- Continue quarterly groundwater sampling/monitoring of the site.
- Finalize a treatability study to have the purged/stored water disposed to the sewer operated by East Bay Municipal Utility District
- Develop a bid package to connect the receptor trench to the treatment facility at 4035 Park Blvd.
- Develop a workplan to augment natural attenuation with oxygen, nitrogen and ortho phosphate
- Permit and install a continuous groundwater pump and treatment system to pump and treat water from the receptor trench wells T1 and T2 and discharge to the sewer under a sewer discharge permit.

11.0 REFERENCES

LEVINE – FRICKE REPORT OF THE SOIL AND GROUND-WATER INVESTIGATION AT 4003 PARK BOULEVARD/4006 BRIGHTON AVENUE, OAKLAND, CALIFORNIA, November 16, 1993

RSI REMEDIATION SERVICE, INT'L SITE ASSESSMENT AND REMEDIATION REPORT FOR DESERT PETROLEUM STATION NO. 793, 4035 PARK BOULEVARD, OAKLAND, CALIFORNIA, January 5, 1990.

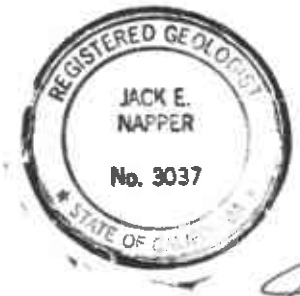
12.0 LIMITATIONS

This report is based upon the following:

A. The observations of field personnel.
B. The results of laboratory analyses performed by a state certified laboratory.
C. Referenced documents.
D. Our understanding of the regulations of the State of California, Alameda County and the City of Oakland.
E. Changes in groundwater conditions can occur due to variations in rainfall, temperature, local and regional water use, and local construction practices.
F. In addition, variations in the soil and groundwater conditions could exist beyond the points explored in this investigation.

State Certified Laboratory analytical results are included in this report. This laboratory follows EPA and State of California approved procedures; however, WEGE is not responsible for errors in these laboratory results. Western Geo-Engineers is a corporation under California Registered Geologist #3037 and/or Contractors License #513857. The services performed by Western Geo-Engineers have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the State of California and the Oakland area. Our work and/or supervision of remediation and/or abatement operations, active or preliminary, at this site is in no way meant to imply that we are owners or operators of this site. Known or suspected contamination of soil and/or groundwater must be reported to the appropriate agencies in a timely manner. No other warranty, expressed or implied, is made.

Sincerely,



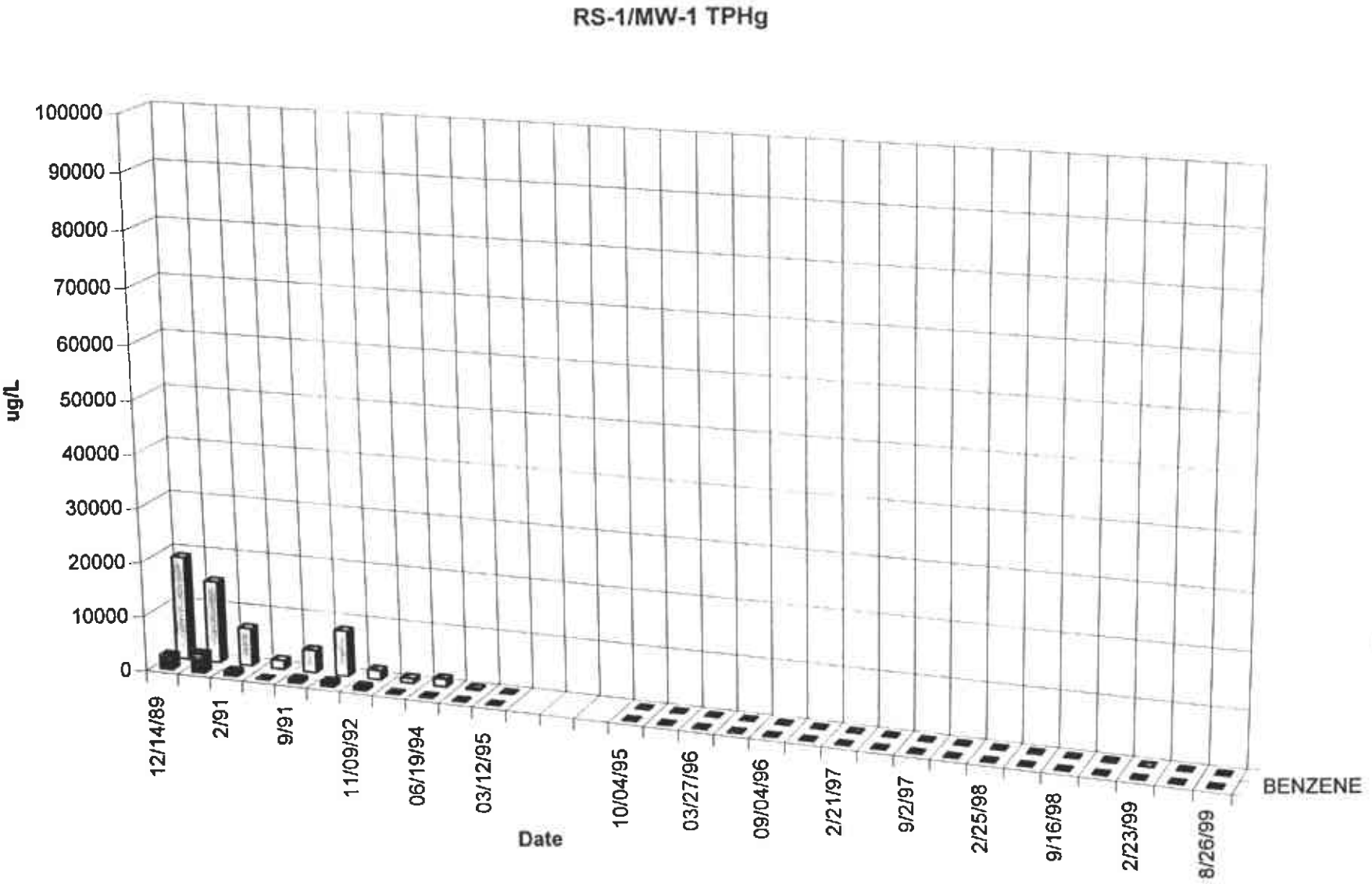
George Converse
Geologist

Jack E. Napper
Ca. Reg. Geologist #3037

cc: Mr.Tom Peacock, Alameda County Health (510) 567-6774
Mr. Leroy Griffin, Oakland Fire Dept.
Mr. Chuck Headlee, RWQCB-Bay Region (510) 622-2433

TABLE 1
GROUNDWATER ELEVATIONS AND CERTIFIED ANALYTICAL LABAORATAORY RESULTS FROM WATER SAMPLES
DESERT PETROLEUM, INC. SITE #793
4035 PARK BOULEVARD, OAKLAND, CALIFORNIA

ID#	(All concentrations in parts per billion [ug/L, ppb]) (AMSL = Above mean sea level) DATE SAMPLED	WELL CASING ELEVATION (FEET AMSL)	DEPTH TO GROUND WATER (FEET)	GROUND WATER ELEVATION (FEET AMSL)		TPH-G (UG/L)	BENZENE (UG/L)	TOLUENE (UG/L)	ETHYL-BENZENE (UG/L)	XYLENES (UG/L)	MTBE (UG/L)
RS-1	12/14/89	240	24.25	215.75		19000	2600	2700	200	1200	
RS-1	12/90					15000	3500	330	170	760	
RS-1	2/91					6900	910	200	39	540	
RS-1	6/91					1600	56	180.000	12	26	
RS-1	9/91					4100	730	7.6	5.1	24	
RS-1	12/91					8300	950	160	71	190	
RS-1	11/09/92	100.18	17.05	83.13		1700	730	9.6	16	14	
RS-1	04/07/94	100.18	13	87.18		860	84	12	16	110	
RS-1	06/19/94	228.15	13.37	214.78		1400	150	12	52	87	
RS-1	09/17/94	228.15	16.33	211.82		310	30	1.8	2.8	3.9	
RS-1	03/12/95	228.15	4.66	223.49		ND	ND	ND	ND	ND	
		DESTROYED BY OVER-EXCAVATION OF UST-DISPENSER AREAS (8/14/95									
		REPLACED WITH MW-1 9/5/95.									
MW-1	10/04/95	232.57	12.38	220.19		ND	ND	ND	ND	ND	
MW-1	12/21/95	232.57	13.40	219.17		< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
MW-1	03/27/96	232.57	5.53	227.04		< 50	< 0.5	< 0.5	< 0.5	< 2	< 50
MW-1	06/11/96	232.57	9.02	223.55		< 50	< 0.5	< 0.5	< 0.5	< 2	< 50
MW-1	09/04/96	232.57	11.84	220.73		< 50	< 0.5	< 0.5	< 0.5	< 2	< 5
MW-1	12/11/96	232.57	12.98	219.59		< 50	< 0.5	0.9	< 0.5	< 1	< 0.5
MW-1	2/21/97	232.57	9.50	223.07		< 50	< 0.5	0.9	< 0.5	< 1	< 0.5*
MW-1	5/28/97	232.57	11.18	221.39		< 50	3	3	< 0.5	< 1	< 0.5*
MW-1	9/2/97	232.57	13.00	219.57		< 50	5	< 0.5	< 0.5	< 1	< 0.5*
MW-1	11/24/97	232.57	14.12	218.45		< 50	5	< 0.5	< 0.5	< 1	< 0.5*
MW-1	2/25/98	232.57	6.41	226.16		< 50	< 0.5	< 0.5	< 0.5	< 1	< 0.5*
MW-1	7/8/98	232.57	7.28	225.29		< 50	< 0.5	< 0.5	< 0.5	< 1	< 1*
MW-1	9/16/98	232.57	10.96	221.61		< 50	< 0.5	< 0.5	< 0.5	< 1	< 1*
MW-1	11/24/98	232.57	12.24	220.33		52	2.3	5.2	< 0.5	5.4	11*
MW-1	2/23/99	232.57	7.14	225.43		< 50	< 0.5	5	< 0.5	< 1	< 0.5
MW-1	5/5/99	232.57	7.00	225.57		< 50	2	<0.5	< 0.5	< 1	8
MW-1***	8/26/99	229.5	11.41	218.09		<50	4.1	<0.5	< 0.5	< 1	<1


RS-1/MW-1 TPHg
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2/91
9/91
11/09/92
06/19/94
03/12/95
10/04/95
03/27/96
09/04/96
2/21/97
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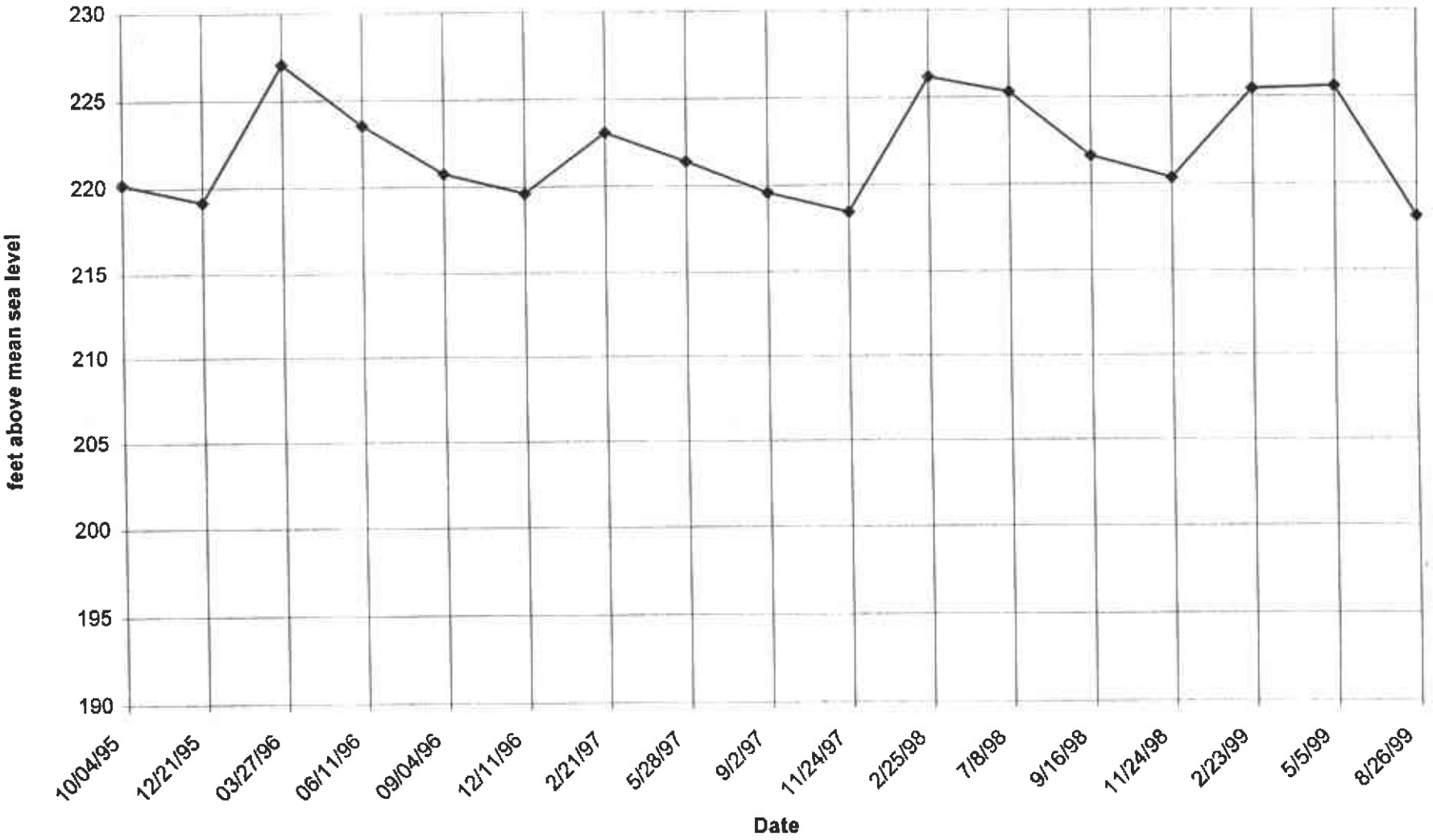
9/16/98
2/23/99
8/26/99
Date
BENZENE

MW-1 Groundwater Elevation



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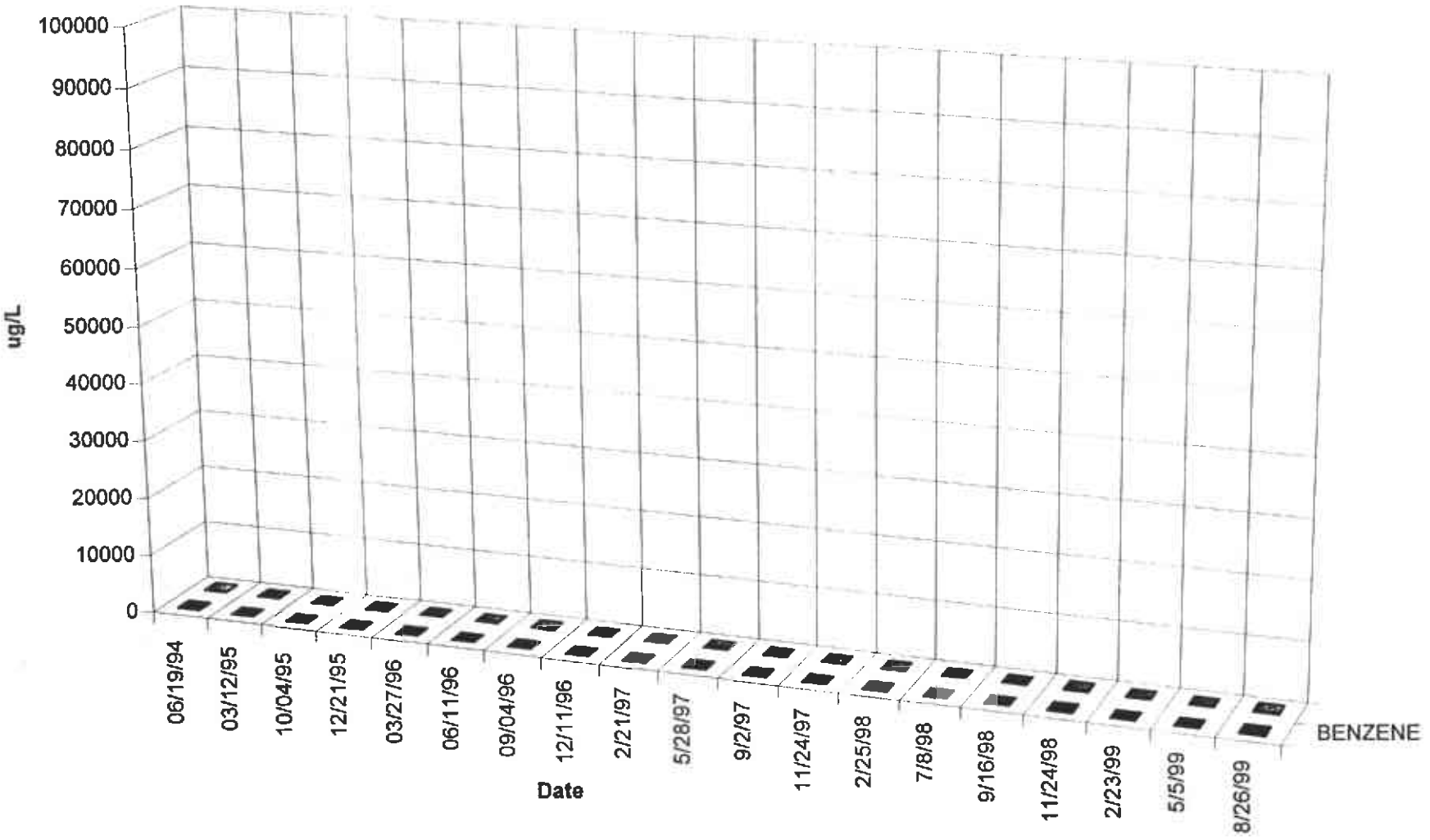
ID#	(All concentrations in parts per billion [ug/L, ppb]) (AMSL = Above mean sea level)										
	DATE SAMPLED	WELL CASING ELEVATION (FEET AMSL)	DEPTH TO GROUND WATER (FEET)	GROUND WATER ELEVATION (FEET AMSL)		TPH-G (UG/L)	BENZENE (UG/L)	TOLUENE (UG/L)	ETHYL-BENZENE (UG/L)	XYLENES (UG/L)	MTBE (UG/L)
RS-2	06/19/94	227.19	10.89	216.3		140	9.2	34	4.3	24.0	
RS-2	03/12/95	227.19	5.26	221.93		ND	ND	ND	ND	ND	
RS-2	10/04/95	230.43	15.05	215.38		ND	ND	ND	ND	ND	
RS-2	12/21/95	230.43	9.95	220.48		< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
RS-2	03/27/96	230.43	6.28	224.15		< 50	< 0.5	< 0.5	< 0.5	< 2	< 50
RS-2	06/11/96	230.43	8.00	222.43		< 50	1.2	2.8	< 0.5	< 2	< 50
RS-2	09/04/96	230.43	9.89	220.54		< 50	< 0.5	< 0.5	< 0.5	< 2	< 5
RS-2	12/11/96	230.43	8.38	222.05		< 50	< 0.5	< 0.5	< 0.5	< 1	6
RS-2	2/21/97	230.43	6.96	223.47		< 50	< 0.5	< 0.5	< 0.5	< 1	< 0.5*
RS-2	5/28/97	230.43	10.02	220.41		< 50	3	3	< 0.5	< 1	< 0.5*
RS-2	9/2/97	230.43	11.46	218.97		< 50	< 0.5	< 0.5	< 0.5	< 1	< 0.5*
RS-2	11/24/97	230.43	10.43	220		< 50	< 0.5	1	< 0.5	3	< 0.5*
RS-2	2/25/98	230.43	3.57	226.86		< 50	< 0.5	< 0.5	< 0.5	< 1	< 0.5*
RS-2	7/8/98	230.43	8.83	221.6		< 50	< 0.5	< 0.5	< 0.5	< 1	< 1*
RS-2	9/16/98	230.43	10.60	219.83		< 50	< 0.5	< 0.5	< 0.5	< 1	< 1*
RS-2	11/24/98	230.43	13.27	217.16		140	2.8	19	2.6	3.3	15*
RS-2	2/23/99	230.43	4.06	226.37		< 50	< 0.5	< 0.5	< 0.5	< 1	< 0.5
RS-2	5/5/99	230.43	7.70	222.73		< 50	0.7	< 0.5	< 0.5	< 1	6
RS-2***	8/26/99	227.39	11.42	215.97		200	15	23	1.7	23	9*

RS-2 TPHg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8/26/99
Date
BENZENE

RS-2 Groundwater Elevation

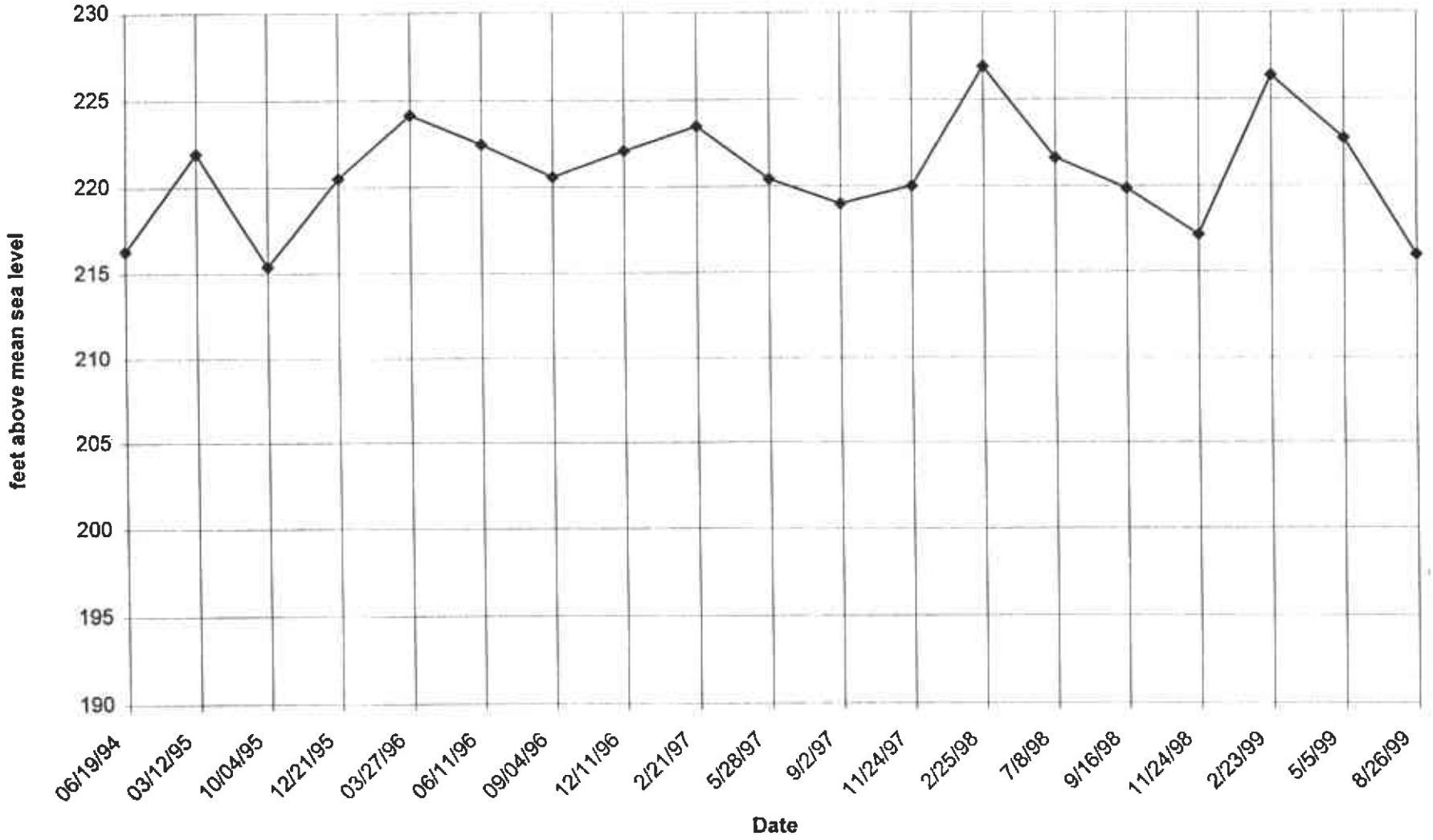
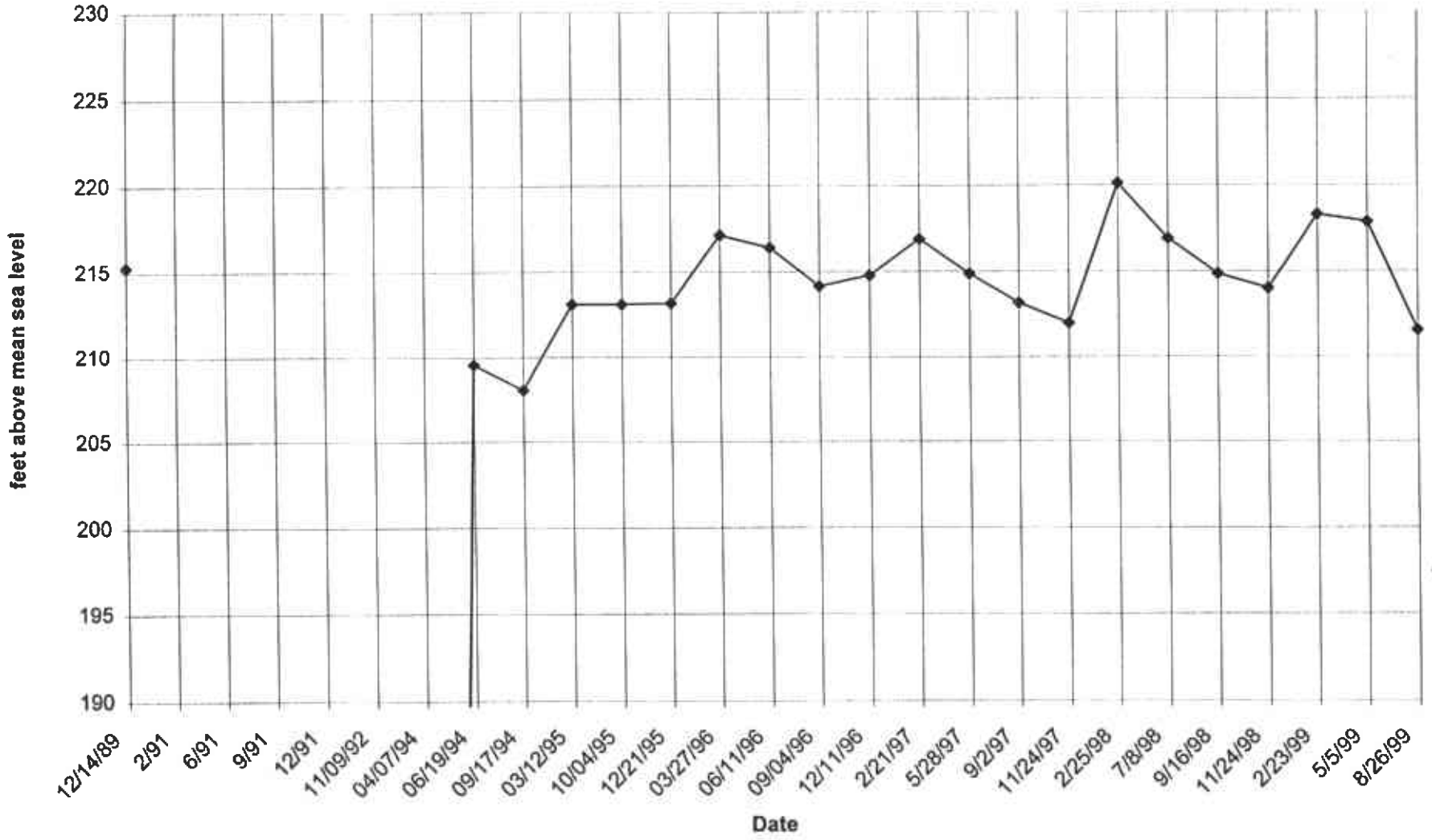


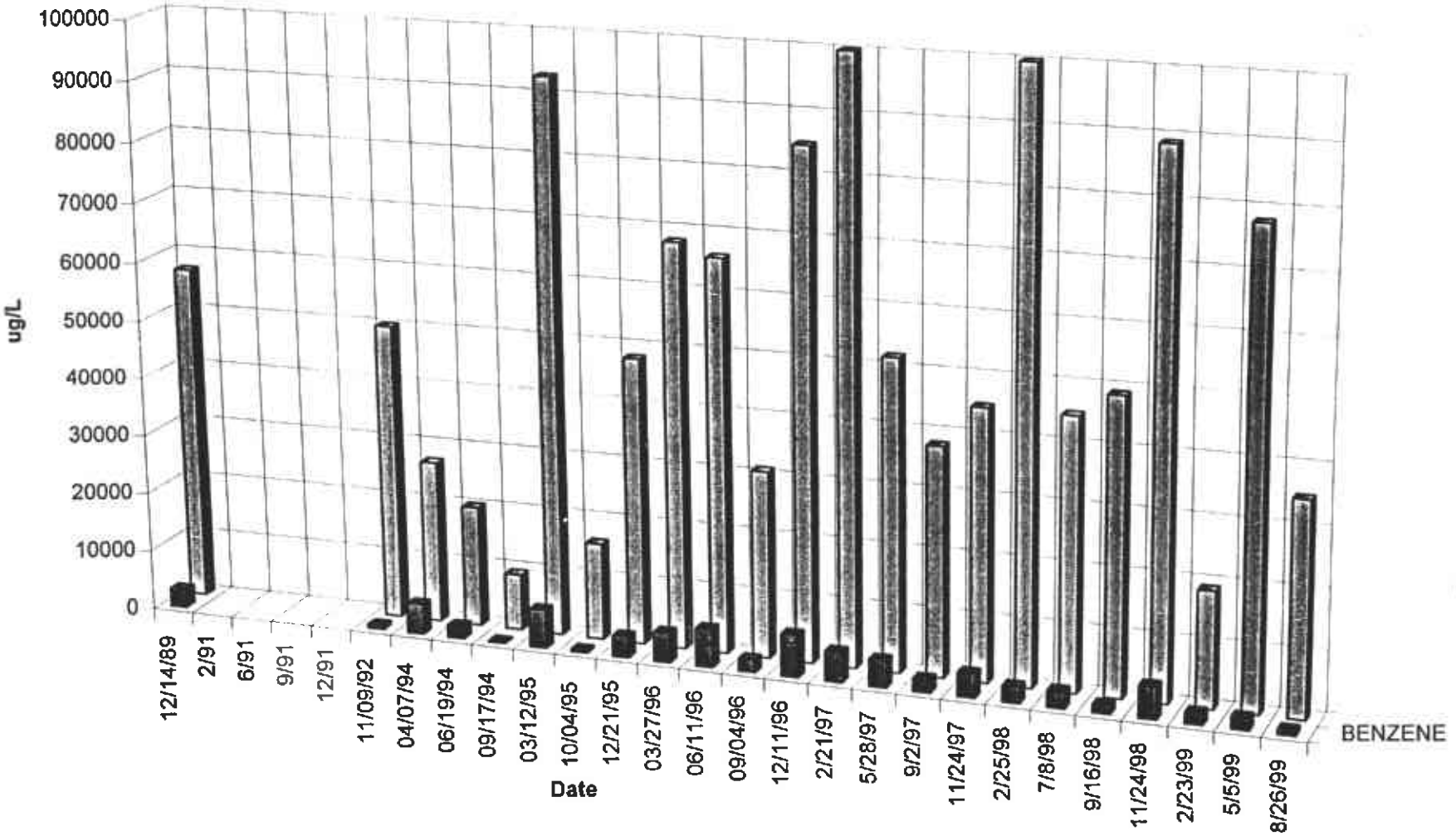
TABLE 1
GROUNDWATER ELEVATIONS AND CERTIFIED ANALYTICAL LABAORATAORY RESULTS FROM WATER SAMPLES
DESERT PETROLEUM, INC. SITE #793
4035 PARK BOULEVARD, OAKLAND, CALIFORNIA

ID#	(All concentrations in parts per billion [ug/L, ppb]) (AMSL = Above mean sea level)										
	DATE SAMPLED	WELL CASING ELEVATION (FEET AMSL)	DEPTH TO GROUND WATER (FEET)	GROUND WATER ELEVATION (FEET AMSL)		TPH-G (UG/L)	BENZENE (UG/L)	TOLUENE (UG/L)	ETHYL-BENZENE (UG/L)	XYLENES (UG/L)	MTBE (UG/L)
RS-5	12/14/89	241.26	25.97	215.29		57000	3100	4300	670	3400	
RS-5	2/91		FLOATING PRODUCT								
RS-5	6/91		FLOATING PRODUCT								
RS-5	9/91		FLOATING PRODUCT								
RS-5	12/91		FLOATING PRODUCT								
RS-5	11/09/92	98.99	20.73	78.26		50000	650	4800	1100	15000	
RS-5	04/07/94	98.99	18.16	80.83		27000	5000	8700	550	2800	
RS-5	06/19/94	227.65	18.11	209.54		20000	2100	5300	470	2500	
RS-5	09/17/94	227.65	19.63	208.02		9300	230	340	110	700	
RS-5	03/12/95	227.65	14.54	213.11		93000	6400	2000	19000	10000	
RS-5	10/04/95	230.64	17.53	213.11		16000	420	2100	320	1800	
RS-5	12/21/95	230.64	17.47	213.17		48000	3500	9200	840	4800	56
RS-5	03/27/96	230.64	13.51	217.13		68000	4900	18000	1700	11000	< 3000
RS-5	06/11/96	230.64	14.25	216.39		66000	6300	20000	2100	12000	< 3000
RS-5	09/04/96	230.64	16.50	214.14		31000	2100	11000	1100	6800	400
RS-5	12/11/96	230.64	15.88	214.76		85000	7000	21000	1800	8900	570
RS-5	2/21/97	230.64	13.76	216.88	sh	100000	5000	22000	1700	7300	<0.5*
RS-5	5/28/97	230.64	15.77	214.87		52000	4500	19000	2100	10000	<0.5*
RS-5	9/2/97	230.64	17.47	213.17		38000	2200	9400	1300	5800	<0.5*
RS-5	11/24/97	230.64	18.67	211.97		45000	4000	16000	1900	9700	<0.5*
RS-5	2/25/98	230.64	10.53	220.11		160000	2700	31000	5300	28000	<0.5*
RS-5	7/8/98	230.64	13.75	216.89		45000	2800	12000	2000	8500	<10*
RS-5	9/16/98	230.64	15.80	214.84		49000	1400	7500	1700	8600	<5*
RS-5	11/24/98	230.64	16.64	214		89000	5300	15000	2800	13000	<10
RS-5	2/23/99	230.64	12.36	218.28		19000	1900	11000	2500	4800	<25*
RS-5	5/5/99	230.64	12.78	217.86		78000	2000	10000	3000	15000	540*
RS-5***	8/26/99	227.61	16.06	211.55		35000	870	4000	1900	8300	<1*

RS-5 Groundwater Elevation



RS-5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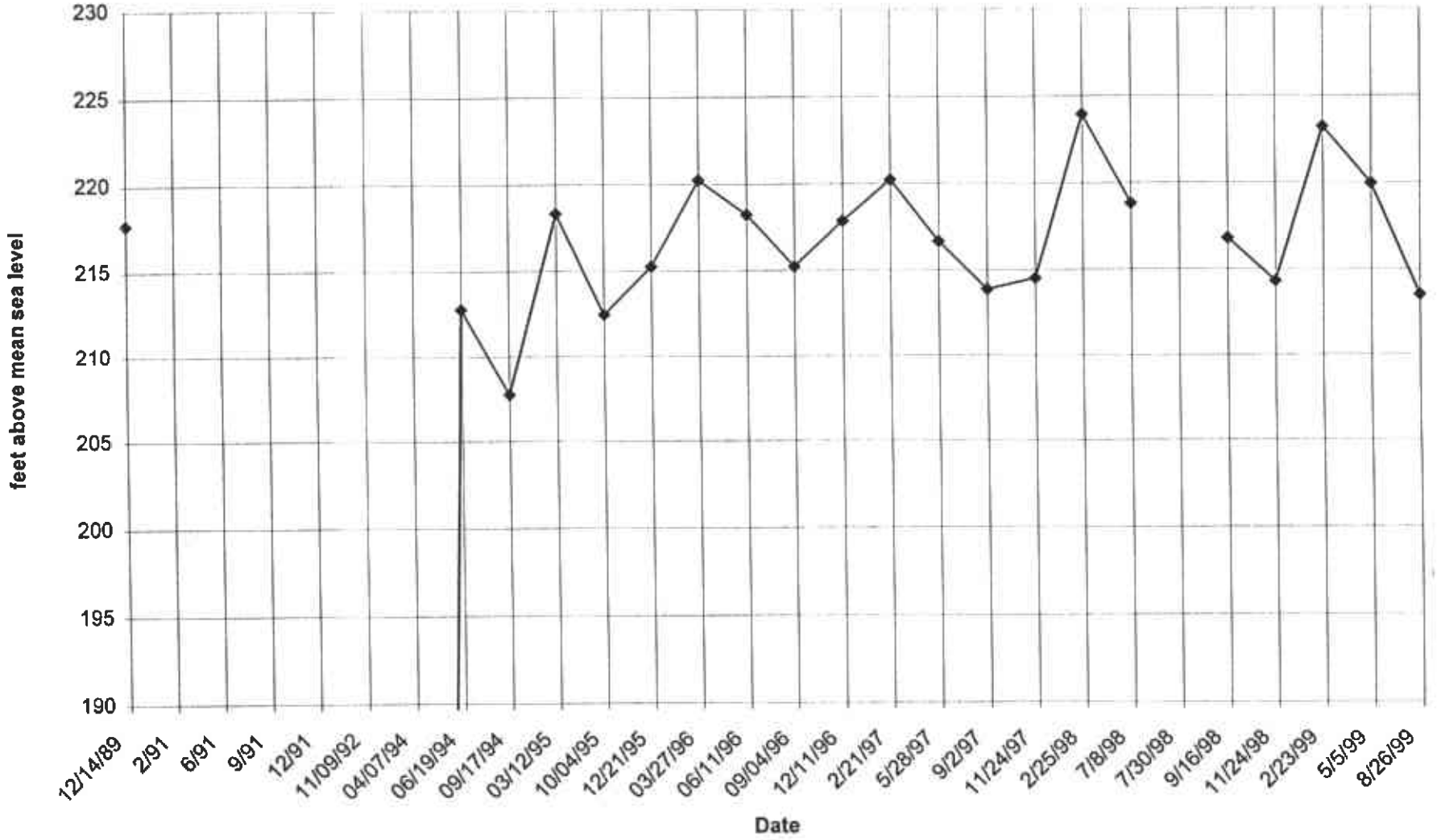
9/2/97
11/24/97
2/25/98
7/8/98
9/16/98
11/24/98
2/23/99
5/5/99
8/26/99
Date
BENZENE

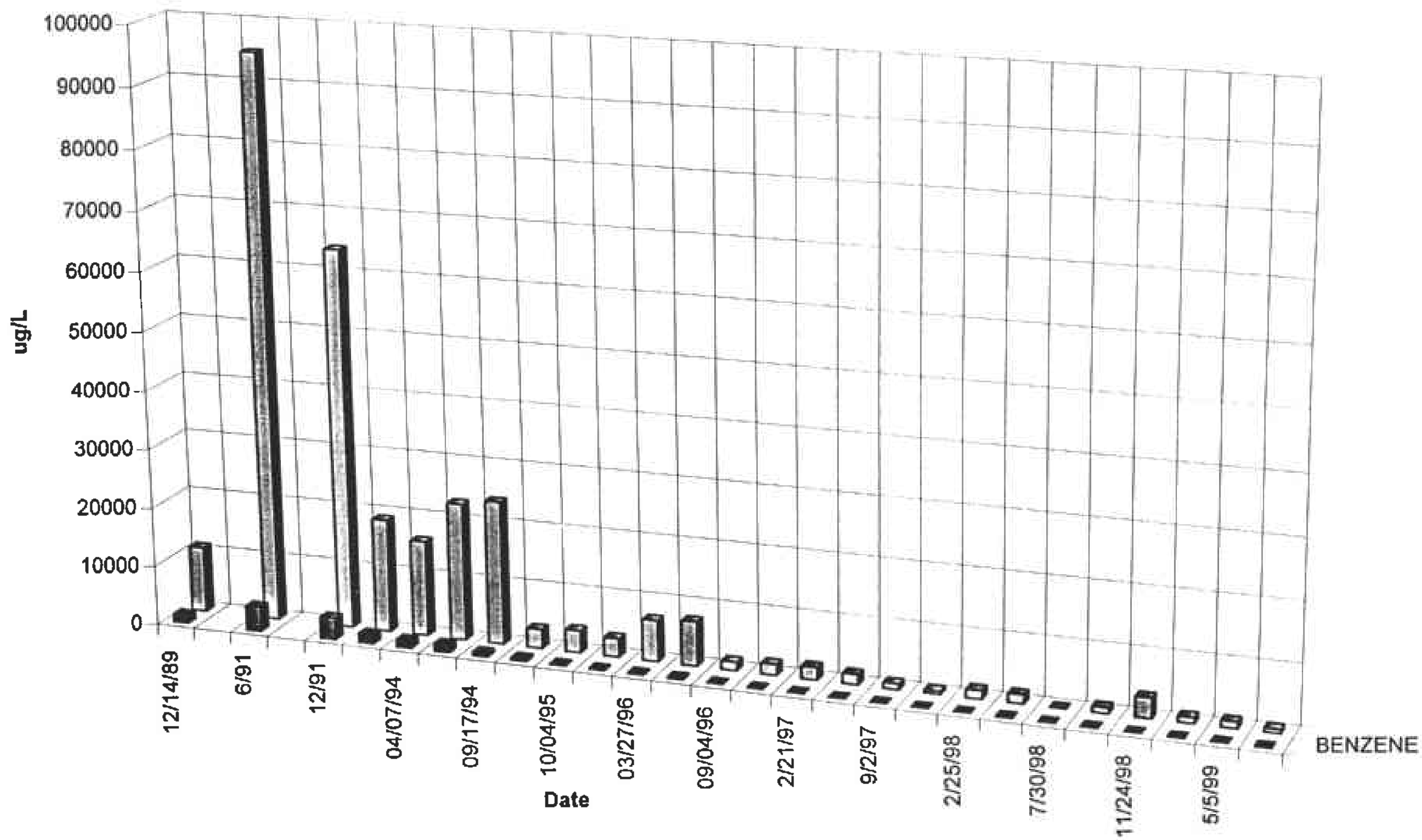
TABLE 1
GROUNDWATER ELEVATIONS AND CERTIFIED ANALYTICAL LABAORATAORY RESULTS FROM WATER SAMPLES
DESERT PETROLEUM, INC. SITE #793
4035 PARK BOULEVARD, OAKLAND, CALIFORNIA

ID#	(All concentrations in parts per billion [ug/L, ppb]) (AMSL = Above mean sea level)										
	DATE SAMPLED	WELL CASING ELEVATION (FEET AMSL)	DEPTH TO GROUND WATER (FEET)	GROUND WATER ELEVATION (FEET AMSL)		TPH-G (UG/L)	BENZENE (UG/L)	TOLUENE (UG/L)	ETHYL-BENZENE (UG/L)	XYLENES (UG/L)	MTBE (UG/L)
RS-6	12/14/89	240.23	22.52	217.71		11000	1400	1700	160	860	
RS-6	2/91		FLOATING PRODUCT								
RS-6	6/91					95000	4200	4200	650	3700	
RS-6	9/91		FLOATING PRODUCT								
RS-6	12/91					64000	3700	2300	730	4100	
RS-6	11/09/92	99.27	19.43	79.84		19000	1600	710	500	1600	
RS-6	04/07/94	99.27	14.42	84.85		16000	1200	1300	290	1100	
RS-6	06/19/94	227.22	14.45	212.77		23000	1300	2200	590	2200	
RS-6	09/17/94	227.22	19.52	207.7		24000	630	790	250	1100	
RS-6	03/12/95	227.22	8.90	218.32		3200	450	13	82	230	
RS-6	10/04/95	230.22	17.78	212.44		3700	170	250	38	290	
RS-6	12/21/95	230.22	14.98	215.24		3100	120	30	16	150	58
RS-6	03/27/96	230.22	10.00	220.22		6900	180	440	79	360	< 300
RS-6	06/11/96	230.22	12.00	218.22		7400	220	150	30	100	<1000
RS-6	09/04/96	230.22	15.00	215.22		1400	68	2.6	7.7	9.2	14
RS-6	12/11/96	230.22	12.36	217.86		1800	39	16	10	18	< 0.5
RS-6	2/21/97	230.22	10.00	220.22		2100	71	85	25	40	< 0.5*
RS-6	5/28/97	230.22	13.56	216.66		1700	34	12	11	16	< 0.5*
RS-6	9/2/97	230.22	16.35	213.87		940	34	71	9	55	< 0.5*
RS-6	11/24/97	230.22	15.72	214.5		490	9	6	1	7	< 0.5*
RS-6	2/25/98	230.22	6.26	223.96		1400	22	47	5	52	< 0.5*
RS-6**	7/8/98	230.22	11.41	218.81		1500	83	9	84	2	<10*
RS-6	7/30/98	230.22				<50	<0.5	<0.5	<0.5	<1	
RS-6	9/16/98	230.22	13.42	216.8		990	23	<0.5	<0.5	<1	<1*
RS-6	11/24/98	230.22	15.91	214.31		3400	5.3	<0.5	<0.5	14	<0.5
RS-6	2/23/99	230.22	7.00	223.22		1000	3.4	3.2	1.6	7.3	<0.5
RS-6	5/5/99	230.22	10.29	219.93		1100	50	10	80	15	2
RS-6***	8/26/99	227.22	13.72	213.5		690	44	2.5	30	31	<5

RS-6 Groundwater Elevation



RS-6



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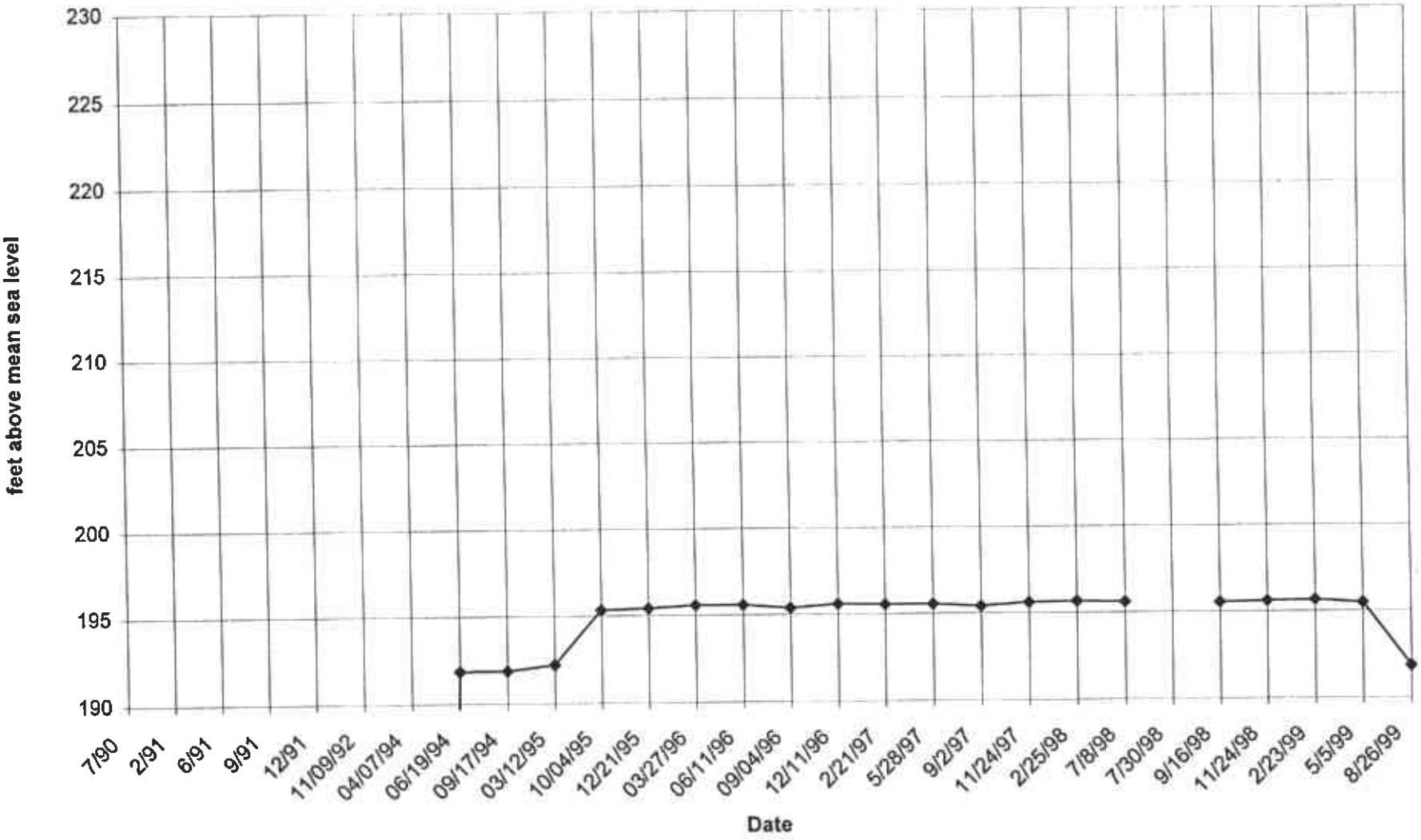
09/04/96
2/21/97
9/2/97
2/25/98
7/30/98
11/24/98
5/5/99
Date
BENZENE

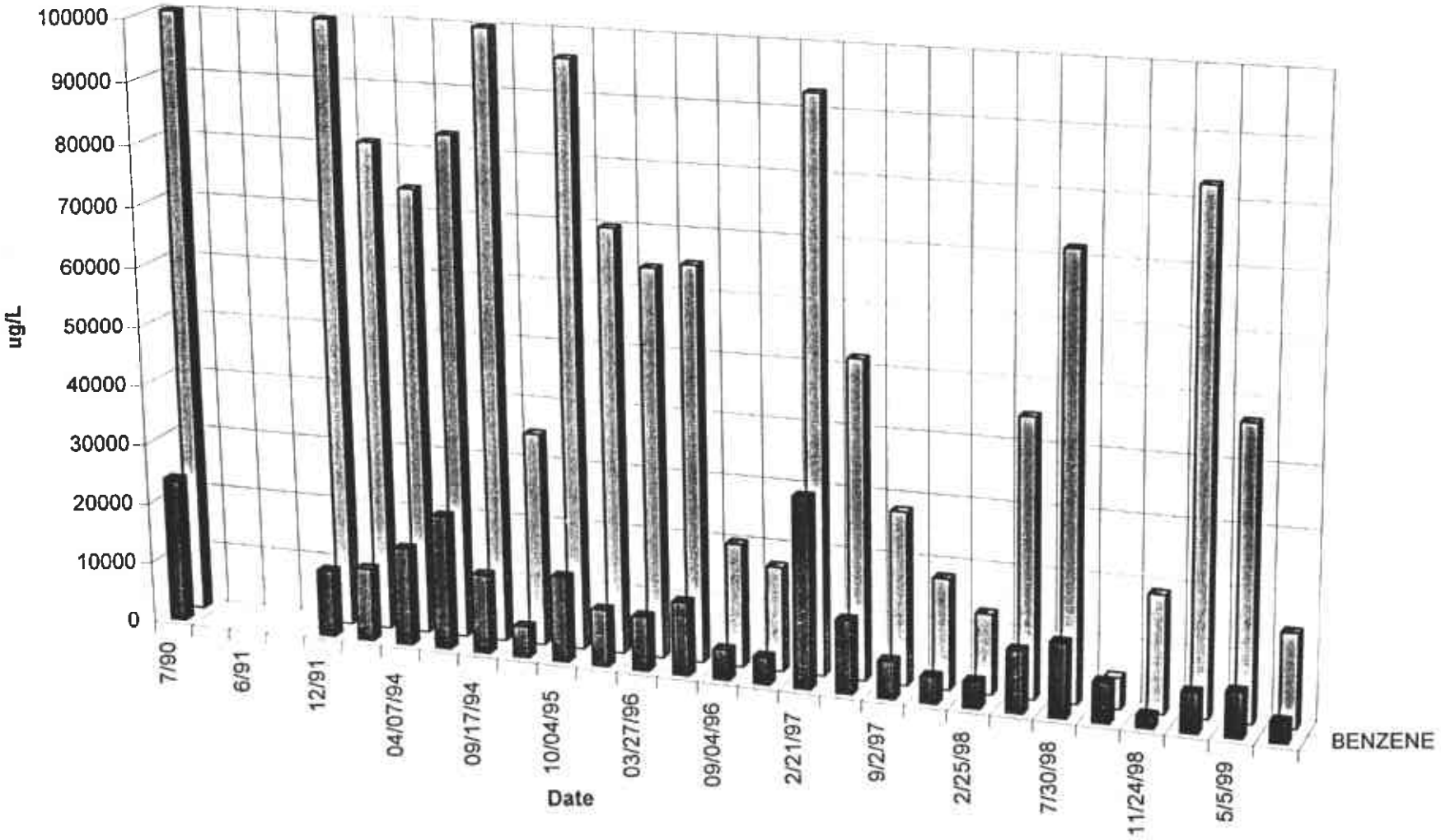
TABLE 1
GROUNDWATER ELEVATIONS AND CERTIFIED ANALYTICAL LABAORATAORY RESULTS FROM WATER SAMPLES
DESERT PETROLEUM, INC. SITE #793
4035 PARK BOULEVARD, OAKLAND, CALIFORNIA

ID#	(All concentrations in parts per billion [ug/L, ppb]) (AMSL = Above mean sea level)									
	DATE SAMPLED	WELL CASING ELEVATION (FEET AMSL)	DEPTH TO GROUND WATER (FEET)	GROUND WATER ELEVATION (FEET AMSL)	TPH-G (UG/L)	BENZENE (UG/L)	TOLUENE (UG/L)	ETHYL-BENZENE (UG/L)	XYLENES (UG/L)	MTBE (UG/L)
RS-7	7/90				5600000	24000	210000	50000	740000	
RS-7	2/91		FLOATING PRODUCT							
RS-7	6/91		FLOATING PRODUCT							
RS-7	9/91		FLOATING PRODUCT							
RS-7	12/91				270000	11000	22000	2000	13000	
RS-7	11/09/92	67.88	4.62	63.26	81000	12000	16000	1900	13000	
RS-7	04/07/94	67.88	4.03	63.85	74000	16000	16000	1400	8500	
RS-7	06/19/94	195.92	4.07	191.85	83000	22000	19000	1500	9500	
RS-7	09/17/94	195.92	4.05	191.87	270000	13000	15000	2100	1100	
RS-7	03/12/95	195.92	3.72	192.2	35000	5100	560	6300	3600	
RS-7	10/04/95	199.35	4.03	195.32	96000	14000	14000	1300	7000	
RS-7	12/21/95	199.35	3.95	195.4	70000	9300	12000	860	5600	210
RS-7	03/27/96	199.35	3.80	195.55	64000	8900	14000	1100	8300	< 3000
RS-7	06/11/96	199.35	3.79	195.56	65000	12000	17000	1600	9700	<5000
RS-7	09/04/96	199.35	3.99	195.36	20000	4900	2100	670	4400	100
RS-7	12/11/96	199.35	3.78	195.57	17000	4400	7500	570	4600	180
RS-7	2/21/97	199.35	3.82	195.53	93000	31000	47000	3800	23000	<0.5*
RS-7	5/28/97	199.35	3.82	195.53	52000	12000	8200	2000	11000	<0.5*
RS-7	9/2/97	199.35	3.96	195.39	28000	6100	2800	950	3800	<50
RS-7	11/24/97	199.35	3.76	195.59	18000	4300	5900	600	2900	<0.5*
RS-7	2/25/98	199.35	3.70	195.65	13000	4300	7100	1100	5800	<0.5*
RS-7**	7/8/98	199.35	3.76	195.59	45000	10000	3400	2000	8000	<10*
RS-7	7/30/98	199.35			72000	12000	2100	2000	9100	
RS-7	9/16/98	199.35	3.83	195.52	5000	6500	160	<2.5	500	<5*
RS-7	11/24/98	199.35	3.77	195.58	19000	2100	1100	500	2100	<0.5
RS-7	2/23/99	199.35	3.70	195.65	83000	6500	9900	1200	7000	<10
RS-7	5/5/99	199.35	3.88	195.47	47000	7400	4800	1300	7400	540
RS-7***	8/26/99	195.99	4.16	191.83	15000	3400	91	950	970	<5

RS-7 Groundwater Elevation



RS-7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03/27/96
09/04/96
2/21/97
9/2/97
2/25/98
7/30/98
11/24/98
5/5/99
Date
BENZENE

TABLE 1
GROUNDWATER ELEVATIONS AND CERTIFIED ANALYTICAL LABAORATAORY RESULTS FROM WATER SAMPLES
DESERT PETROLEUM, INC. SITE #793
4035 PARK BOULEVARD, OAKLAND, CALIFORNIA

ID#	(All concentrations in parts per billion [ug/L, ppb]) (AMSL = Above mean sea level)										
	DATE SAMPLED	WELL CASING ELEVATION (FEET AMSL)	DEPTH TO GROUND WATER (FEET)	GROUND WATER ELEVATION (FEET AMSL)		TPH-G (UG/L)	BENZENE (UG/L)	TOLUENE (UG/L)	ETHYL-BENZENE (UG/L)	XYLENES (UG/L)	MTBE (UG/L)
RS-8***	8/26/99	214.67	7.25	207.42		160000	24000	35000	4200	24000	<5
RS-9***	8/26/99	195.63	7.46	188.17		17000	3500	1200	360	1600	180*
RS-10***	8/26/99	208.46	3.76	204.7		5100	160	340	190	1000	32*

TABLE 1
GROUNDWATER ELEVATIONS AND CERTIFIED ANALYTICAL LABAORATAORY RESULTS FROM WATER SAMPLES
DESERT PETROLEUM, INC. SITE #793
4035 PARK BOULEVARD, OAKLAND, CALIFORNIA

ID#	(All concentrations in parts per billion [ug/L, ppb]) (AMSL = Above mean sea level)										
	DATE SAMPLED	WELL CASING ELEVATION (FEET AMSL)	DEPTH TO GROUND WATER (FEET)	GROUND WATER ELEVATION (FEET AMSL)		TPH-G (UG/L)	BENZENE (UG/L)	TOLUENE (UG/L)	ETHYL-BENZENE (UG/L)	XYLENES (UG/L)	MTBE (UG/L)
RECOVERY 1	09/04/96	230.73	15.00	215.73		1800	1100	3	29	< 10	< 30
RECOVERY 1	12/11/96	230.73	10.30	220.43		<50	<0.5	< 0.5	< 0.5	< 1	4
RECOVERY 1	2/21/97	230.73	11.88	218.85		2500	670	9	3	13	<0.5*
RECOVERY 1	5/28/97	230.73	14.03	216.7		24000	4300	36	2000	370	<0.5*
RECOVERY 1	9/2/97	230.73	14.98	215.75		4400	320	6	340	72	20
RECOVERY 1	11/24/97	230.73	14.06	216.67		100	39	1	18	10	<0.5
RECOVERY 1	2/25/98	230.73	8.93	221.8		1200	400	8	13	150	<0.5
RECOVERY 1	7/8/98	230.73	11.36	219.37		68	14	< 0.5	< 0.5	< 1	<1*
RECOVERY 1	9/16/98	230.73	13.30	217.43		16000	3400	92	< 0.5	410	<1*
RECOVERY 1	11/24/98	230.73	10.72	220.01		340	19	1.6	35	9.7	<0.5
RECOVERY 1	2/23/99	230.73	9.34	221.39		60	16	0.6	5.6	1.2	<0.5
RECOVERY 1	5/5/99	230.73	11.30	219.43		1300	290	3	150	1	15
RECOVERY 1***	**8/26/99**	227.69	13.97	213.72		6500	630	<0.5	1300	<1	<1

R-1 Groundwater Elevation

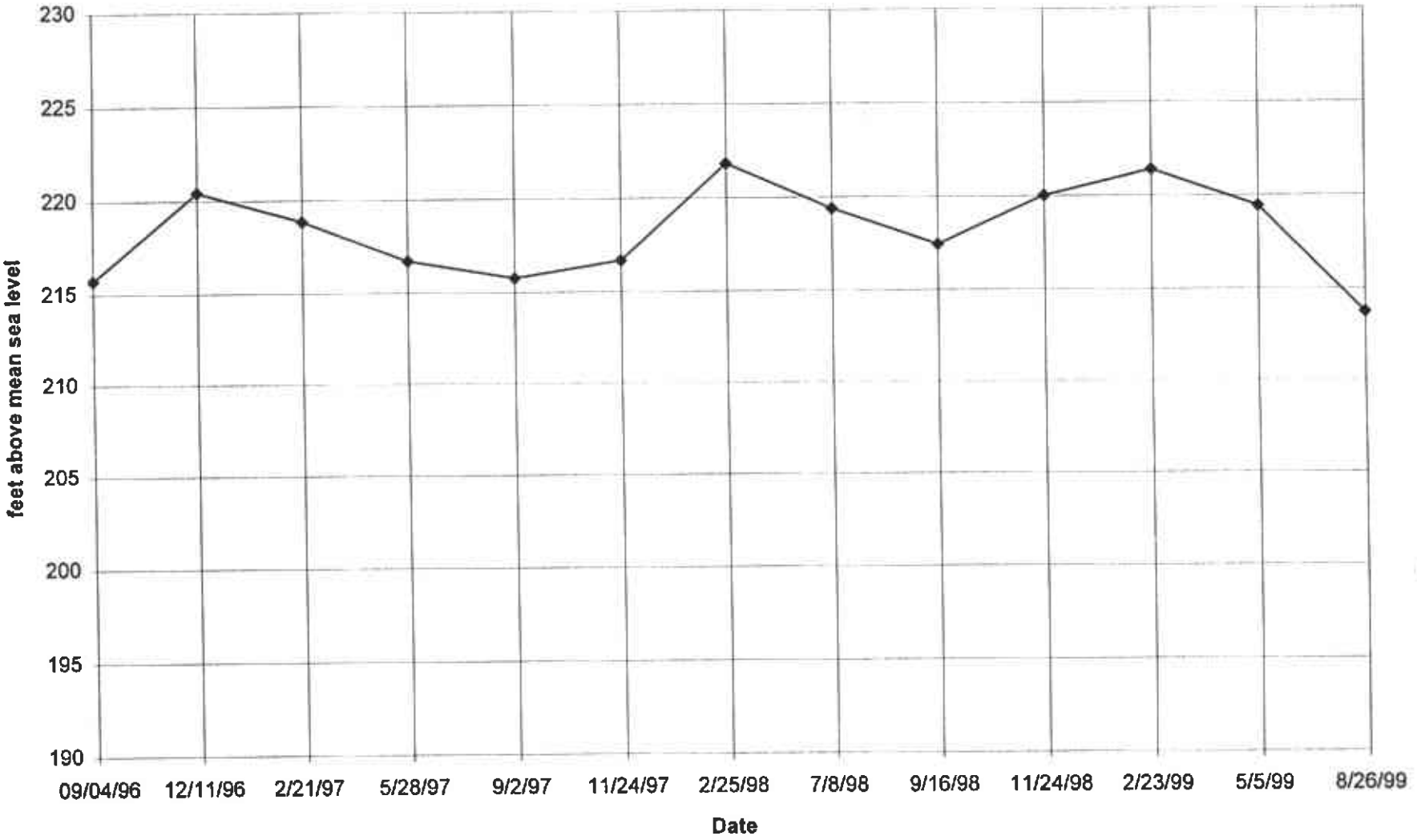
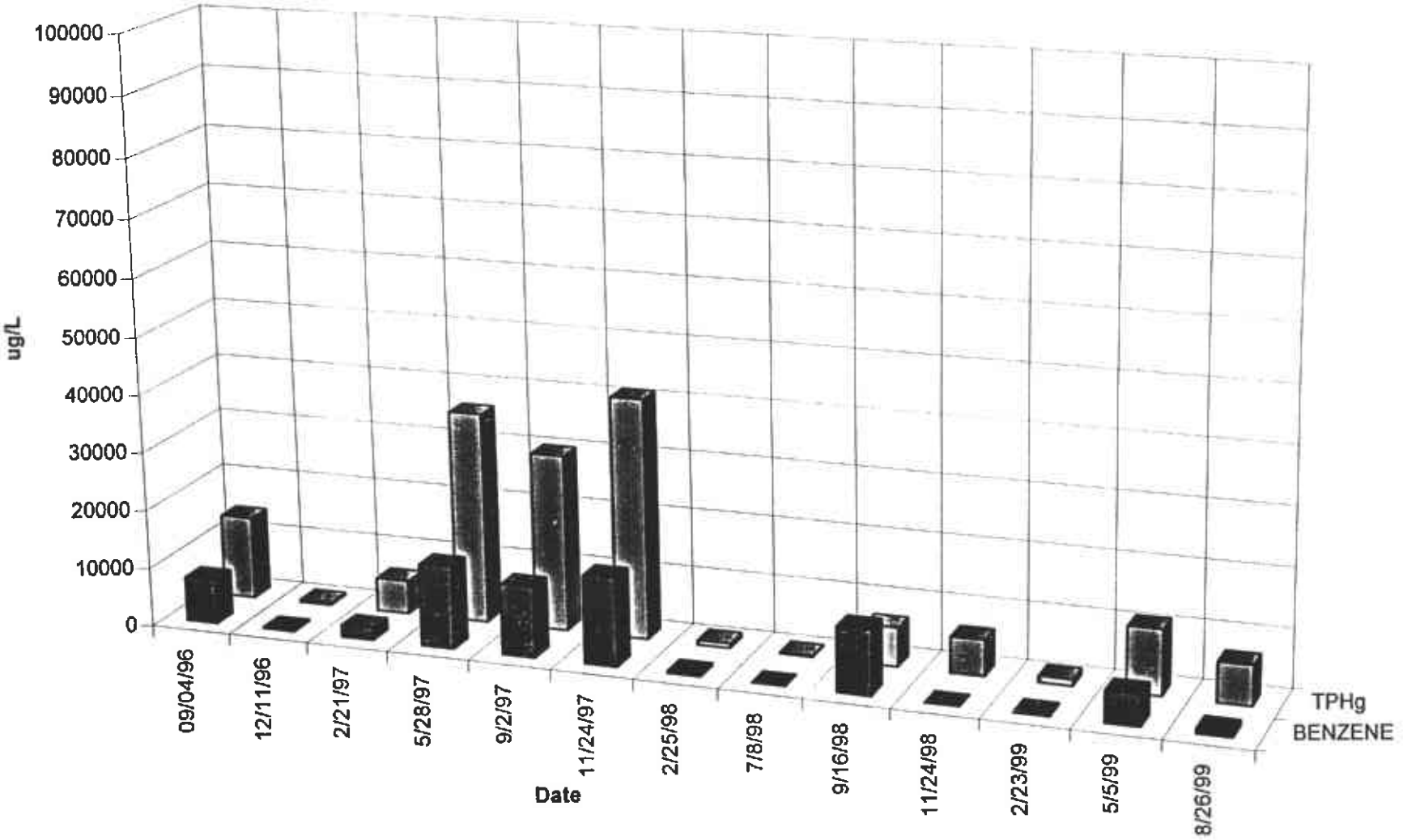


TABLE 1
GROUNDWATER ELEVATIONS AND CERTIFIED ANALYTICAL LABAORATAORY RESULTS FROM WATER SAMPLES
DESERT PETROLEUM, INC. SITE #793
4035 PARK BOULEVARD, OAKLAND, CALIFORNIA

ID#	(All concentrations in parts per billion [ug/L, ppb]) (AMSL = Above mean sea level)										
	DATE SAMPLED	WELL CASING ELEVATION (FEET AMSL)	DEPTH TO GROUND WATER (FEET)	GROUND WATER ELEVATION (FEET AMSL)		TPH-G (UG/L)	BENZENE (UG/L)	TOLUENE (UG/L)	ETHYL-BENZENE (UG/L)	XYLENES (UG/L)	MTBE (UG/L)
RECOVERY 2	09/04/96	230.68	13.44	217.24		14000	7600	<10	170	190	<100
RECOVERY 2	12/11/96	230.68	12.42	218.26		488	300	1	< 0.5	30	16
RECOVERY 2	2/21/97	230.68	10.50	220.18		5700	2100	5	2	10	3*
RECOVERY 2	5/28/97	230.68	13.10	217.58		36000	14000	63	260	220	<0.5*
RECOVERY 2	9/2/97	230.68	14.16	216.52		30000	12000	330	1000	790	47
RECOVERY 2	11/24/97	230.68	14.71	215.97		41000	15000	830	1500	4200	<0.5*
RECOVERY 2	2/25/98	230.68	7.39	223.29		800	400	<0.5	<0.5	15	<0.5*
RECOVERY 2	7/8/98	230.68	11.27	219.41		290	31	< 0.5	1	< 1	2*
RECOVERY 2	9/16/98	230.68	13.73	216.95		6600	11000	24	<0.5	35	<1*
RECOVERY 2	11/24/98	230.68	11.67	219.01		6100	<0.5	36	<0.5	21	<0.5
RECOVERY 2	2/23/99	230.68	7.55	223.13		1100	310	3	2	26	<0.5
RECOVERY 2	5/5/99	230.68	10.89	219.79		11000	5300	7	36	7	8
RECOVERY 2***	8/26/99	227.28	13.14	214.14		6700	940	33	190	240	<1*

R-2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Date
TPHg
BENZENE

R-2 Groundwater Elevation

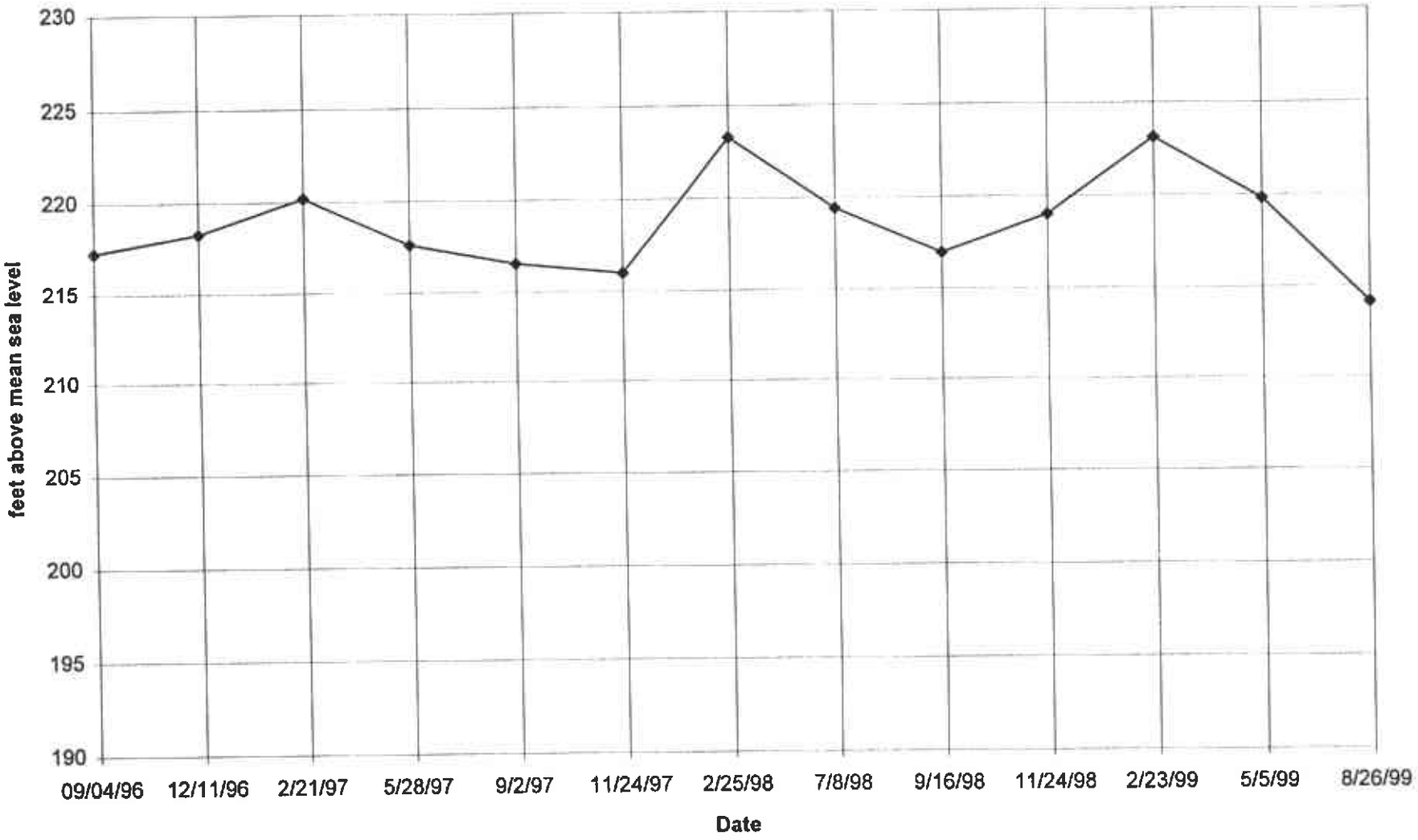


TABLE 1
GROUNDWATER ELEVATIONS AND CERTIFIED ANALYTICAL LABAORATAORY RESULTS FROM WATER SAMPLES
DESERT PETROLEUM, INC. SITE #793
4035 PARK BOULEVARD, OAKLAND, CALIFORNIA

ID#	(All concentrations in parts per billion [ug/L, ppb]) (AMSL = Above mean sea level)										
	DATE SAMPLED	WELL CASING ELEVATION (FEET AMSL)	DEPTH TO GROUND WATER (FEET)	GROUND WATER ELEVATION (FEET AMSL)		TPH-G (UG/L)	BENZENE (UG/L)	TOLUENE (UG/L)	ETHYL-BENZENE (UG/L)	XYLENES (UG/L)	MTBE (UG/L)
RECOVERY 3	09/04/96	230.32	9.90	220.42		<50	<0.5	<0.5	<0.5	<2	<5
RECOVERY 3	12/11/96	230.32	8.18	222.14		<50	<0.5	<0.5	<0.5	<1	5
RECOVERY 3	2/21/97	230.32	6.76	223.56		340	35	59	8	54	<0.5*
RECOVERY 3	5/28/97	230.32	9.98	220.34		<50	<0.5	<0.5	<0.5	<1	<0.5*
RECOVERY 3	9/2/97	230.32	10.86	219.46		<50	4	<0.5	<0.5	<1	<0.5*
RECOVERY 3	11/24/97	230.32	11.20	219.12	not enough water to sample. No sample						
RECOVERY 3	2/25/98	230.32	3.42	226.9		<50	<0.5	<0.5	<0.5	<1	<0.5*
RECOVERY 3	7/8/98	230.32	8.78	221.54		140	<0.5	<0.5	4	24	<1*
RECOVERY 3	9/16/98	230.32	10.38	219.94		<50	<0.5	<0.5	<0.5	<1	<1*
RECOVERY 3	11/24/98	230.32	11.12	219.2	not enough water to sample. No sample						
RECOVERY 3	2/23/99	230.32	3.95	226.37		<50	<0.5	<0.5	<0.5	<1	<0.5*
RECOVERY 3	5/5/99	230.32	7.58	222.74		80	9	<0.5	<0.5	<1	6
RECOVERY 3***	8/26/99	227.25	10.76	216.49		<50	2	<0.5	<0.5	<1	1*

R-3 Groundwater Elevation

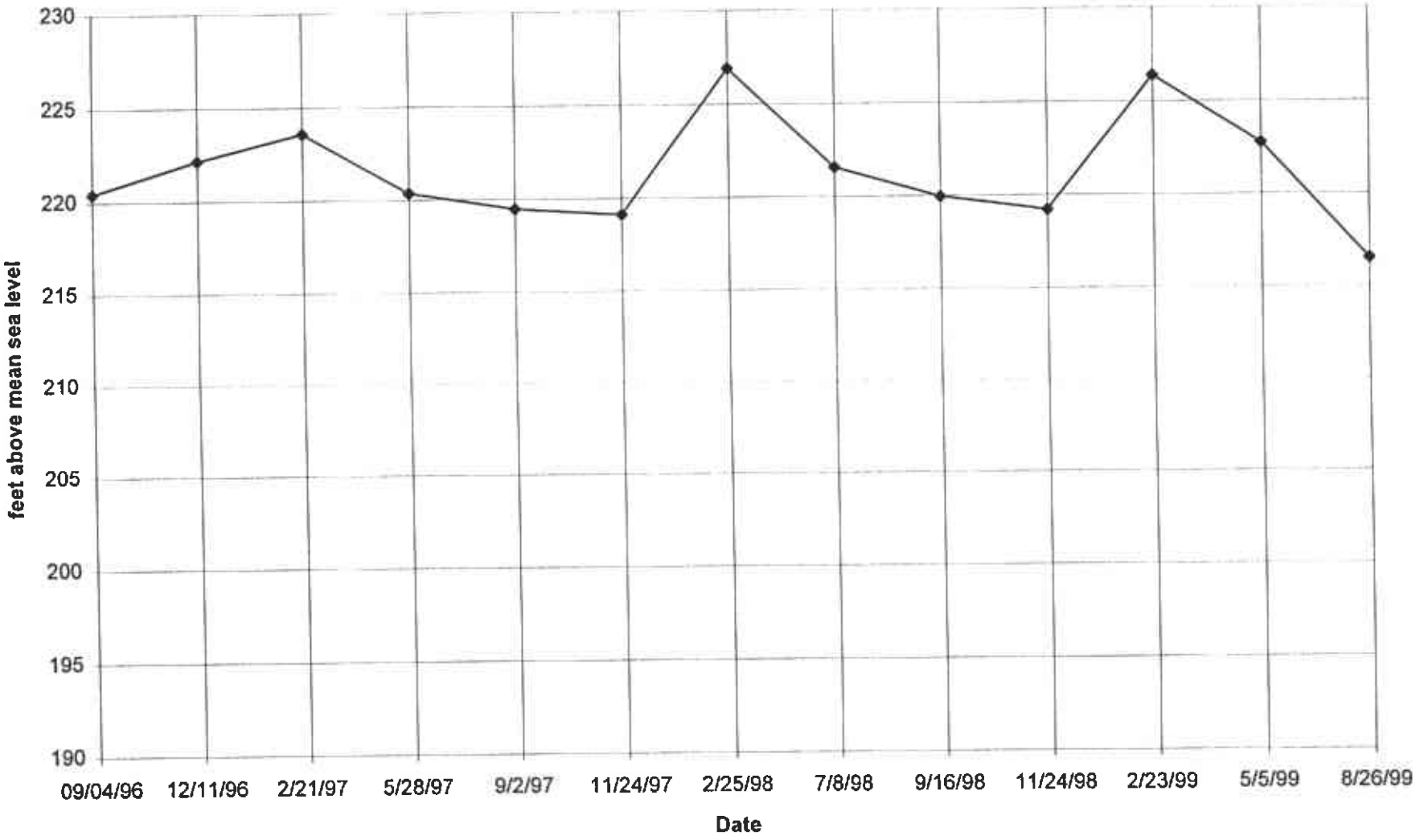


TABLE 1
GROUNDWATER ELEVATIONS AND CERTIFIED ANALYTICAL LABAORATAORY RESULTS FROM WATER SAMPLES
DESERT PETROLEUM, INC. SITE #793
4035 PARK BOULEVARD, OAKLAND, CALIFORNIA

ID#	(All concentrations in parts per billion [ug/L, ppb]) (AMSL = Above mean sea level) DATE SAMPLED	WELL CASING ELEVATION (FEET AMSL)	DEPTH TO GROUND WATER (FEET)	GROUND WATER ELEVATION (FEET AMSL)		TPH-G (UG/L)	BENZENE (UG/L)	TOLUENE (UG/L)	ETHYL-BENZENE (UG/L)	XYLENES (UG/L)	MTBE (UG/L)
T 1***	8/26/99	195.11	2.44	192.67		40000	7200	5000	950	8100	53*
T 2***	8/26/99	195.3	CAR								
T 3***	8/26/99	202.38	CAR								
T 4***	8/26/99	197.48	CAR								
LF-1***	8/26/99	226.59	CAR								

ND BELOW LABORATORY DETECTION LIMITS
TPH-G TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
* MTBE results confirmed by EPA Method 8260 (GC/MS)
** LAB REPORT HAD RS-6 AND RS-7 MISLABELED, RESAMPLE ON 7/30/98 CONFIRMED.
*** WELL CASING ELEVATION SURVEY 8-27-99, WADE HAMMOND No.6163,BENCH MARK CITY OF OAKLAND #2814

TABLE 2
SOIL SAMPLE (CERTIFIED LABORATORY RESULTS)
FORMER DP #793
4035 PARK BLVD., OAKLAND, CALIFORNIA

SAMPLE ID	SAMPLED BY	DATE SAMPLED	DEPTH SAMPLED BELOW SURFACE IN FEET	EPA METHOD 8020 TPHg mg/Kg	BENZENE mg/Kg	TOLUENE mg/Kg	ETHYL-BENZENE mg/Kg	XYLENES mg/Kg	MTBE mg/Kg	TOC mg/Kg
SOIL BORINGS/MONITOR WELLS INSTALLATIONS BY RSI										
RS-1	RSI	12/11/89	5	16	na	na	na	na		
RS-1	RSI	12/11/89	10	33	na	na	na	na		
RS-1	RSI	12/11/89	15	<1	na	na	na	na		
RS-1	RSI	12/11/89	20	<1	<0.003	0.008	<0.003	<0.003		
RS-1	RSI	12/11/89	25	10	0.056	0.12	0.041	0.13		
RS-1	RSI	12/11/89	30	<1	<0.003	0.012	<0.003	<0.003		
RS-2	RSI	12/11/89	5	<1	na	na	na	na		
RS-2	RSI	12/11/89	10	11	na	na	na	na		
RS-2	RSI	12/11/89	15	<1	na	na	na	na		
RS-2	RSI	12/11/89	20	<1	<0.003	0.017	<0.003	<0.003		
RS-3	RSI	12/11/89	5	<1	<0.003	0.043	<0.003	0.008		
RS-3	RSI	12/11/89	10	<1	<0.003	0.02	<0.003	<0.003		
RS-4	RSI	12/12/89	5	50	0.76	3.4	0.74	4.1		
RS-4	RSI	12/12/89	10	8	0.25	0.94	0.17	0.92		
RS-5	RSI	12/12/89	5	<1	na	na	na	na		
RS-5	RSI	12/12/89	10	<1	na	na	na	na		
RS-5	RSI	12/12/89	15	<1	na	na	na	na		
RS-5	RSI	12/12/89	20	530	1.5	8.4	3.9	22		
RS-5	RSI	12/12/89	25	4	0.7	0.42	0.58	0.26		
RS-5	RSI	12/12/89	30	1600	na	na	na	na		
RS-5	RSI	12/12/89	35	<1	na	na	na	na		
RS-5	RSI	12/12/89	40	1	0.036	0.069	0.009	0.043		
RS-6	RSI	12/13/89	5	<1	na	na	na	na		
RS-6	RSI	12/13/89	10	<1	na	na	na	na		
RS-6	RSI	12/13/89	15	<1	na	na	na	na		
RS-6	RSI	12/13/89	20	<1	0.017	0.007	<0.003	0.015		
RS-6	RSI	12/13/89	25	<1	0.009	0.011	<0.003	<0.003		
RS-6	RSI	12/13/89	30	<1	na	na	na	na		
RS-6	RSI	12/13/89	35	<1	0.005	0.007	<0.003	0.006		
RS-7(SB-1)	RSI	12/14/89	STOCKPILE	130	0.46	3.6	1	7.6		
RS-7(SB-2)	RSI	12/14/89	STOCKPILE	370	1.1	13	4.4	29		
SOIL BORINGS ALONG SEWER LATERAL										
DPO-SS1	WWC	7/24/90	3.5	<1	<0.005	<0.005	<0.005	<0.005		
DPO-SS1	WWC	7/24/90	5	<1	0.005	<0.005	<0.005	0.011		
DPO-SB1	WWC	8/21/90	5	390	2.5	17	9.4	47		
DPO-SB2	WWC	8/21/90	5	41	0.31	1.4	0.92	4.4		
DPO-SB2	WWC	8/21/90	10	230	3.5	21	5	43		
DPO-SB2	WWC	8/21/90	15	<1	0.052	0.13	0.019	0.099		
DPO-SB2	WWC	8/21/90	20	<1	0.03	0.033	0.0076	0.03		
DPO-SB3	WWC	9/19/90	15	<1	<0.005	<0.005	<0.005	0.0073		

TABLE 2
SOIL SAMPLE (CERTIFIED LABORATORY RESULTS)
FORMER DP #793
4035 PARK BLVD., OAKLAND, CALIFORNIA

SAMPLE ID	SAMPLED BY	DATE SAMPLED	DEPTH SAMPLED BELOW SURFACE IN FEET	EPA METHOD 8020 TPHg mg/Kg	BENZENE mg/Kg	TOLUENE mg/Kg	ETHYL-BENZENE mg/Kg	XYLENES mg/Kg	MTBE mg/Kg	TOC mg/Kg
SOIL BORINGS AT 4003 AND 4006 BRIGHTON AVENUE										
SB-A	LF	9/8/93	5	<0.2	<0.005	<0.005	<0.005	<0.005		
SB-A	LF	9/8/93	15	<0.2	<0.005	<0.005	<0.005	<0.005		
SB-B	LF	9/8/93	5	<0.2	<0.005	<0.005	<0.005	<0.005		
SB-B	LF	9/8/93	12.5	400	1.7	17	8.2	44		
LF-1	LF	9/9/93	6	<0.2	<0.005	<0.005	<0.005	<0.005		
LF-1	LF	9/9/93	15.5	<0.2	<0.005	<0.005	<0.005	<0.005		
UST AND PIPING REMOVAL DOCUMENTATION SAMPLING										
REGULAR LEADED STEEL UST										
T1A	WEGE	6/23/94	14	2	0.022	0.075	0.03	0.16		
T1B	WEGE	6/23/94	14	<1	0.027	0.028	0.006	0.026		
UNLEADED STEEL UST										
T2A	WEGE	6/23/94	14	<1	0.022	0.027	0.005	0.022		
T2B	WEGE	6/23/94	14	<1	0.017	0.025	0.005	0.02		
UNLEADED FIBERGLASS UST										
T3A	WEGE	6/23/94	14	<1	0.013	0.012	<0.005	<0.015		
T3B	WEGE	6/23/94	14	<1	0.013	0.011	<0.005	<0.015		
WASTE OIL UST										
WO-1	WEGE	6/23/94	7.5	3	0.063	0.34	0.048	0.23		
PRODUCT DISPENSING SYSTEM										
PL-1	WEGE	6/23/94	2.5	<1	0.01	<0.005	<0.005	0.02		
PL-2	WEGE	6/23/94	2.5	<1	0.01	0.031	0.0059	0.032		
OVER-EXCAVATION OF USTs AND PRODUCT DISPENSING AREAS										
SIDEWALLS OF UST EXCAVATION AND SOUTH OF BUILDING										
SWA -13	WEGE	8/8/95	13	3	0.005	0.009	0.046	0.36		
SWB-6	WEGE	8/8/95	6	<1	<0.005	<0.005	<0.005	<0.005		
SWC-13	WEGE	8/8/95	13	3	<0.005	<0.005	<0.005	0.022		
SWD-6	WEGE	8/8/95	6	<1	<0.005	<0.005	<0.005	<0.005		
SWE-11.5	WEGE	8/8/95	11.5	<1	<0.005	<0.005	<0.005	<0.005		
F-14	WEGE	8/8/95	14	3	0.12	0.24	0.053	0.29		
G-17	WEGE	8/8/95	17	6	0.16	0.31	0.11	0.68		
H-SW-BOT-16	WEGE	8/10/95	16	1000	3.6	31	14	77		
I-SW BUILD 8	WEGE	8/10/95	8	2000	4.5	35	18	130		
J-BOT WEST	WEGE	8/11/95	13	<1	<0.005	<0.005	<0.005	<0.005		
K-SW WEST 8	WEGE	8/11/95	8	<1	<0.005	<0.005	<0.005	0.005		
SIDEWALLS AND BASE OF EXCAVATION SOUTH OF PUMP ISLANDS AND DISPENSER AREAS										
PI-1	WEGE	8/14/95	12	<1	<0.005	<0.005	<0.005	<0.005		
PI-2	WEGE	8/14/95	7	<1	0.011	<0.005	0.005	0.03		
PI-3	WEGE	8/14/95	8	<1	<0.005	<0.005	<0.005	<0.005		
PI-4	WEGE	8/14/95	6	<1	<0.005	<0.005	<0.005	<0.005		

TABLE 2
SOIL SAMPLE (CERTIFIED LABORATORY RESULTS)
FORMER DP #793
4035 PARK BLVD., OAKLAND, CALIFORNIA

SAMPLE ID	SAMPLED BY	DATE SAMPLED	DEPTH SAMPLED BELOW SURFACE IN FEET	EPA METHOD 8020 TPHg mg/Kg	BENZENE mg/Kg	TOLUENE mg/Kg	ETHYL-BENZENE mg/Kg	XYLENES mg/Kg	MTBE mg/Kg	TOC mg/Kg
HYDRAULIC HOIST AREAS										
SLP-7	WEGE	8/16/95	7	na						
SLP-14.5	WEGE	8/16/95	14.5	1200	8.8	25	18	92		
NPL-7	WEGE	8/16/95	7	na						
WASTE OIL UST										
T1-17	WEGE	8/31/95	17	940	2.1	3.3	7.9	33		
EXPLORATORY PIT WEST OF BUILDING										
T2-11.5	WEGE	8/31/95	11.5	<1	<0.005	<0.005	<0.005	<0.005		
T2-17.5	WEGE	8/31/95	17.5	4	0.05	0.07	0.062	0.31		
BORING FOR MONITOR WELL MW1, REPLACED RS-1 WHICH WAS OVER-EXCAVATED.										
MW1-5	WEGE	9/5/95	5	<1	0.005	0.005	<0.005	0.015		
MW1-10	WEGE	9/5/95	10	<1	<0.005	<0.005	<0.005	<0.005		
MW1-15	WEGE	9/5/95	15	<1	<0.005	<0.005	<0.005	<0.005		
MW1-20	WEGE	9/5/95	20	<1	<0.005	<0.005	<0.005	<0.005		
SEWER LATERAL INVESTIGATION										
BH1-5	WEGE	5/1/96	5	<0.2	<0.005	<0.005	<0.005	<0.005		
BH1-10	WEGE	5/1/96	10	31	<0.005	0.16	0.22	0.71		390
BH2-5.5	WEGE	5/2/96	5.5	<0.2	<0.005	<0.005	<0.005	<0.005		2400
BH3-5	WEGE	5/2/96	5	<0.2	<0.005	<0.005	<0.005	<0.005		
BH3-8.5	WEGE	5/2/96	8.5	<0.2	<0.005	<0.005	<0.005	<0.005		
BH3-10.5	WEGE	5/2/96	10.5	<0.2	0.09	<0.005	<0.005	0.021		340
BH4-6.5	WEGE	5/2/96	6.5	<0.2	<0.005	<0.005	<0.005	<0.005		
BH4-8.5	WEGE	5/2/96	8.5	<0.2	<0.005	<0.005	<0.005	<0.005		460
BH5-5	WEGE	5/2/96	5	<0.2	<0.005	<0.005	<0.005	<0.005		
BH5-6.5	WEGE	5/2/96	6.5	<0.2	<0.005	<0.005	<0.005	<0.005		5700
AUGER 1	WEGE	1/17/97	0.9	0.5	<0.005	0.017	<0.005	<0.01	0.14	
AUGER 2	WEGE	1/17/97	7	0.68	0.024	0.032	0.009	0.024	0.07	
AUGER 3	WEGE	1/17/97	4.5	<0.5	<0.005	0.017	<0.005	<0.01	0.085	
ADDITIONAL MONITOR WELLS ALONG SEWER LATERAL										
RS8-10	WEGE	8/2/99	10	160	0.49	0.79	2.6	6.2	<0.005	
RS9-6	WEGE	8/3/99	6	<0.5	<0.005	<0.005	<0.005	<0.01	<0.005	
RS9-10	WEGE	8/3/99	10	67	0.41	2	0.87	4.9	<0.005	
RS10-6	WEGE	8/5/99	6	<0.5	0.005	<0.005	<0.005	<0.01	<0.005	
RS10-9.5	WEGE	8/5/99	9.5	870	11	62	21	120	<0.005	

TABLE 2
SOIL SAMPLE (CERTIFIED LABORATORY RESULTS)
FORMER DP #793
4035 PARK BLVD., OAKLAND, CALIFORNIA

SAMPLE ID	SAMPLED BY	DATE SAMPLED	DEPTH SAMPLED BELOW SURFACE IN FEET	EPA METHOD 8020 TPHg mg/Kg	BENZENE mg/Kg	TOLUENE mg/Kg	ETHYL-BENZENE mg/Kg	XYLENES mg/Kg	MTBE mg/Kg	TOC mg/Kg
RECEPTOR TRENCH DOCUMENTATION SAMPLES										
TRENCH-A-15	WEGE	8/4/99	15	<0.5	0.072	0.011	0.008	0.015	<0.005	
TRENCH-B-10	WEGE	8/4/99	10	140	2	4	2.4	10	<0.005	
TRENCH-C-14	WEGE	8/4/99	14	<0.5	0.009	0.017	0.005	0.031	<0.005	
TRENCH-D-10.5	WEGE	8/5/99	10.5	<0.5	<0.005	0.006	<0.005	0.017	<0.005	
TRENCH-E-5	WEGE	8/5/99	5	4000	17	260	110	580	<0.005	
TRENCH-F-10.5	WEGE	8/5/99	10.5	<0.5	0.064	0.015	0.01	0.046	<0.005	
TRENCH-G-7	WEGE	8/6/99	7	1100	1.4	70	34	180	4.5	
TRENCH-H-10.5	WEGE	8/6/99	10.5	<0.5	<0.005	<0.005	<0.005	0.018	<0.005	
TRENCH-I-5	WEGE	8/6/99	5	<0.5	<0.005	<0.005	<0.005	<0.01	<0.005	
TRENCH-J-10	WEGE	8/6/99	10	<0.5	0.021	0.079	0.011	0.057	<0.005	
TRENCH-K-12.5	WEGE	8/9/99	12.5	<0.5	<0.005	<0.005	<0.005	<0.01	<0.005	
TRENCH-L-10	WEGE	8/9/99	10	<0.5	<0.005	<0.005	<0.005	<0.01	<0.005	
TRENCH-M-6	WEGE	8/12/99	6	<0.5	<0.005	<0.005	<0.005	<0.01	<0.005	
TRENCH-N-8	WEGE	8/12/99	8	<0.5	0.012	0.005	<0.005	0.012	<0.005	
TRENCH-O-10	WEGE	8/12/99	10	<0.5	0.011	<0.005	<0.005	0.011	<0.005	
TRENCH-P-6	WEGE	8/12/99	6	<0.5	0.045	<0.005	<0.005	<0.01	<0.005	

RSI REMEDIATION SERVICE, INT'L
WWC WATERWORKS CORP.
LF LEVINE-FRICKE
WEGE WESTERN GEO-ENGINEERS

< BELOW LABORATORY LOWER DETECTION LIMITS
mg/Kg milligrams per kilogram (parts per million)
TPHg TOTAL PETROLEUM HYDROCARBONS GASOLINE RANGE
MTBE METHYL TERTIARY BUTYL ETHER
TOC Total Organic Carbon

TABLE 3
EXCAVATED SOIL SAMPLE (CERTIFIED LABORATORY RESULTS)
FORMER DP #793
4035 PARK BLVD., OAKLAND, CALIFORNIA

SAMPLE ID	SAMPLED BY	DATE SAMPLED	DEPTH SAMPLED BELOW SURFACE IN FEET	EPA METHOD 8020 TPHg mg/Kg	BENZENE mg/Kg	TOLUENE mg/Kg	ETHYL-BENZENE mg/Kg	XYLENES mg/Kg	MTBE mg/Kg	EPA 8015 DIESEL mg/Kg	EPA 418.1 OIL & GREASE mg/Kg
SOIL BORINGS/MONITOR WELLS INSTALLATIONS BY RSI											
RS-7(SB-1)	RSI	12/14/89	STOCKPILE	130	0.46	3.6	1	7.6			
RS-7(SB-2)	RSI	12/14/89	STOCKPILE	370	1.1	13	4.4	29			
UST AND PIPING REMOVAL EXCAVATED SOIL DOCUMENTATION SAMPLING											
WASTE OIL UST EXCAVATED SOIL											
SP-W	WEGE	6/23/94	1.5	<1	0.009	0.008	<0.005	0.02		<1	1100
SOIL WAS PLACED BACK INTO EXCAVATION AFTER CONCURRENCE WITH ALAMEDA COUNTY HEALTH (MS. JENNIFER EBERLY)											
GASOLINE STORAGE USTs EXCAVATED SOIL											
SP1	WEGE	6/23/94	1.5	110	<0.05	0.46	0.46	4.9			
SP2	WEGE	6/23/94	1.5	200	<0.05	0.22	0.34	3.5			
SP3	WEGE	6/23/94	1.5	170	<0.05	0.08	0.47	2.6			
SP4	WEGE	6/23/94	1.5	68	<0.05	0.13	0.13	1.8			
SP5	WEGE	6/23/94	1.5	110	0.011	0.009	0.14	1.3			
SOIL WAS PLACED BACK INTO EXCAVATION AFTER CONCURRENCE WITH ALAMEDA COUNTY HEALTH (MS. JENNIFER EBERLY)											
PRODUCT LINE EXCAVATED SOIL											
SP6	WEGE	6/23/94	1.5	19	0.006	0.013	0.048	0.51			
SOIL WAS PLACED BACK INTO EXCAVATION AFTER CONCURRENCE WITH ALAMEDA COUNTY HEALTH (MS. JENNIFER EBERLY)											
OVER EXCAVATION OF GASOLINE TAINTED SOILS DISCOVERED DURNG UST REMOVALS											
WASTE OIL UST AREA											
WO A&B	WEGE	7/10/95	1.5								
USTs AND PRODUCT DISPENSING AREAS											
SP1 A&B	WEGE	7/10/95	1.5								
SP2 A&B	WEGE	7/10/95	1.5								
SP3 A&B	WEGE	7/10/95	1.5								
SP4 A&B	WEGE	7/10/95	1.5								
SP5 A&B	WEGE	7/10/95	1.5								
SP6 A&B	WEGE	7/10/95	1.5								
A CALCULATED 700 CUBIC YARDS OF EXCAVATED SOIL WAS REMOVED AND DISPOSED OF AT FORWARD LANDFILL, STOCKTON, CALIRONIA											
RECEPTOR TRENCH DOCUMENTATION SAMPLES											
SOIL PILE 1 A	WEGE	8/6/99	1	COMPOSITE FOUR INTO ONE							
SOIL PILE 1 B	WEGE	8/6/99	1								
SOIL PILE 1 C	WEGE	8/6/99	1	7.9	0.006	0.051	0.064	0.52	<0.005		
SOIL PILE 1 D	WEGE	8/6/99	1								
SOIL PILE 2 A	WEGE	8/13/99	1	COMPOSITE FOUR INTO ONE							
SOIL PILE 2 B	WEGE	8/13/99	1								
SOIL PILE 2 C	WEGE	8/13/99	1	<0.5	0.006	<0.005	<0.005	0.023	<0.005		
SOIL PILE 2 D	WEGE	8/13/99	1								
A CALCULATED 148 CUBIC YARDS OF SOIL WAS REMOVED AND DISPOSED OF AT BJ LANDFILL, VACAVILLE, CALIFORNIA											

mg/L milligrams per liter (parts per million)

WEGE WESTERN GEO-ENGINEERS

< BELOW LABORATORY LOWER DETECTION LIMITS
mg/Kg milligrams per kilogram (parts per million)
TPHg TOTAL PETROLEUM HYDROCARBONS GASOLINE RANGE
MTBE METHYL TERTIARY BUTYL ETHER

SAMPLE ID	EPA 8010	EPA 8270	CAM FIVE METALS TTLC					METALS STLC EPA 6010				
	mg/Kg	mg/Kg	LEAD mg/Kg	CADMIUM mg/Kg	CHROMIUM mg/Kg	NICKEL mg/Kg	ZINC mg/Kg	LEAD mg/L	CADMIUM mg/L	CHROMIUM mg/L	NICKEL mg/L	ZINC mg/L
RS-7(SB-1)												
RS-7(SB-2)												
WASTE OIL UST												
SP-W												
GASOLINE STO												
SP1												
SP2												
SP3												
SP4												
SP5												
PRODUCT LINE												
SP6												
WASTE OIL UST												
WO A&B	<0.0005	<3	130	1.6	46	54	150	6.98	<0.025	0.083	0.81	<10
USTs AND PRO												
SP1 A&B			27					<0.25				
SP2 A&B			32					<0.25				
SP3 A&B			34					<0.25				
SP4 A&B			11					<0.25				
SP5 A&B			10					<0.25				
SP6 A&B			29					<0.25				
A CALCULATED												
SOIL PILE 1 A												
SOIL PILE 1 B												
SOIL PILE 1 C												
SOIL PILE 1 D												
SOIL PILE 2 A												
SOIL PILE 2 B												
SOIL PILE 2 C												
SOIL PILE 2 D												
A CALCULATED												

mg/L milligrams p

WEGE

TABLE 4
GROUNDWATER ELEVATIONS AND NATURAL ATTENUATION INDICES FROM WATER SAMPLES
DESERT PETROLEUM, INC. SITE #793
4035 PARK BOULEVARD, OAKLAND, CALIFORNIA

ID#		FIELD MEASUREMENTS							CERTIFIED LABORATORY RESULTS DISSOLVED IN WATER					
	DATE SAMPLED	GROUND WATER ELEVATION (FEET AMSL)	DISSOLVED OXYGEN O2 (MG/L)	SULFATE SO4 (MG/L)	NITRATE NO3 (MG/L)	FERROUS IRON FE2 (MG/L)	TEMP-ERATURE (F)	pH	TOTAL PETROLEUM HYDROCARBONS GASOLINE (MG/L)	CARBON DI OXIDE CO2 (MG/L)	METHANE CH4 (MG/L)	AEROBIC HYDROCARBON DEGRADING BACTERIA CFU/ML	ORTHO-PHOSPHATE PO4 (MG/L)	AMMONIA as NITROGEN N (MG/L)
MW-1***	8/26/99	218.16	4.9	35	0	0.25	75.4	6.55	<0.05					
	9/2/99	217.92					72.9	8.16		0.13	<0.00001	10	<1	<0.5
RS-2***	8/26/99	215.97	0.7	46	2.7	0.65	80.9	6.97	0.2					
	9/2/99	215.39								nm	nm	nm	nm	nm
RS-5***	8/26/99	211.55	0.7	31	1.3	0.92	71.7	7.08	35					
	9/2/99	211.35					68.4	7.15		0.16	0.00021	3000	<1	<0.5
RS-6***	8/26/99	213.5	1.2	76	0.3	>3.3	77.8	6.66	0.69					
	9/2/99	213.08					69	6.69		0.36	<0.00001	400	<1	<0.5
RS-7***	8/26/99	191.83	0.3	>77	0.8	1.27	73.4	6.99	15					
	9/2/99	191.85								nm	nm	nm	nm	nm
RS-8	8/26/99	207.42	2.6	0	0	0.54	69.2	6.7	160					
	9/2/99	207.29					71.7	5.74		0.058	0.000018	6600	<1	<0.5
RS-9	8/26/99	188.17	2.1	7	0	0.59	73.5	6.95	17					
	9/2/99	188.02					70.9	6.98		0.25	0.0021	10000	<1	<0.5
RS-10	8/26/99	204.7	4.2	nm	nm	nm	70.9	8.03	5.1					
	9/2/99	204.5					73.3	7.24		0.1	0.000037	8800	<1	<0.5
RECOVERY 1***	8/26/99	213.72	0.4	9	0	>3.3	70.6	6.38	6.5					
	9/2/99	213.51								nm	nm	nm	nm	nm
RECOVERY 2***	8/26/99	214.14	0.4	>77	0.8	0.3	72.7	6.65	6.7					
	9/2/99	214.05								nm	nm	nm	nm	nm
RECOVERY 3***	8/26/99	219.56	2.5	>77	0.7	0.05	75	6.95	<0.05					
	9/2/99	219.45								nm	nm	nm	nm	nm
T 1	8/26/99	192.67	0.8	32	0.5	0.03	75.3	7.29	40					
	9/2/99	192.91					78.1	7.57		0.11	0.00019	1300	<1	<0.5

TABLE 4
GROUNDWATER ELEVATIONS AND NATURAL ATTENUATION INDICES FROM WATER SAMPLES
DESERT PETROLEUM, INC. SITE #793
4035 PARK BOULEVARD, OAKLAND, CALIFORNIA

ID#	DATE SAMPLED	FIELD MEASUREMENTS							CERTIFIED LABORATORY RESULTS DISSOLVED IN WATER					
		GROUND WATER ELEVATION (FEET AMSL)	DISSOLVED OXYGEN O2 (MG/L)	SULFATE SO4 (MG/L)	NITRATE NO3 (MG/L)	FERROUS IRON FE2 (MG/L)	TEMP-ERATURE (F)	pH	TOTAL PETROLEUM HYDROCARBONS GASOLINE (MG/L)	CARBON DI OXIDE CO2 (MG/L)	METHANE CH4 (MG/L)	AEROBIC HYDROCARBON DEGRADING BACTERIA CFU/ML	ORTHO-PHOSPHATE PO4 (MG/L)	AMMONIA as NITROGEN N (MG/L)
MW-1***	8/26/99	218.16	4.9	35	0	0.25	75.4	6.55	<0.05					
T 2	8/26/99		nm	nm	nm	nm	nm	nm	NA					
	9/2/99									nm	nm	nm	nm	nm
T 3	8/26/99		nm	nm	nm	nm	nm	nm	NA					
	9/2/99									nm	nm	nm	nm	nm
T 4	8/26/99		nm	nm	nm	nm	nm	nm	NA					
	9/2/99									nm	nm	nm	nm	nm
LF-1	8/26/99		nm	nm	nm	nm	nm	nm	NA					
	9/2/99						nm	nm		nm	nm	nm	nm	nm

*** CAR
nm
MG/L milligrams per liter (ppm)
F degrees Fahrenheit
CFU/ML colony forming units per milliliter
NA Not Analyzed
< below laboratory lower detection limits.

TABLE 5
RECEPTOR TRENCH GROUNDWATER REMOVAL
FORMER DP #793
4035 PARK BLVD., OAKLAND, CALIFORNIA

WELL ID	PURGING BY	DATE PURGED	DEPTH TO TOP OF WATER IN FEET	GALLONS PURGED	ACCUMULATED GALLONS REMOVED	EPA METHOD 8020 TPHg mg/Kg	BENZENE mg/Kg	TOLUENE mg/Kg	ETHYL-BENZENE mg/Kg	XYLENES mg/Kg	MTBE mg/Kg
T1	WEGE	8/9/99	6.47	200	200						
T1	WEGE	8/10/99	5.02	1730	1930						
T1	WEGE	8/11/99	7.89	960	2890						
T1	WEGE	8/12/99	8.12	800	3690						
T1	WEGE	8/13/99	8.87	600	4290						
T1	WEGE	9/2/99	2.2	3600	7890	40	7.2	5	0.95	8.1	0.053 *
T1	WEGE	9/16/99	2.27	5131	13021						
T1	WEGE	9/23/99	4.26	3351	16372						
T1	WEGE	9/30/99	4.69	2786	19158						
T1	WEGE	10/7/99	4.78	293	19451						

mg/L milligrams per liter (parts per million)

WEGE WESTERN GEO-ENGINEERS

< BELOW LABORATORY LOWER DETECTION LIMITS
mg/Kg milligrams per kilogram (parts per million)
TPHg TOTAL PETROLEUM HYDROCARBONS GASOLINE RANGE
MTBE METHYL TERTIARY BUTYL ETHER
* SAMPLED ON AUGUST 26, 1999

-WEGE-

DESERT STATION #793
4035 Park Blvd.
Oakland, California

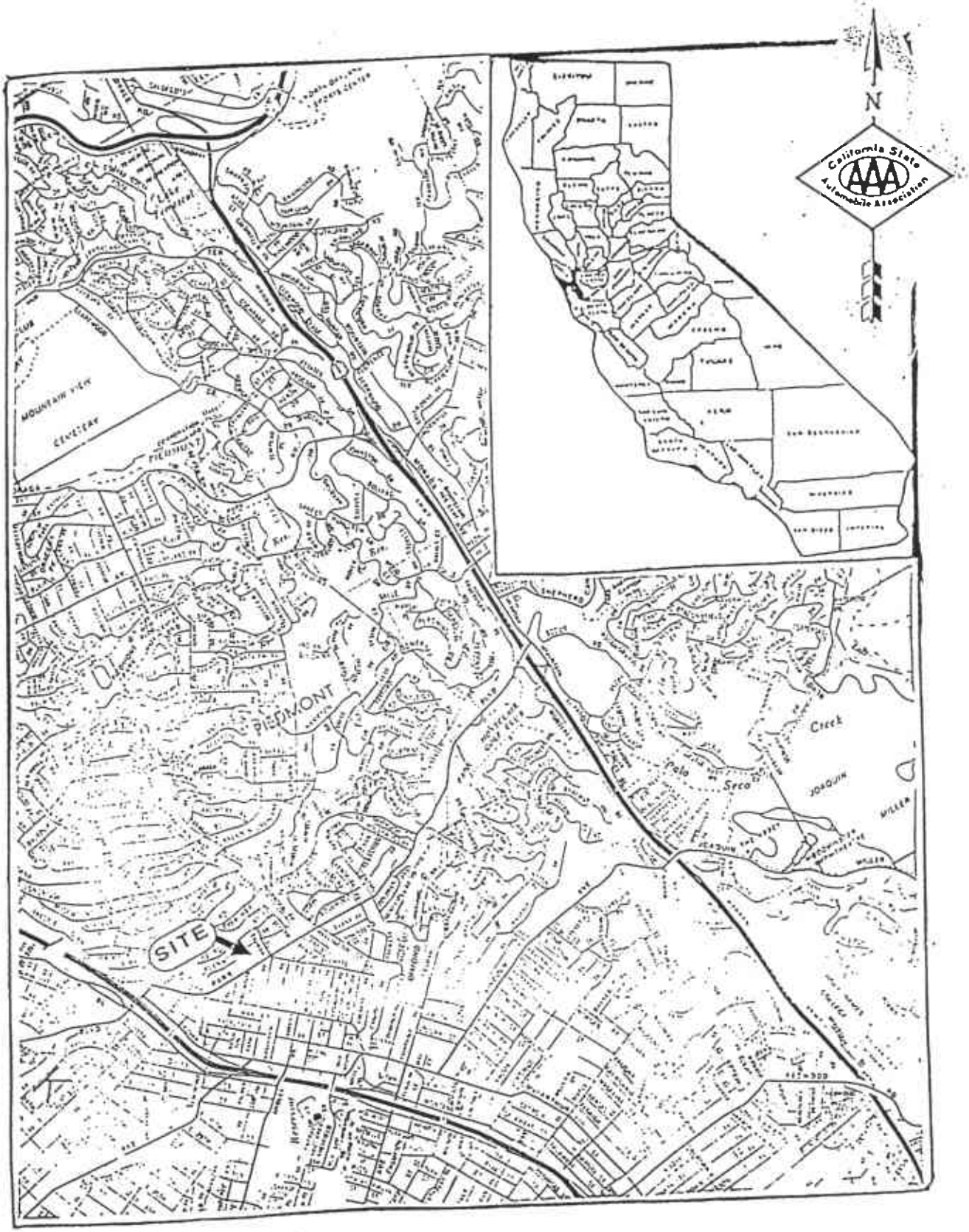


FIGURE 1

Location (AAA Map)

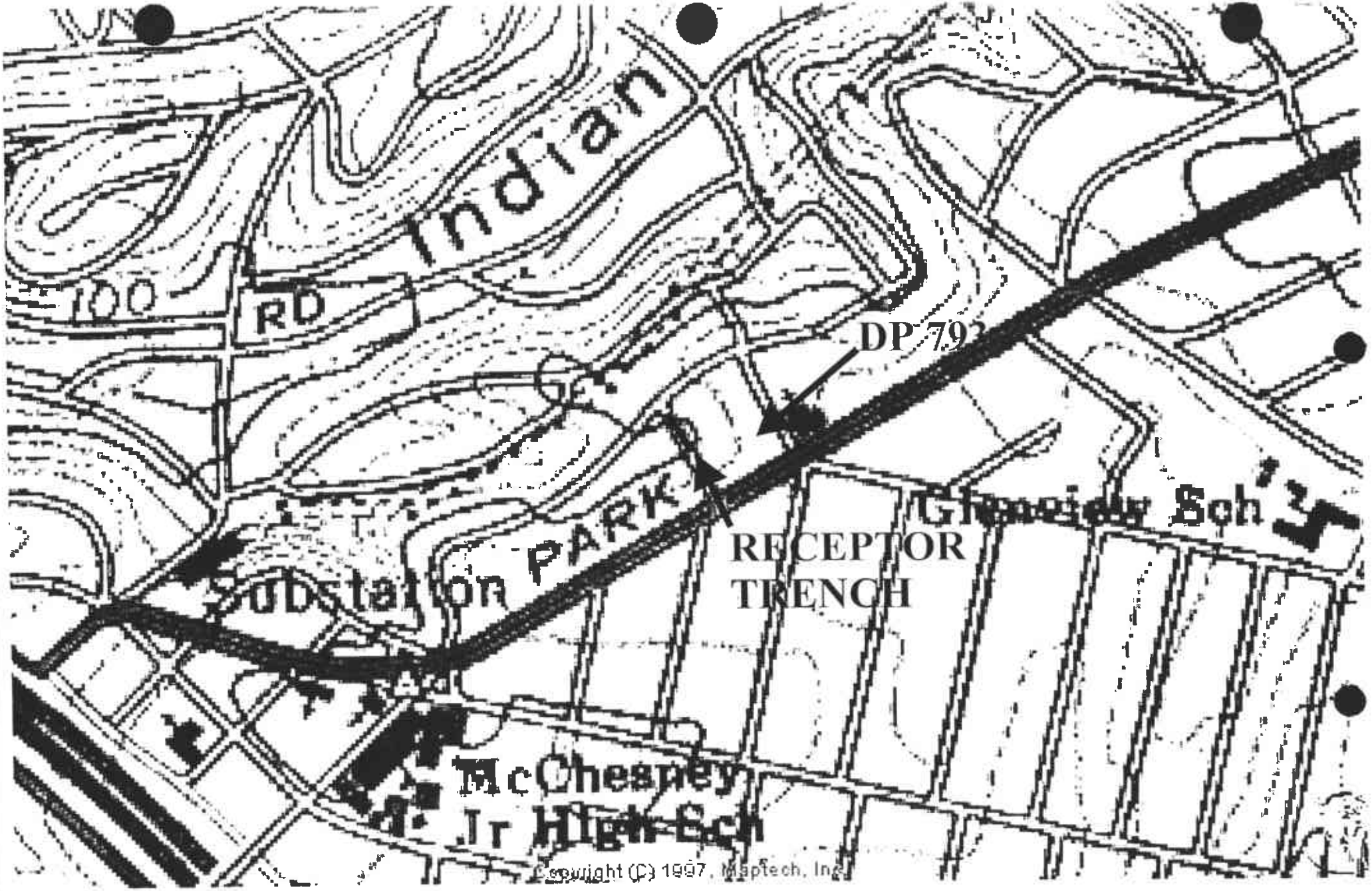


FIGURE 2
PORTION OF OAKLAND EAST 7.5 MINUTE USGS TOPOGRAPHIC MAP

NORTH

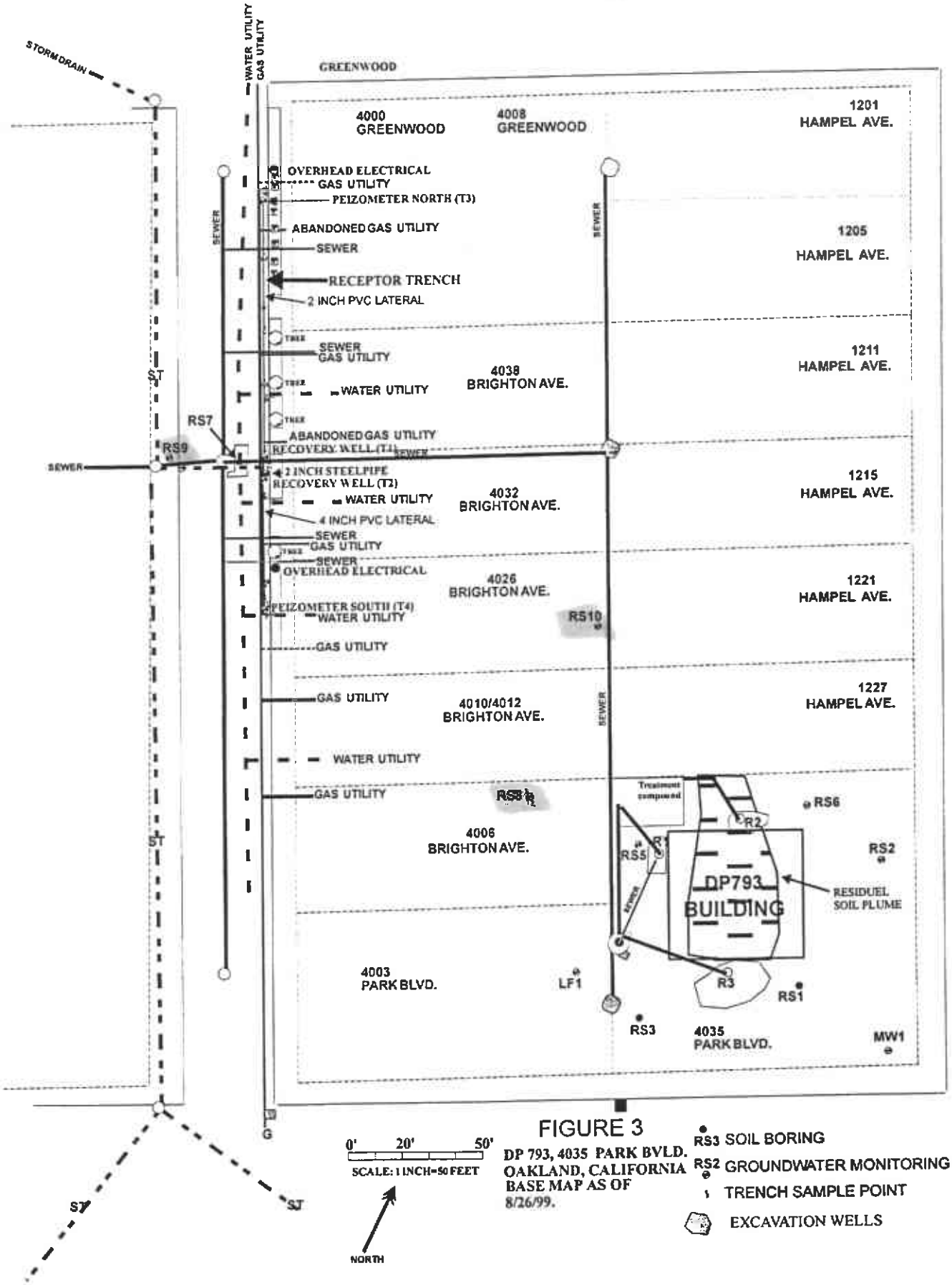


FIGURE 3

DP 793, 4035 PARK BVLD.
OAKLAND, CALIFORNIA
BASE MAP AS OF
8/26/99.

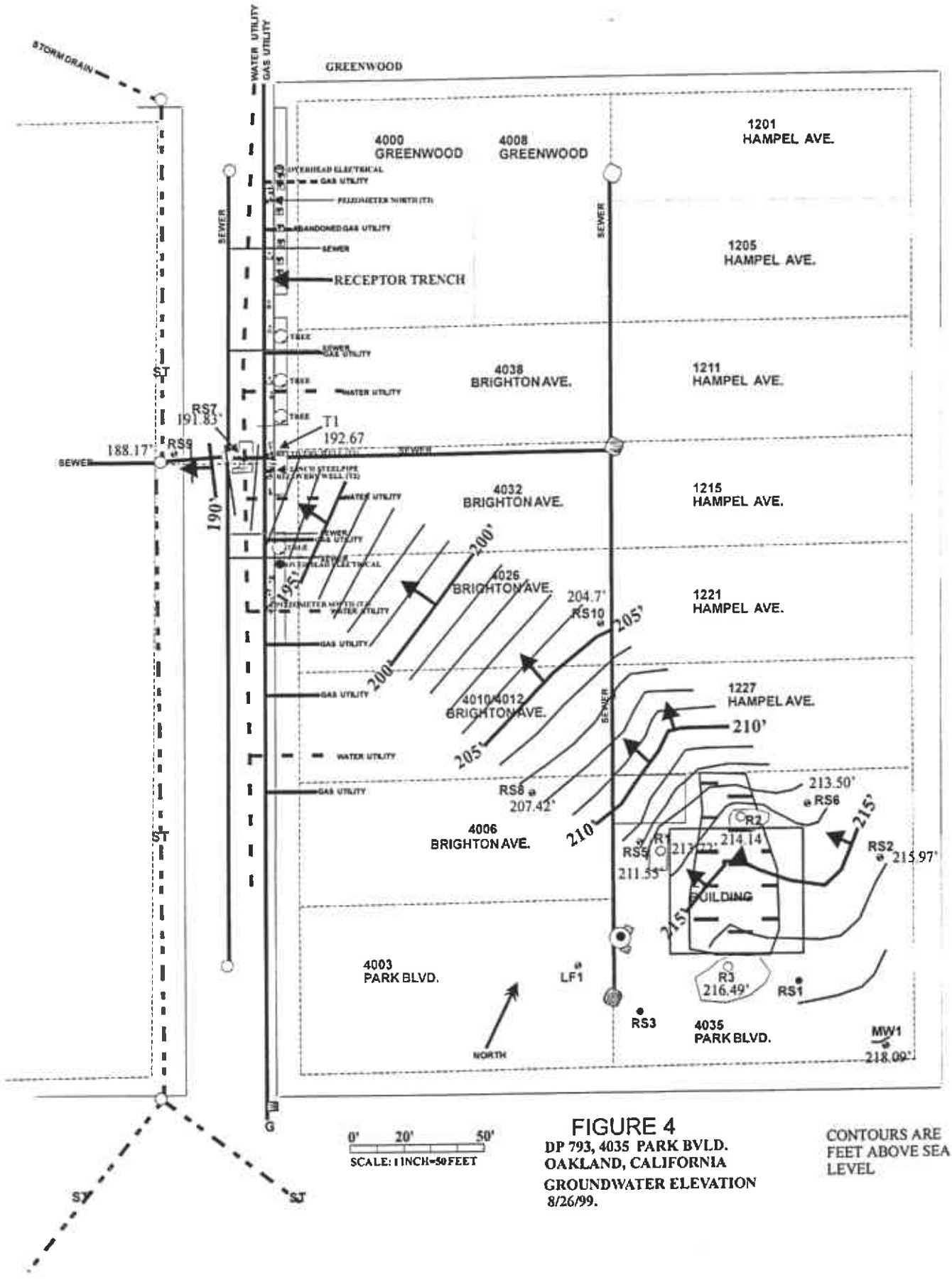


FIGURE 4
DP 793, 4035 PARK BVLD.
OAKLAND, CALIFORNIA
GROUNDWATER ELEVATION
8/26/99.

CONTOURS ARE FEET ABOVE SEA LEVEL

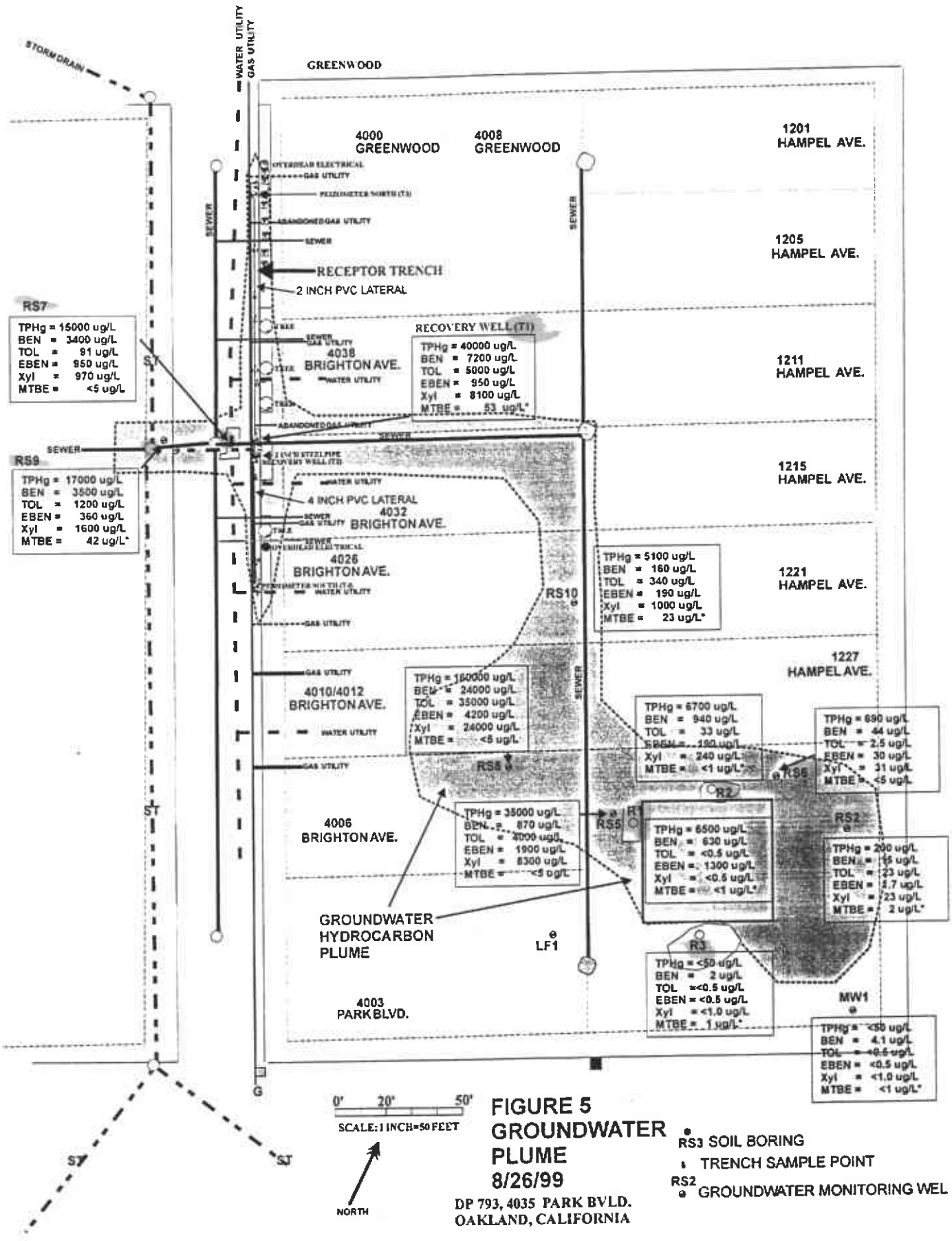


FIGURE 5
GROUNDWATER PLUME
8/26/99

DP 793, 4035 PARK BVLD.
OAKLAND, CALIFORNIA

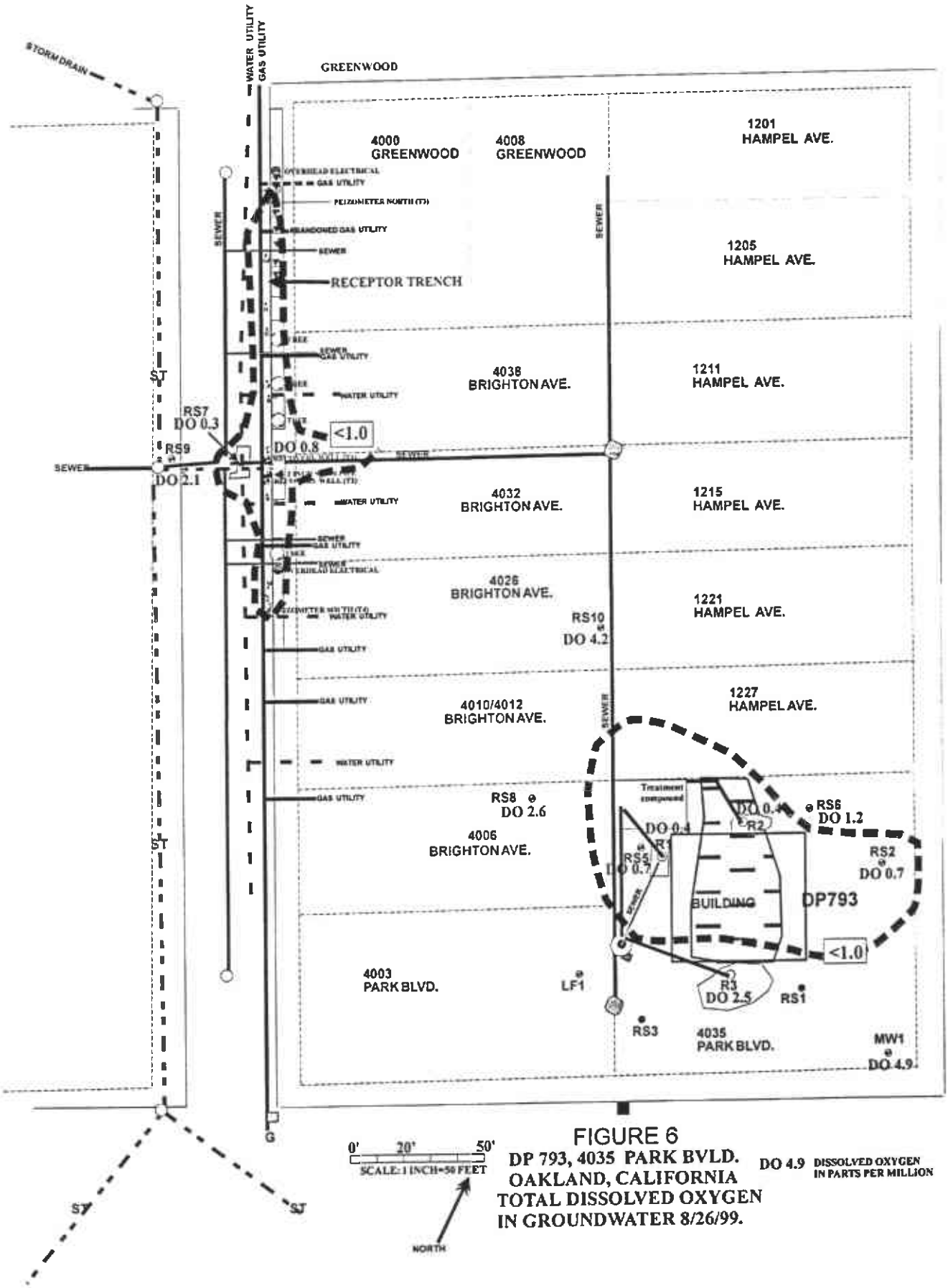


FIGURE 6

DP 793, 4035 PARK BVLD. OAKLAND, CALIFORNIA TOTAL DISSOLVED OXYGEN IN GROUNDWATER 8/26/99.

DO 4.9 DISSOLVED OXYGEN IN PARTS PER MILLION

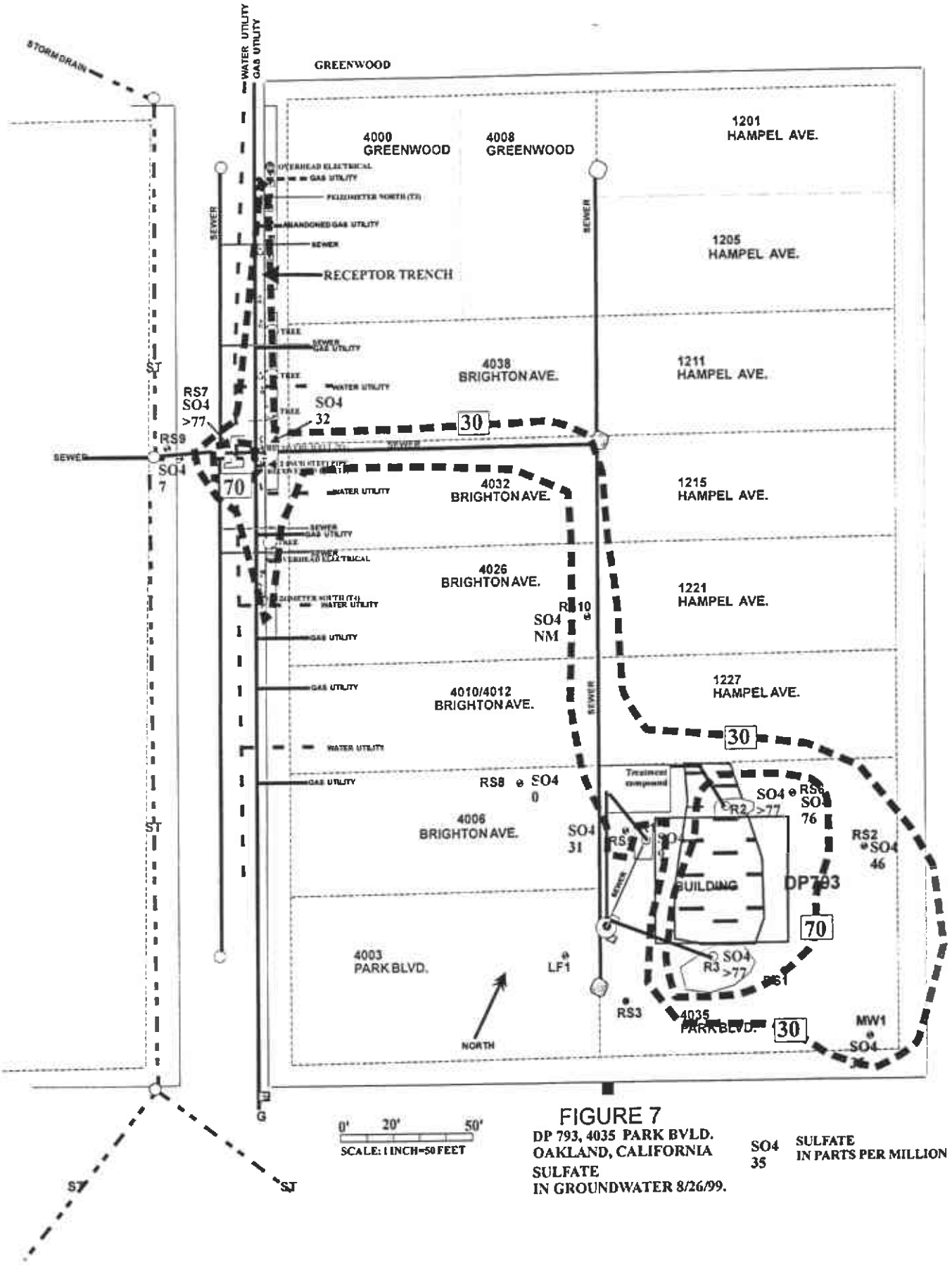


FIGURE 7
DP 793, 4035 PARK BVLD.
OAKLAND, CALIFORNIA
SULFATE
IN GROUNDWATER 8/26/99.

SO4 35 SULFATE IN PARTS PER MILLION

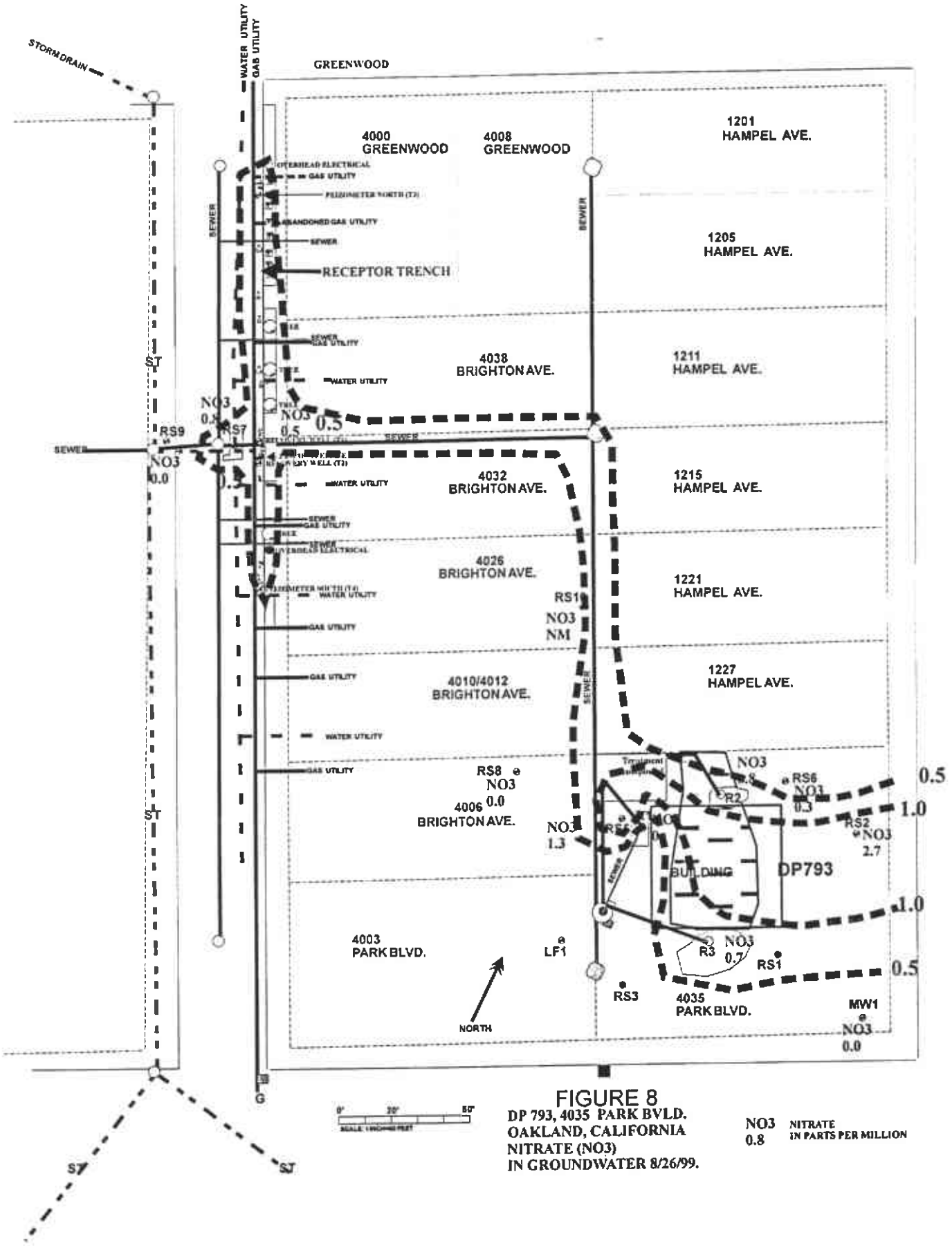


FIGURE 8
DP 793, 4035 PARK BVLD.
OAKLAND, CALIFORNIA
NITRATE (NO3)
IN GROUNDWATER 8/26/99.

NO3 0.8 NITRATE IN PARTS PER MILLION

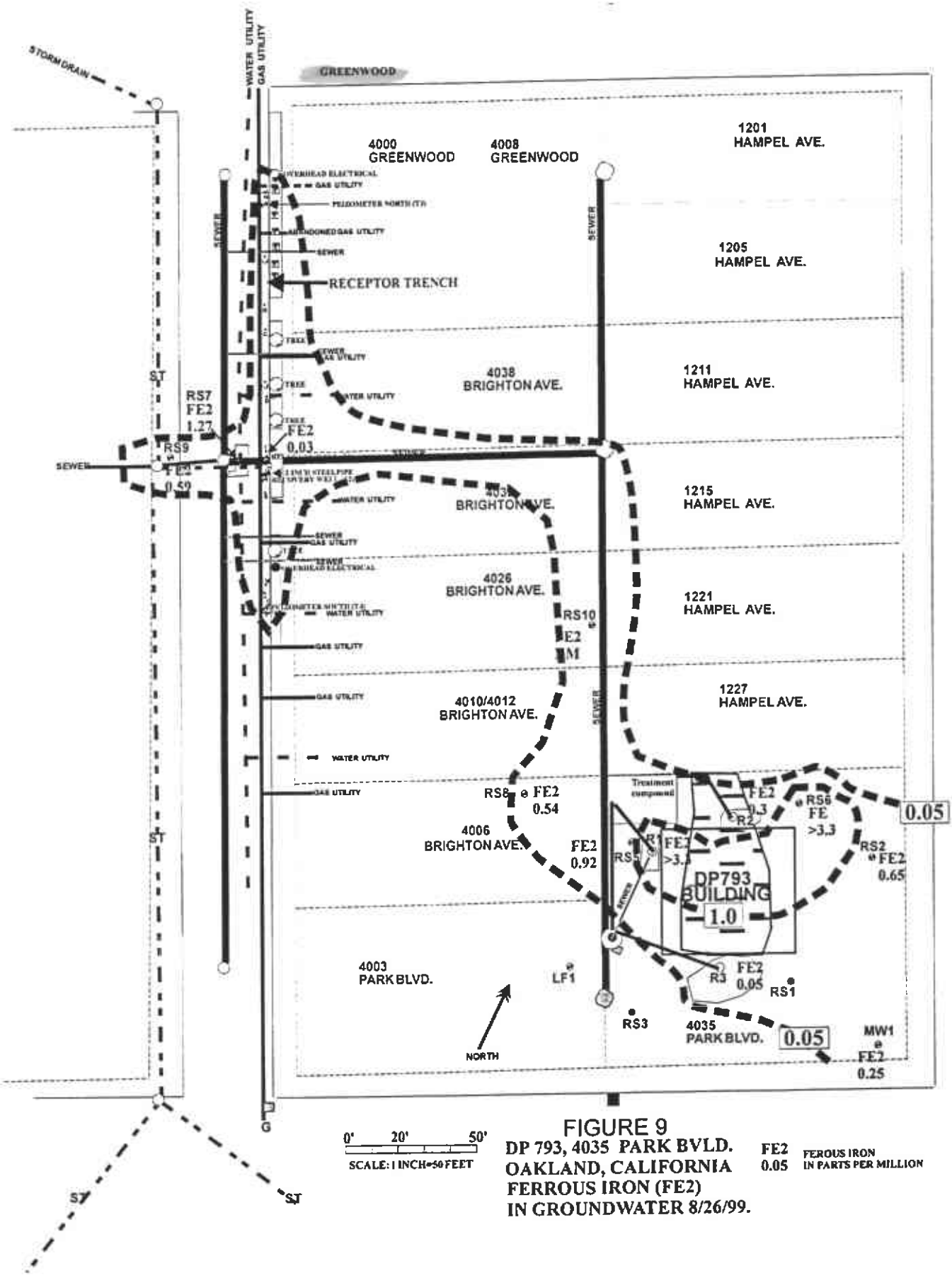
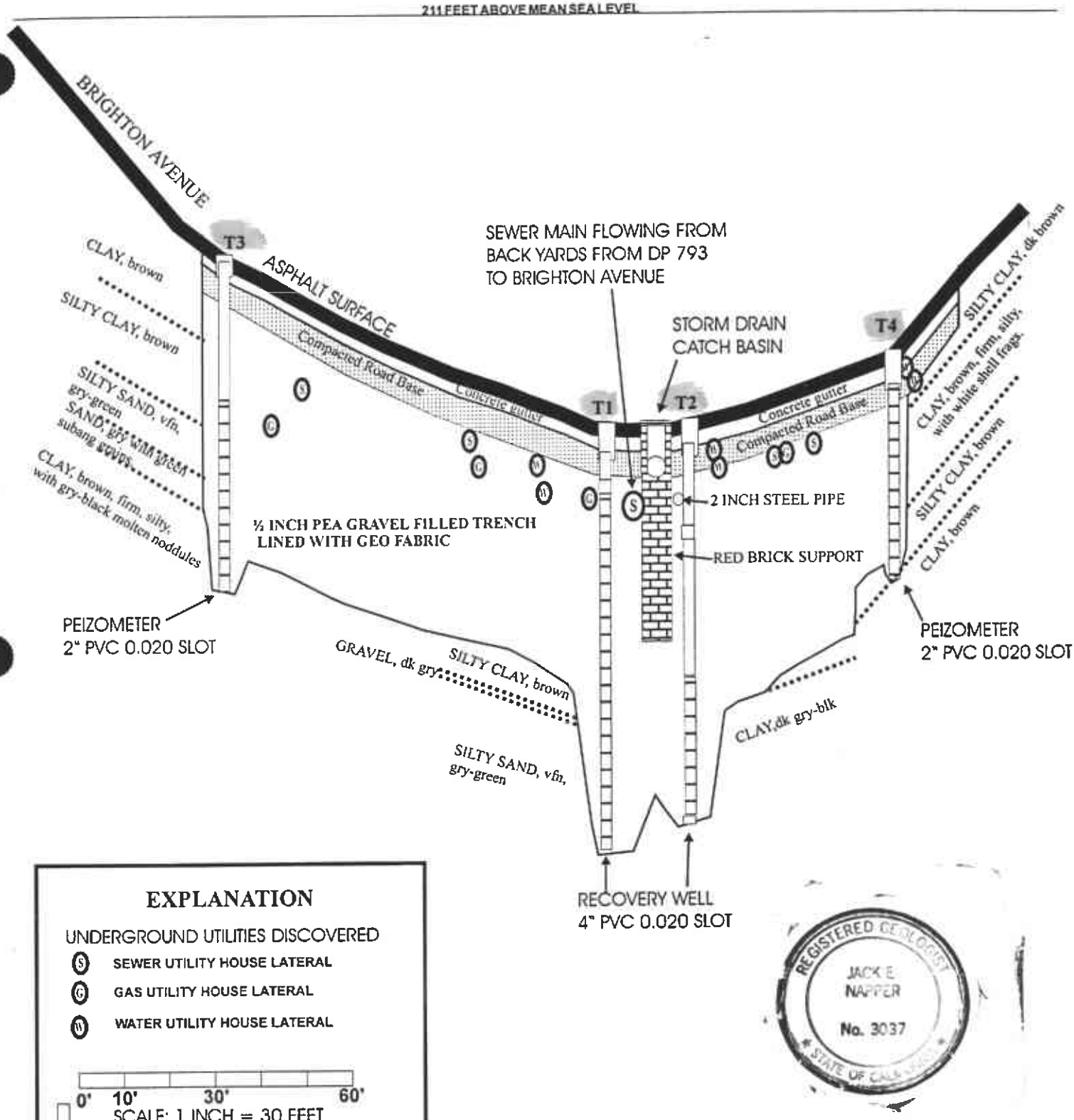


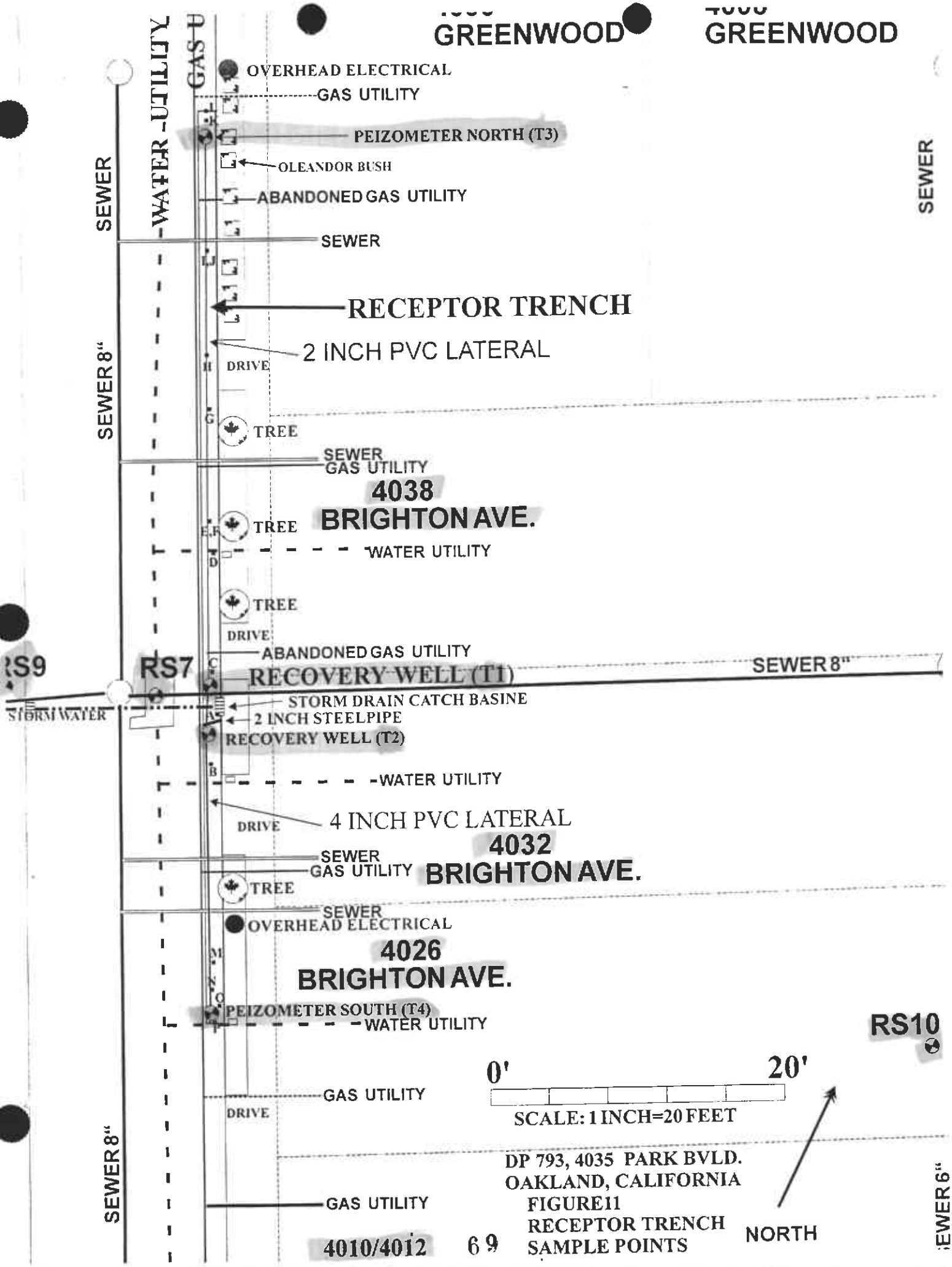
FIGURE 9
DP 793, 4035 PARK BVLD.
OAKLAND, CALIFORNIA
FERROUS IRON (FE2)
IN GROUNDWATER 8/26/99.

FE2 FEROUS IRON
0.05 IN PARTS PER MILLION



REGISTERED GEOLOGIST
JACK E. NAPPER
No. 3037
STATE OF CALIFORNIA

FIGURE 10
CROSS SECTION
AS BUILT RECEPTOR TRENCH
FOR FREE PRODUCT AND GROUNDWATER RECOVERY
DP793, 4035 PARK BLVD.
OAKLAND, CALIFORNIA
SEPTEMBER 9, 1999


GREENWOOD
GREENWOOD
OVERHEAD ELECTRICAL
GAS UTILITY
PEIZOMETER NORTH (T3)
OLEANDOR BUSH
ABANDONED GAS UTILITY
SEWER
WATER -UTILITY
GAS U
SEWER
SEWER
RECEPTOR TRENCH
2 INCH PVC LATERAL
DRIVE
TREE
SEWER
GAS UTILITY
4038
BRIGHTON AVE.
TREE
WATER UTILITY
TREE
DRIVE
ABANDONED GAS UTILITY
RS9
RS7
RECOVERY WELL (T1)
SEWER 8"
STORM DRAIN CATCH BASINE
STORM WATER
2 INCH STEELPIPE
RECOVERY WELL (T2)
WATER UTILITY
DRIVE
4 INCH PVC LATERAL
4032
SEWER
GAS UTILITY
BRIGHTON AVE.
TREE
SEWER
OVERHEAD ELECTRICAL
4026
BRIGHTON AVE.
PEIZOMETER SOUTH (T4)
WATER UTILITY
RS10
0'
20'
GAS UTILITY
DRIVE
SCALE: 1 INCH=20 FEET
SEWER 8"
DP 793, 4035 PARK BVLD.
OAKLAND, CALIFORNIA
FIGURE11
RECEPTOR TRENCH
SAMPLE POINTS
GAS UTILITY
NORTH
4010/4012
SEWER 6"

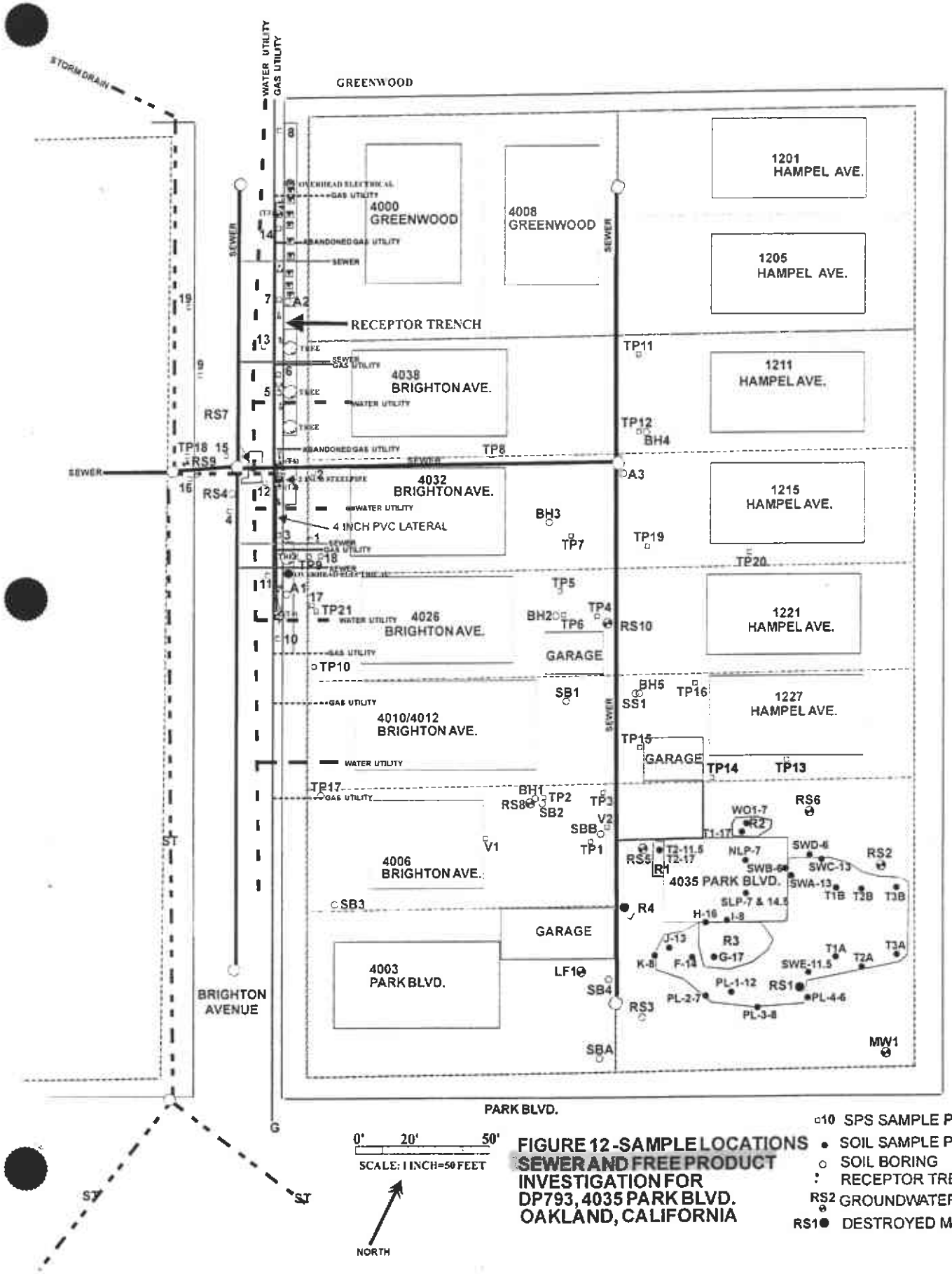


FIGURE 12-SAMPLE LOCATIONS SEWER AND FREE PRODUCT INVESTIGATION FOR DP793, 4035 PARK BLVD. OAKLAND, CALIFORNIA

□10 SPS SAMPLE POINT
• SOIL SAMPLE POINT
○ SOIL BORING
: RECEPTOR TRENCH SAMPLE POI
RS2 GROUNDWATER MONITORING WE
RS1● DESTROYED MONITORING WELL

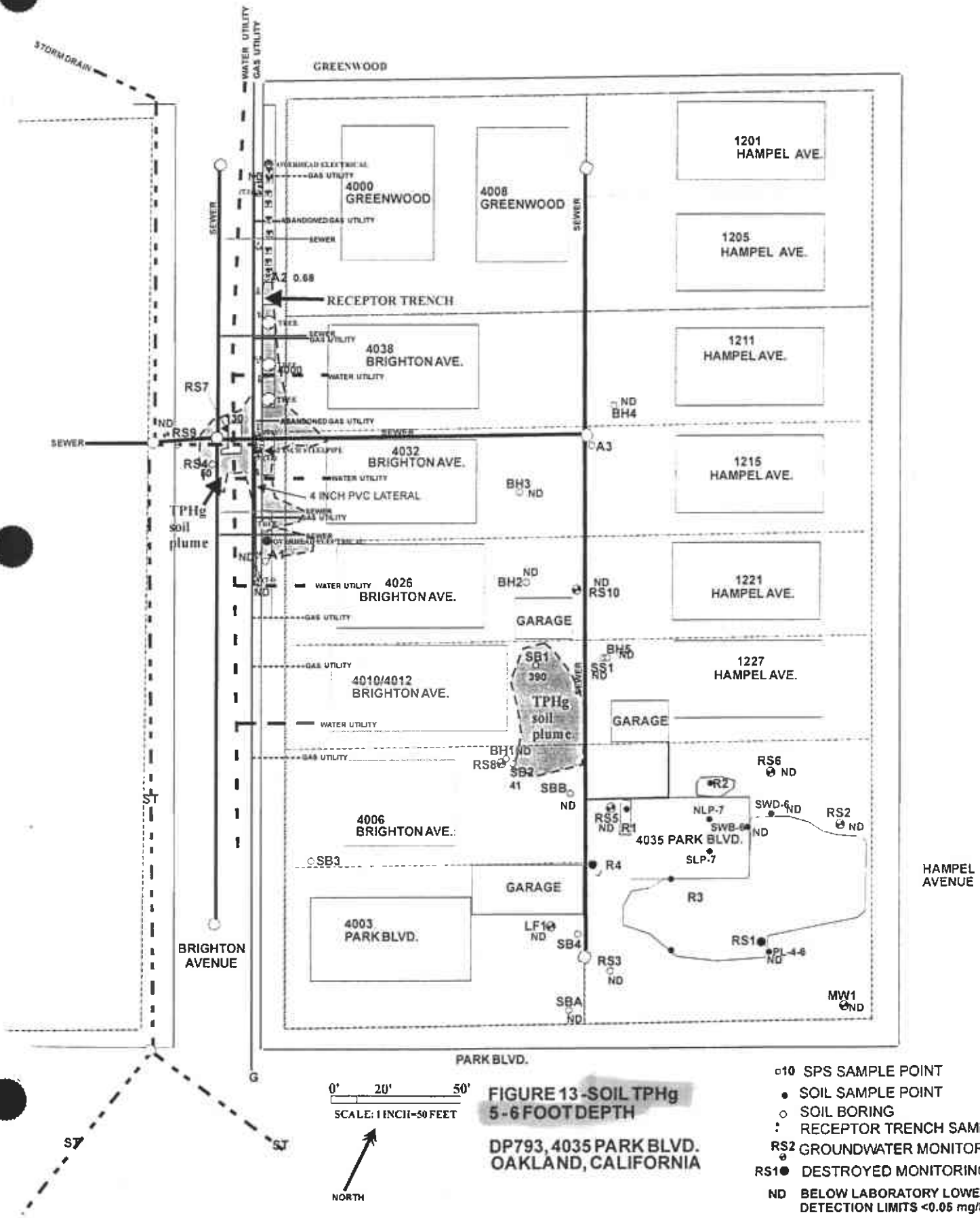


FIGURE 13-SOIL TPHg 5-6 FOOT DEPTH

DP793, 4035 PARK BLVD. OAKLAND, CALIFORNIA

- ○10 SPS SAMPLE POINT
- • SOIL SAMPLE POINT
- ○ SOIL BORING
- : RECEPTOR TRENCH SAMPLE POI
- RS2 GROUNDWATER MONITORING WE
- RS1● DESTROYED MONITORING WELL
- ND BELOW LABORATORY LOWER DETECTION LIMITS <0.05 mg/KG TPHg

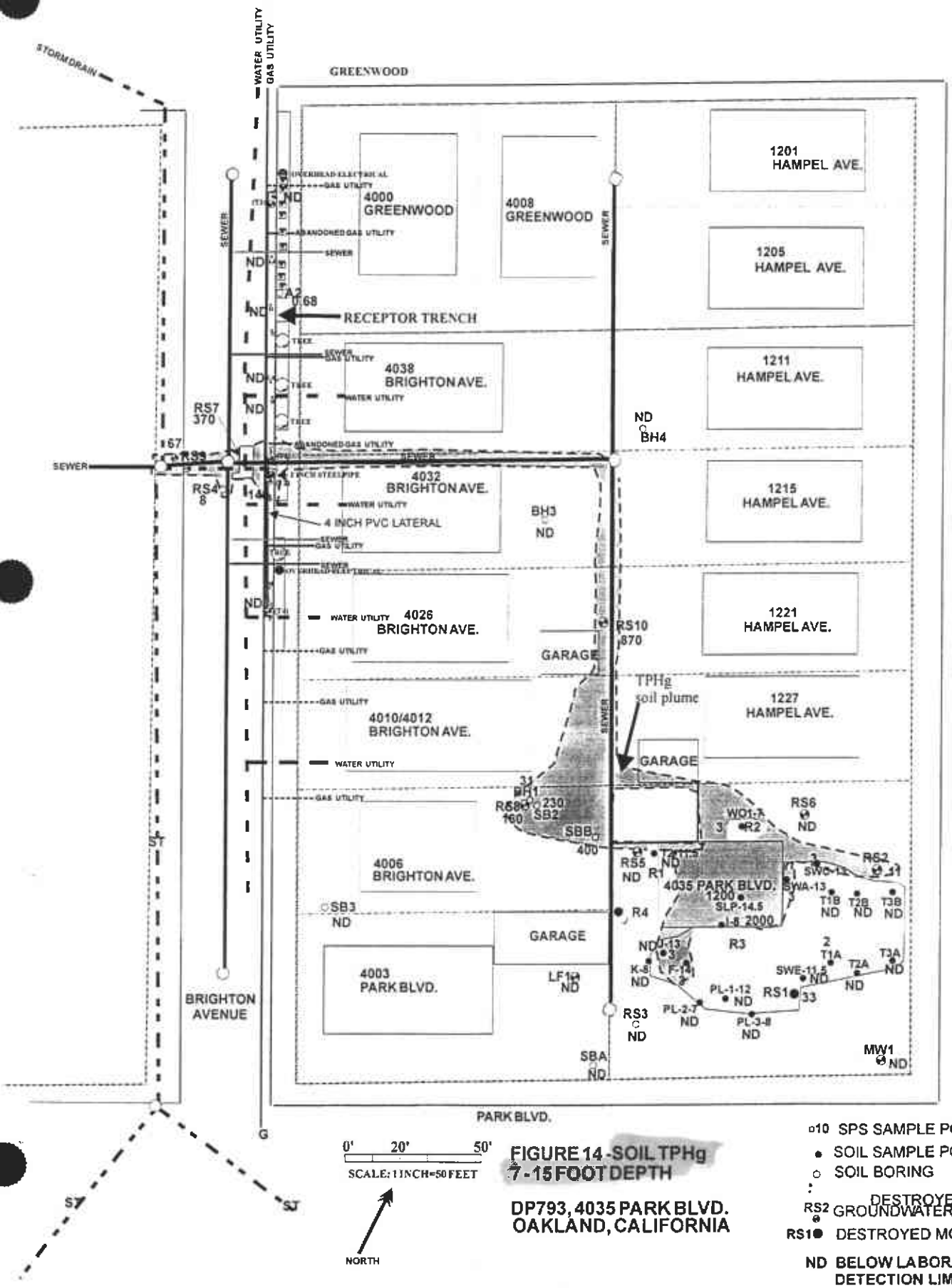


FIGURE 14 - SOIL TPHg 7 - 15 FOOT DEPTH

DP793, 4035 PARK BLVD. OAKLAND, CALIFORNIA

- ▫10 SPS SAMPLE POINT
- • SOIL SAMPLE POINT
- ○ SOIL BORING
- : DESTROYED MONITORING W
- RS2 GROUNDWATER MONITORING WE
- RS1● DESTROYED MONITORING WELL
- ND BELOW LABORATORY LOWER DETECTION LIMIT < 0.05 mg/KG TP

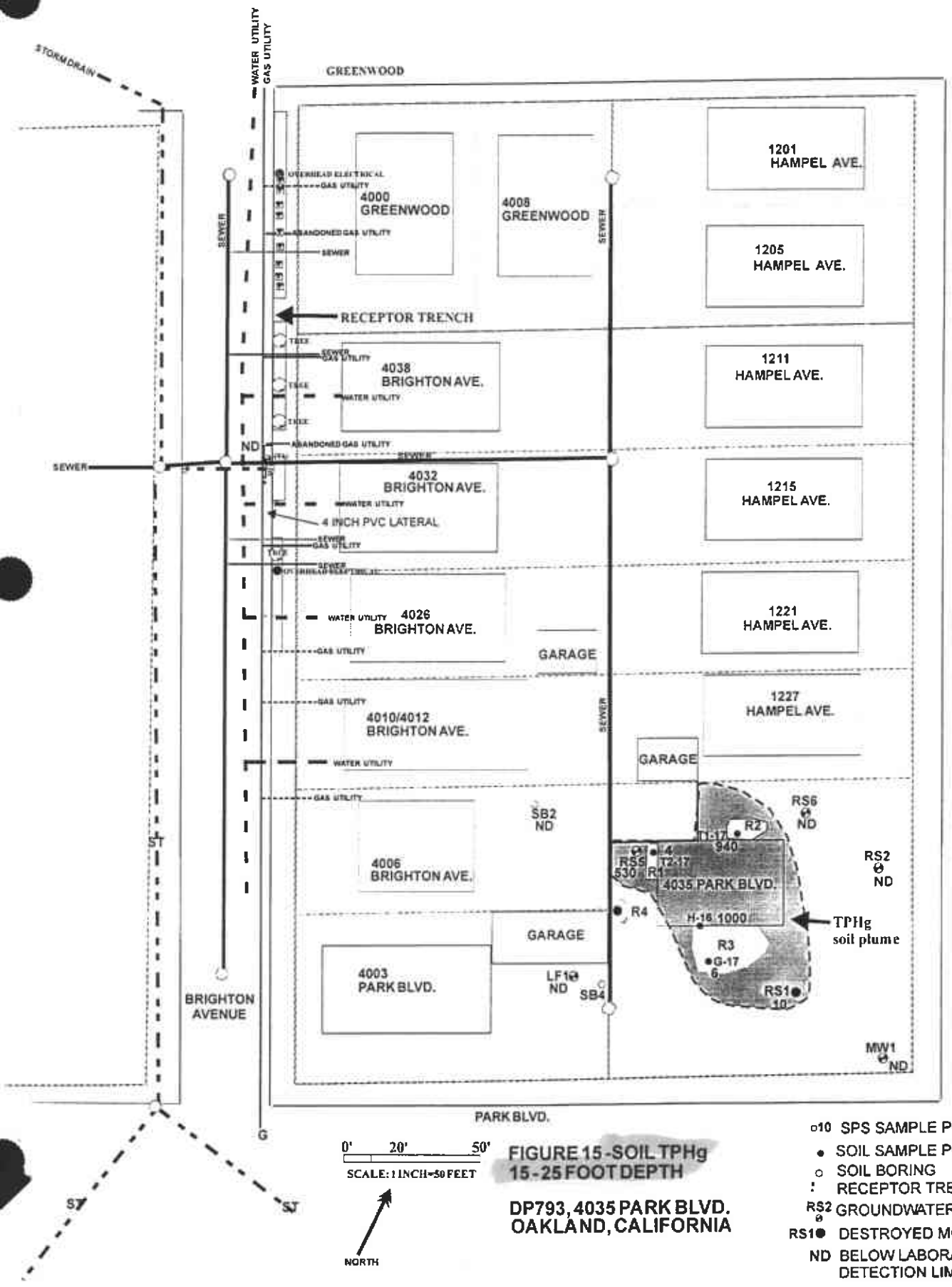


FIGURE 15 - SOIL TPHg 15-25 FOOT DEPTH

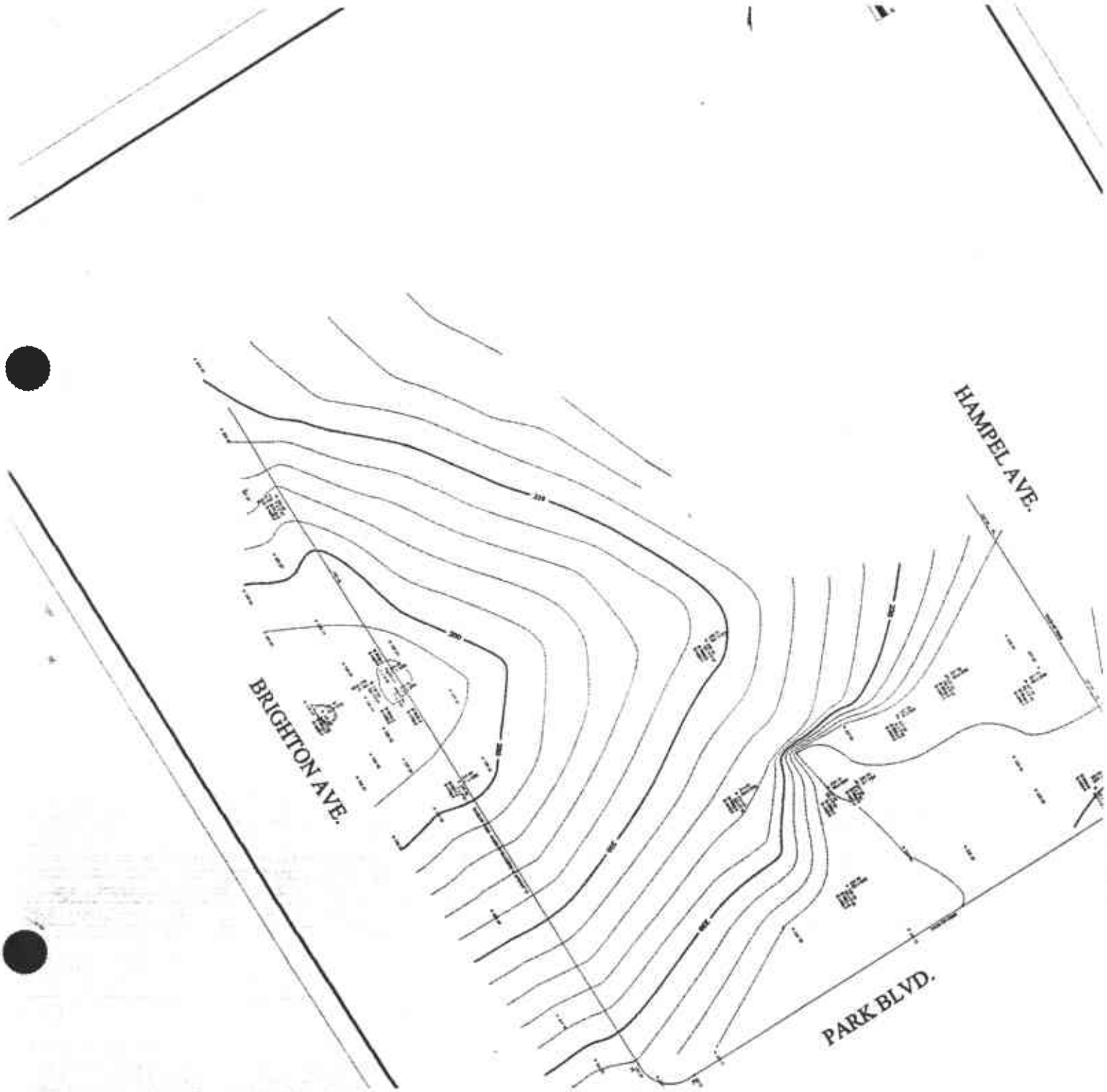
DP793, 4035 PARK BLVD. OAKLAND, CALIFORNIA

@10 SPS SAMPLE POINT
• SOIL SAMPLE POINT
○ SOIL BORING
! RECEPTOR TRENCH SAMPLE POI
RS2 GROUNDWATER MONITORING WE
RS1● DESTROYED MONITORING WELL
ND BELOW LABORATORY LOWER DETECTION LIMITS <0.05 mg/KG T

October 20, 1999
WEC Report

APPENDIX A

WADE HAMMOND
LIC #6163
Original on file



APPENDIX B

APPENDIX B.

METHODS AND PROCEDURES, QA/QC

This Appendix documents the specific methods, procedures, and materials used to collect and analyze ground water samples.

Gauging and Measuring Monitor Wells.

Prior to sampling a well, WEGE personnel obtain two measurements: the depth to ground water and the product thickness using a battery powered depth to water-product interface probe and or by using a specially designed bailer. The probe is lowered into the well casing until the instrument signals that the top of water has been reached. The distance from the top of water to the top of casing is read from the tape calibrated in 0.01 foot intervals for accuracy to 0.01 foot, that is attached to the probe. The measured distance is subtracted from the established elevation at the top of casing to determine the elevation of ground water with respect to mean sea level.

The probe is washed with TSP and rinsed in distilled water before each measurement. WEGE has designed and built bailers that will collect a sample of the contents of a well to show the exact thickness of any floating product.

Purging Standing Water from Monitor Wells

If no product is present, WEGE personnel purge the well. This is accomplished by removing ground water from the well until the water quality parameters (temperature, pH, and conductivity) stabilize, or until the well is emptied of water. Periodic measurements of ground water temperature, pH, and conductivity were taken with a Hydac Monitor or other meter and recorded along with the volume of ground water removed from the well. Purging is done by one or more methods singularly or in combination. Bailers, pneumatic or electric sample pumps, or vacuum pump tanks or trucks may be used. The usual amount of water removed is three well volumes. The water collected during purging is either safely stored onsite for later disposition, transported to an approved onsite or offsite sewer discharge system, or an approved onsite or offsite treatment system.

Collection of Water Sample for Analysis

The well is allowed to recover after purging and a ground water sample is collected. A fresh bailer is used to collect enough water for the requirements of the laboratory for the analyses needed or required. The water samples are decanted from the bailer into the appropriate number and size

containers. These containers are furnished pre-cleaned to exact EPA protocols, with and without preservatives added, by the analytical laboratory or a chemical supply company. The bottles are filled, with no headspace, and then capped with plastic caps with teflon liners.

The vials or bottles containing the ground water samples are labeled with site name, station, date, time, sampler, and analyses to be performed, and documented on a chain of custody form. They were placed in ziplock bags and stored in a chest cooled to 4øC with ice. The preserved samples are chain of custody delivered to the chosen laboratory.

Analytical Results

TPH is the abbreviations used for Total Petroleum Hydrocarbons used by the laboratories for water and soil analyses. The letter following TPH indicates a particular distinction or grouping for the results. The letters "g", "d", "k", or "o" indicates gasoline, diesel, kerosene, or oil, respectively, ie. TPH-d for diesel range TPH.

BTEX or MTBE are acronyms or abbreviations used for Benzene, Toluene, Ethylbenzene and all of the Xylenes (BTEX) and Methyl Tertiary Butyl Ether (MTBE), respectively.

MBTEX is the designation for the combination of the above five compounds.

The less than symbol, <, used with a "parts per value" indicates the lower detection limit for a given analytical result and the level, if present, of that particular analyte is below or less than that lower detection limit.

Other abbreviations commonly used are ppm, ppb, mg/Kg, ug/Kg, ml/l and ul/l are parts per million, parts per billion, milligrams per kilogram, micrograms per kilogram, milliliters per liter, microliters per liter, respectively.

Chain of Custody Documentation

All water samples that are collected by WEGE and transported to a certified analytical laboratory are accompanied by chain-of-custody (COC) documentation. This documentation is used to record the movement and custody of a sample from collection in the field to final analysis and storage. Samples to be analyzed at the certified laboratory were logged on the COC sheet provided by the laboratory. The same information provided on the sample labels (site name, sample location, date, time, and analysis to be performed) are also noted on the COC form. Each person relinquishing custody of the sample set signs the COC form indicating the date and time of the transfer to the recipient. A copy of the COC follows the samples or their extracts throughout the laboratory to aid the analyst in identifying the samples and to assure analysis within holding times.

Copies of the COC documentation are included with the laboratory results in Appendix C of this report.

WESTERN GEO-ENGINEERS
138 EAST BEAMER
WOODLAND, CALIFORNIA 95695
(916) 668-5300, FAX (916) 662-0273

WELL SAMPLING DATA SHEET

SITE DP 793	DATE 8-26-99	TIME 1621
WELL R-1	SAMPLED BY. BROADWAY	

1.2
1.47
3
4.41

WELL ELEVATION	
PRODUCT THICKNESS	
DEPTH TO WATER	13.97 DTB 16.92
FLUID ELEVATION	
BAILER TYPE	Disposable Bailer
PUMP	~~Bennett Pitman~~ Transfer + 55gal metered

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP. F°	pH	COND. X1000
1623	1 Bailer	71.8	7.10	.64
1643	20 gal	73.1	6.45	.65
1646	1	71.6	6.38	.63
1649	1	70.6	6.38	.63

FINAL VOLUME PURGED	22 gal
TIME SAMPLED	1653
SAMPLE ID.	R-1
SAMPLE CONTAINERS	4/40cc VOAs
ANALYSIS TO BE RUN	TPHg BTEX/MTBE
LABORATORY	NSE
NOTES:	1ST Bailer Clear Strong Odor
$O_2 = 0.4$	
$SO_4 = 9$	
$NO_2 = 0$	
Fe ~~=~~ 3.30	

WESTERN GEO-ENGINEERS
1384 EAST BEAMER
WOODLAND, CALIFORNIA 95695
(916) 668-5300, FAX (916) 662-0273

WELL SAMPLING DATA SHEET

SITE OP 793	DATE 8-26-99	TIME
WELL R-2	SAMPLED BY. BROADWAY	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER 13.14	DTB 16.8	
FLUID ELEVATION		
BAILER TYPE Disposable Bailer		
PUMP ~~David Pittman~~ TRANSFER + 55 gal METERED		

6.7
9.17
3.6
8 8 2
4 4 1
5.292

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP. F°	pH	COND. X1000
1444	1 Bailer	77.7	6.93	.82
1454	16 gal	76.4	6.69	.69
1456	1	72.6	6.66	.63
1458	1	72.7	6.65	.63

FINAL VOLUME PURGED	18 gal
TIME SAMPLED	1501
SAMPLE ID.	R-2
SAMPLE CONTAINERS	4/40cc VOAs
ANALYSIS TO BE RUN	TPHg BTEX/MTBE
LABORATORY	NSE
NOTES:	1ST Bailer Clear Some Odor
Or 0.4	
SO4 > 77	
NO3 0.8	
Fe^{+2} = 0.30	

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138 EAST BEAMER
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WELL SAMPLING DATA SHEET

SITE DP 793	DATE 8-26-99	TIME 1605
WELL R-3	SAMPLED BY. BROADWAY	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	10.76 DTB 11.74	
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	~~Bennett Pitcher~~ TRANSFER + 55 gal metered	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP. F°	pH	COND. X1000
1612	1 Bailer	77.8	7.38	.82
1403	15 gal	75.9	7.02	.85
1408	1	75.1	6.96	.86
1414	1	75.0	6.95	.85

FINAL VOLUME PURGED	17 gal
TIME SAMPLED	1417
SAMPLE ID.	R-3
SAMPLE CONTAINERS	4/40cc VOAs
ANALYSIS TO BE RUN	TPHg BTEX/MTBE
LABORATORY	NSE
NOTES:	1ST Bailer Clear Some Color
$O_2 = 2.5$	
$SO_4 > 77$	
NO_3 0.7	
Fe^2 0.05	

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WELL SAMPLING DATA SHEET

SITE DP 793	DATE 8-26-99	TIME 1030
WELL MW-1	SAMPLED BY. BROADWAY	

WELL ELEVATION
PRODUCT THICKNESS
DEPTH TO WATER 11.41' DTB 18.31
FLUID ELEVATION
BAILER TYPE Disposable Bailer
PUMP ~~Bennett Pitman~~ Hand Bailed + Bucket

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP. F°	pH	COND. X1000
1035	1 Bailer	79.4	7.39	.56
1059	3.5 gal	77.6	6.57	.37
1102	1	75.9	6.55	.33
1105	1	75.4	6.55	.33
1107	1	75.4	6.55	.33

FINAL VOLUME PURGED 6.5 gal
TIME SAMPLED 1110
SAMPLE ID. MW-1
SAMPLE CONTAINERS 4/40cc VOAs
ANALYSIS TO BE RUN TPHg BTEX/MTBE + Oxy
LABORATORY NSE
NOTES: 1st Bailer O_2 = 4.9
SO_4 = 35
NO_3 = 0.0
F_l = 0.25

Clear No Odor

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WELL SAMPLING DATA SHEET

SITE OP 793	DATE 8-26-99	TIME 1119
WELL RS-2	SAMPLED BY. Broadway	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER 1142	DTB 18.40	
FLUID ELEVATION		
BAILER TYPE Disposable Bailer		
PUMP ~~David Pittman~~ Transfer + 55 gal metered		

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP. F°	pH	COND. X1000
1121	1 Bailer	78.9	6.80	1.07
1305	15 gal	81.1	6.99	1.16
1355	1	80.9	6.97	1.15

FINAL VOLUME PURGED	16 gal
TIME SAMPLED	1405
SAMPLE ID.	RS-2
SAMPLE CONTAINERS	4/40cc VOAs
ANALYSIS TO BE RUN	TPHg BTEX/MTBE
LABORATORY	NSE
NOTES:	1st Bailer Clear No Odor
$O_2 = 0.7$ mg/l	
$SO_4 = 4.6$	SAND in Bottom of well
$NO_3 = 2.7$	
$Fe = 0.65$	

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WELL SAMPLING DATA SHEET

SITE OP 793	DATE 8-26-99	TIME 1512
WELL RS-5	SAMPLED BY. BROADWAY	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	16.06 DTB 39.20	
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	David Pittman	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP. F°	pH	COND. X1000
1516	1 Bailer	76.5	7.64	.47
1543	46 gal	73.8	7.39	.45
1547	1	72.8	7.19	.43
1551	1	71.6	7.08	.42
1556	1	71.7	7.08	.42

FINAL VOLUME PURGED	49 gal
TIME SAMPLED	1559
SAMPLE ID.	RS-5
SAMPLE CONTAINERS	4/40cc VOA's
ANALYSIS TO BE RUN	TPHg BTEX/MTBE
LABORATORY	NSE
NOTES:	1ST Bailer Clear Strong Odor
$O_2 \approx 0.7$	
$SO_4 = 31$	
$NO_3 = 1.3$	
$Fe^{+2} = 0.92$	

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WELL SAMPLING DATA SHEET

SITE OP 793	DATE 8-26-99	TIME 1412
WELL RS-6	SAMPLED BY. BROADWAY	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	13.72 DTB 34.02	
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	~~Grundfos~~ Hoffman TRANSFER + 55 gal meter	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP. F°	pH	COND. X1000
1415	1 Bailer	78.9	6.80	.75
1431	16 gal	77.9	6.64	.78
1433	1	77.8	6.66	.76

FINAL VOLUME PURGED	17 gal
TIME SAMPLED	1435
SAMPLE ID.	RS-6
SAMPLE CONTAINERS	4/40cc VOA's
ANALYSIS TO BE RUN	TPHg BTEX/MTBE
LABORATORY	NSE
NOTES:	1ST Bailer Clear Slight odor
$O_2 = 1.2$	
$SO_4 = 76$	
$NH_3 = 0.3$	
$Fe^{+2} > 3.30$	

WEGE WESTERN GEO-ENGINEERS

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WELL SAMPLING DATA SHEET

SITE OP 793	DATE 8-26-99	TIME 1917
WELL RS-7	SAMPLED BY. BROADWAY	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	4.16 DTB 7.0	
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	~~David Pittman~~ Trash Pump + 55gal Metered	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP. F°	pH	COND. X1000
1915	1 Bailer	73.3	7.32	.64
1918	16 gal	73.0	7.03	.65
1920	1	73.4	6.99	.64

FINAL VOLUME PURGED	17 gal
TIME SAMPLED	1924
SAMPLE ID.	RS-7
SAMPLE CONTAINERS	4/40cc VOAs
ANALYSIS TO BE RUN	TPHg BTEX/MTBE
LABORATORY	NSE
NOTES:	1ST Bailer Turbid Strong Odor
O_2 = 0.3	
SO_4 = >77	
NO_3 = 0.8	
Fe = 1.27	

WESTERN GEO-ENGINEERS
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WELL SAMPLING DATA SHEET

SITE OP 793	DATE 8-26-99	TIME 1242
WELL RS-8	SAMPLED BY. BROADWAY	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	7.25 DTB 14.15	
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	~~[illegible]~~ Teflon + Bucket	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP. F°	pH	COND. X1000
1746	1 Bailer	71.9	7.26	.61
1752	3 gal	70.3	6.67	.63
1800	1	69.2	6.70	.62

FINAL VOLUME PURGED	4 gal
TIME SAMPLED	1822
SAMPLE ID.	RS-8
SAMPLE CONTAINERS	4/40cc VOAs
ANALYSIS TO BE RUN	TPHg BTEX/MTBE
LABORATORY	NSE
NOTES:	1ST Bailer Silty STRONG odor
$O_2 = 2.6$	
$SO_4 = 0$	
$NO_3 = 0$	
$Fe = 0.54$	

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WELL SAMPLING DATA SHEET

SITE OP 793	DATE 8-26-99	TIME 1705
WELL RS-9	SAMPLED BY. BROADWAY	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER 7.46	DTB 14.98	
FLUID ELEVATION		
BAILER TYPE Disposable Bailer		
PUMP ~~David Pittman~~ Transfer + Bucket		

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP. F°	pH	COND. X1000
1713	1 Bailer	75.8	7.39	.48
1721	3 gal	74.9	7.17	.51
1723	1	73.8	7.04	.50
1726	1	73.8	6.96	.50
1729	1	73.5	6.95	.50

FINAL VOLUME PURGED 6 gal
TIME SAMPLED 1737
SAMPLE ID. RS-9
SAMPLE CONTAINERS 4/40cc VOAs
ANALYSIS TO BE RUN TPHg BTEX/MTBE
LABORATORY NSE
NOTES: 1st Bailer Silty Slight odor
O_2 = 2.1
SO_4 = 7
NO_3 = 0
Fe^{2} = 0.59

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WELL SAMPLING DATA SHEET

SITE OP 793	DATE 8-26-99	TIME 1759
WELL RS-10	SAMPLED BY. BROADWAY	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	3.76 DTB 9.6	
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	~~David Pittman~~ TRANSFER bucket	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP. F°	pH	COND. X1000
1807	1 Bailer	73.2	8.51	.29
1833	3 gal	72.7	8.31	.27
1838	1	70.9	8.03	.25

FINAL VOLUME PURGED	4 gal
TIME SAMPLED	1841
SAMPLE ID.	RS-10
SAMPLE CONTAINERS	4/40cc VOAs
ANALYSIS TO BE RUN	TPHg BTEX/MTBE
LABORATORY	NSE
NOTES:	1ST Bailer ~~Mud~~ silty Some Odor
	O_2 = 4.2

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WELL SAMPLING DATA SHEET

SITE OP 793	DATE 8-26-99	TIME 1900
WELL T1	SAMPLED BY. BROADWAY	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	2.44' DTB 14.64	
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	~~Grundfos Pittman~~ Trash Pump + 55 gal metered	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP. F°	pH	COND. X1000
1902	1 Bailer	76.2	7.58	.54
1905	20 gal	75.8	7.38	.56
1907	1	75.4	7.30	.56
1908	1	75.3	7.29	.56

FINAL VOLUME PURGED	22 gal
TIME SAMPLED	1907
SAMPLE ID.	T1
SAMPLE CONTAINERS	4/40cc VOAs
ANALYSIS TO BE RUN	TPHg BTEX/MTBE
LABORATORY	NSE
NOTES:	1ST Bailer Clear Some Odor
$O_2 = 0.9$	
$SO_4 = 32$	
$NO_3 = 6.5$	
$Fe = 0.03$	

2 to 1

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WELL SAMPLING DATA SHEET

SITE OP 793	DATE 8-26-99	TIME
WELL T2	SAMPLED BY. BROADWAY	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	DTB	
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	David Pittman	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP. F°	pH	COND. X1000
	1 Bailer			
	gal			

CAR

FINAL VOLUME PURGED	gal
TIME SAMPLED	
SAMPLE ID. T2	
SAMPLE CONTAINERS	40cc VOAs
ANALYSIS TO BE RUN	TPHg BTEX/MTBE
LABORATORY	NSE
NOTES:	1ST Bailer

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WELL SAMPLING DATA SHEET

SITE DP 793	DATE 9-2-99	TIME 828
WELL MW1	SAMPLED BY. BROADWAY	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	11.65 DTB 18.31	
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	David Pittman	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP. F°	pH	COND. X1000
833	1 Bailer	77.5	8.76	.41
837	2 gal	74.3	8.65	.34
839	1	73.5	8.55	.31
842	1	73.1	8.15	.30
844	1	72.9	8.16	.29

FINAL VOLUME PURGED	5 gal
TIME SAMPLED	850
SAMPLE ID.	MW1
SAMPLE CONTAINERS	7 40cc VOAs 2 Ambers
ANALYSIS TO BE RUN	TPHg BTEX/MTBE
LABORATORY	NSE
NOTES:	1ST Bailer Clear No Odor

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WELL SAMPLING DATA SHEET

R1-14.18
R3-10.87
R5-4-28.26

SITE OP 793	DATE 9-2-99	TIME 0915
WELL RS-5	SAMPLED BY. Broadway	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	16.26 DTB 39.20	
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	David Pittman	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP. F°	pH	COND. X1000
0917	1 Bailer	68.7	7.35	.145
0924	4 6 gal	68.8	7.15	.146
0929	1	68.4	7.15	.144

FINAL VOLUME PURGED	47 gal
TIME SAMPLED	934
SAMPLE ID.	RS-5
SAMPLE CONTAINERS	~~4 40cc VOAs~~ 2 Ambers
ANALYSIS TO BE RUN	TPHg BTEX/MTBE
LABORATORY	NSE
NOTES:	1ST Bailer Cloudy Strong Odor

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WELL SAMPLING DATA SHEET

32-13-23
352-12

SITE OP 793	DATE 9-2-99	TIME 853
WELL RS-6	SAMPLED BY. BROADWAY	

WELL ELEVATION	
PRODUCT THICKNESS	
DEPTH TO WATER	14.14 DTB 34.02
FLUID ELEVATION.	
BAILER TYPE	Disposable Bailer
PUMP	David Pittman

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP. F°	pH	COND. X1000
8:56	1 Bailer	71.0	7.75	.68
902	20 gal	69.5	7.74	.73
904	1	69.0	6.70	.73
906	1	69.0	6.69	.73

FINAL VOLUME PURGED	22 gal
TIME SAMPLED	910
SAMPLE ID.	RS-6
SAMPLE CONTAINERS	1 40cc VOAs 2 AMBERS
ANALYSIS TO BE RUN	TPHg BTEX/MTBE
LABORATORY	NSE
NOTES:	1ST Bailer Clear Slight odor

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WELL SAMPLING DATA SHEET

SITE OP 793	DATE 9-2-99	TIME 1509
WELL RS 8	SAMPLED BY. BROADWAY	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	7.38 DTB	
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	David Pittman	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP. F°	pH	COND. X1000
1512	1 Bailer	72.4	6.43	.61
1517	2 gal	71.9	6.21	.49
1520	1	71.7	5.78	.47
1523	1	71.7	5.74	.46

FINAL VOLUME PURGED	4 gal
TIME SAMPLED	1330
SAMPLE ID.	RS-8
SAMPLE CONTAINERS	4 40cc VOAs 2 Ambers
ANALYSIS TO BE RUN	TPHg BTEX/MTBE
LABORATORY	NSE
NOTES:	1st Bailer Silty Some Odor

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WELL SAMPLING DATA SHEET

RS7- 4.14'
RS7 4.14

SITE DP 793	DATE 9-2-99	TIME 939
WELL RS-7	SAMPLED BY. BROADWAY	
WELL ELEVATION		
PRODUCT THICKNESS 7.61		
DEPTH TO WATER 7.64 ~~8.34~~	DTB 15	
FLUID ELEVATION		
BAILER TYPE Disposable Bailer		
PUMP David Pittman		

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP. F°	pH	COND. X1000
942	1 Bailer	73.7	7.07	.46
0945	3 gal	71.9	7.00	.53
947	1	71.2	6.99	.51
949	1	70.9	6.98	.51

FINAL VOLUME PURGED	5 gal
TIME SAMPLED	950
SAMPLE ID.	RS-7
SAMPLE CONTAINERS	~~4 40cc VOAs~~ 2 / Ambers
ANALYSIS TO BE RUN	~~TPHg BTEX MTBE~~ Bio Chem C&C
LABORATORY	NSE
NOTES:	1ST Bailer Silty Slight odor

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WELL SAMPLING DATA SHEET

SITE OP 793	DATE 9-2-99	TIME 1550
WELL RS10	SAMPLED BY. BROADWAY	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	3.96 DTB 9.6	
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	~~David Pittman~~	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP. F°	pH	COND. X1000
1553	1 Bailer	73.8	7.24	.23
1558	1 gal	73.2	7.25	.21
1600		73.3	7.24	.21

FINAL VOLUME PURGED	1 gal
TIME SAMPLED	1559
SAMPLE ID.	RS 10
SAMPLE CONTAINERS	~~4 40cc VOA's~~ 2 Ambers
ANALYSIS TO BE RUN	TPHg BTEX/MTBE
LABORATORY	NSE
NOTES:	1st Bailer Silty Some Odor

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WELL SAMPLING DATA SHEET

SITE DP 793	DATE 9-2-99	TIME 1015
WELL T1	SAMPLED BY. BROADWAY	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	2.20 DTB 14.98	
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	David Pittman	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP. F°	pH	COND. X1000
1020	1 Bailer	78.8	7.59	.62
1040	~~300 gal~~			
1105	300	14:40	300 gal	
1125	300	15:05	300	
1145	300	15:30	300	
1207	300			
1230	300	78.1	7.57	.60
1320	300			
1350	300			
1420	300			

FINAL VOLUME PURGED 3600 gal
TIME SAMPLED ~~15~~ 1540
SAMPLE ID. T1
SAMPLE CONTAINERS ~~4 40cc VOA's~~ 2 Ambers
ANALYSIS TO BE RUN ~~TPHg BTEX MTBE~~
LABORATORY NSE
NOTES: 1ST Bailer Clear Strong Odor

1334 T1 = 4.25 & T4 = 6.42

North State Environmental Analytical Laboratory

90 South Spruce Avenue, Suite W, South San Francisco, CA 94080
Phone: (650) 266-4563 Fax: (650) 266-4560

Chain of Custody / Request for Analysis
Lab Job No.:_____ Page___ of___

Client: Desert Petroleum	Report to: Roy Butler	Phone: 530 668 5300	Turnaround Time
Mailing Address: Western Geo Engineers 1386 E. Beamer St Woodland, CA 95776	Billing to: SAME	Fax: 530 662 0273	
		PO# / Billing Reference:	Date: 9-2-99
			Sampler: BROADWAY

Project / Site Address: DP 793 PARK BLVD

Analysis Requested

Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	Ortho Phosphate	Ammonia Nitrogen	Hydrocarbon degraders	(CO_2)/Methane					Comments / Hazards
MW 1	H_2O	2 Ambers	None	9-2-99 8:50									
RS 5				9:24									
RS 6				9:10									
RS 8				13:30									
RS 9				9:50									
RS 10				15:59									
T 1	↓	↓	↓	15:40	↓	↓	↓	↓					

Relinquished by: Stephen J Broadway	Date: 9-3-99	Time: 9:37	Received by:	Lab Comments
Relinquished by:	Date: 9-3-99	Time: 11 (AM)	Received by: NSE	
Relinquished by:	Date:	Time:	Received by: (AB)	

APPENDIX C

North State Environmental Laboratory
CA ELAP # 1753
90 South Spruce Avenue, Suite V • South San Francisco, CA 94080 • (650) 266-4563 • FAX (650) 266-4560

C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 99-1350
Client: Western Geo-Engineers
Project: DP793 Park Blvd

Date Reported: 09/14/99

Gasoline,BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 99-1350-01 Client ID: MW-1				08/26/99	WATER
Gasoline	8015M	ND			09/02/99
Benzene	8020	4.1	ug/L		
Ethylbenzene	8020	ND			
MTBE	8020	*ND			
Toluene	8020	ND			
Xylenes	8020	ND			
Sample: 99-1350-02 Client ID: R-1				08/26/99	WATER
Gasoline	8015M	6500	ug/L		09/02/99
Benzene	8020	630	ug/L		
Ethylbenzene	8020	1300	ug/L		
MTBE	8020	*ND			
Toluene	8020	ND			
Xylenes	8020	ND			
Sample: 99-1350-03 Client ID: R-2				08/26/99	WATER
Gasoline	8015M	6700	ug/L		09/02/99
Benzene	8020	940	ug/L		
Ethylbenzene	8020	190	ug/L		
MTBE	8020	*4.9	ug/L		
Toluene	8020	33	ug/L		
Xylenes	8020	240	ug/L		

*Confirmed by GC/MS method 8260.

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C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 99-1350
Client: Western Geo-Engineers
Project: DP793 Park Blvd

Date Reported: 09/14/99

Gasoline, BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 99-1350-04 Client ID: R-3				08/26/99	WATER
Gasoline	8015M	ND			09/02/99
Benzene	8020	2	ug/L		
Ethylbenzene	8020	ND			
MTBE	8020	*2.1	ug/L		
Toluene	8020	ND			
Xylenes	8020	ND			
Sample: 99-1350-05 Client ID: RS-2				08/26/99	WATER
Gasoline	8015M	200	ug/L		09/02/99
Benzene	8020	15	ug/L		
Ethylbenzene	8020	1.7	ug/L		
MTBE	8020	*9	ug/L		
Toluene	8020	23	ug/L		
Xylenes	8020	23	ug/L		
Sample: 99-1350-06 Client ID: RS-5				08/26/99	WATER
Gasoline	8015M	35000	ug/L		09/02/99
Benzene	8020	870	ug/L		
Ethylbenzene	8020	1900	ug/L		
MTBE	8020	*ND<5	ug/L		
Toluene	8020	4000	ug/L		
Xylenes	8020	8300	ug/L		

*Confirmed by GC/MS method 8260.

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C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 99-1350
Client: Western Geo-Engineers
Project: DP793 Park Blvd

Date Reported: 09/14/99

Gasoline,BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 99-1350-07 Client ID: RS-6				08/26/99	WATER
Gasoline	8015M	690	ug/L		09/02/99
Benzene	8020	44	ug/L		
Ethylbenzene	8020	30	ug/L		
MTBE	8020	ND			
Toluene	8020	2.5	ug/L		
Xylenes	8020	31	ug/L		
Sample: 99-1350-08 Client ID: RS-7				08/26/99	WATER
Gasoline	8015M	15000	ug/L		09/02/99
Benzene	8020	**3400**	ug/L		
Ethylbenzene	8020	950	ug/L		
MTBE	8020	*ND<5	ug/L		
Toluene	8020	91	ug/L		
Xylenes	8020	970	ug/L		
Sample: 99-1350-09 Client ID: RS-8				08/26/99	WATER
Gasoline	8015M	160000	ug/L		09/02/99
Benzene	8020	**24000**	ug/L		
Ethylbenzene	8020	4200	ug/L		
MTBE	8020	*ND<5	ug/L		
Toluene	8020	35000	ug/L		
Xylenes	8020	24000	ug/L		

*Confirmed by GC/MS method 8260.

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C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 99-1350
Client: Western Geo-Engineers
Project: DP793 Park Blvd

Date Reported: 09/14/99

Gasoline,BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 99-1350-10 Client ID: RS-9				08/26/99	WATER
Gasoline	8015M	17000	ug/L		09/02/99
Benzene	8020	3500	ug/L		
Ethylbenzene	8020	360	ug/L		
MTBE	8020	*180	ug/L		
Toluene	8020	1200	ug/L		
Xylenes	8020	1600	ug/L		
Sample: 99-1350-11 Client ID: RS-10				08/26/99	WATER
Gasoline	8015M	5100	ug/L		09/02/99
Benzene	8020	160	ug/L		
Ethylbenzene	8020	190	ug/L		
MTBE	8020	*32	ug/L		
Toluene	8020	340	ug/L		
Xylenes	8020	1000	ug/L		
Sample: 99-1350-12 Client ID: T-1				08/26/99	WATER
Gasoline	8015M	40000	ug/L		09/02/99
Benzene	8020	7200	ug/L		
Ethylbenzene	8020	950	ug/L		
MTBE	8020	*26	ug/L		
Toluene	8020	5000	ug/L		
Xylenes	8020	8100	ug/L		

*Confirmed by GC/MS method 8260.

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C E R T I F I C A T E O F A N A L Y S I S

Quality Control/Quality Assurance

Lab Number: 99-1350
Client: Western Geo-Engineers
Project: DP793 Park Blvd

Date Reported: 09/14/99

Gasoline, BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Reporting Limit	Unit	Blank	Avg MS/MSD Recovery	RPD
Gasoline	8015M	50	ug/L	ND	103	1
Benzene	8020	0.5	ug/L	ND	108	1
Ethylbenzene	8020	0.5	ug/L	ND	111	1
Toluene	8020	0.5	ug/L	ND	112	0
Xylenes	8020	1.0	ug/L	ND	117	1
MTBE	8020	0.5	ug/L	ND	107	6

ELAP Certificate NO:1753
Reviewed and Approved

John A.Murphy, Laboratory Director

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C E R T I F I C A T E O F A N A L Y S I S

Job Number: 99-1350
Client : Western Geo-Engineers
Project : DP793 Park Blvd

Date Sampled : 08/26/99
Date Analyzed: 09/02/99
Date Reported: 09/14/99

Volatile Organics by GC/MS Method 8260

Laboratory Number	99-1350-01	99-1350-02	99-1350-03	99-1350-04	99-1350-05	99-1350-06
Client ID	MW-1	R-1	R-2	R-3	RS-2	RS-5
Matrix	WATER	WATER	WATER	WATER	WATER	WATER
Analyte	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bromochloromethane	ND<5	ND<5	ND<5	ND<5	ND<5	ND<25
Dichlorodifluoromethane	ND<5	ND<5	ND<5	ND<5	ND<5	ND<25
Chloromethane	ND<5	ND<5	ND<5	ND<5	ND<5	ND<25
Vinyl Chloride	ND<5	ND<5	ND<5	ND<5	ND<5	ND<25
Bromomethane	ND<5	ND<5	ND<5	ND<5	ND<5	ND<25
Chloroethane	ND<5	ND<5	ND<5	ND<5	ND<5	ND<25
Trichlorofluoromethane	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
1,1-Dichloroethene	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
Acetone	ND<50	ND<50	ND<50	ND<50	ND<50	ND<250
Trichlorotrifluoroethane	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
Methylene Chloride	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
t-1,2-Dichloroethene	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
Methyl-t-butyl Ether	ND<1	ND<1	ND<1	1	2	ND<5
1,1-Dichloroethane	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
2,2-Dichloropropane	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
cis-1,2-Dichloroethene	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
2-Butanone	ND<10	ND<10	ND<10	ND<10	ND<10	ND<50
Chloroform	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
1,1,1-Trichloroethane	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
Carbon Tetrachloride	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
1,1-Dichloropropene	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
Benzene	ND<1	520	910	ND<1	12	770
1,2-Dichloroethane	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
Trichloroethene	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
1,2-Dichloropropane	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
Dibromomethane	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
Bromodichloromethane	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
trans-1,3-Dichloropropene	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
4-Methyl-2-Pentanone	ND<10	ND<10	ND<10	ND<10	ND<10	ND<50
Toluene	ND<1	9	12	ND<1	21	3700
cis-1,3-Dichloropropene	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
1,1,2-Trichloroethane	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
Tetrachloroethene	ND<1	ND<1	1	ND<1	ND<1	ND<5
1,3-Dichloropropane	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
2-Hexanone	ND<10	ND<10	ND<10	ND<10	ND<10	ND<50
Dibromochloromethane	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5

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CERTIFICATE OF ANALYSIS

Job Number: 99-1350
Client : Western Geo-Engineers
Project : DP793 Park Blvd

Date Sampled : 08/26/99
Date Analyzed: 09/02/99
Date Reported: 09/14/99

Volatile Organics by GC/MS Method 8260

Laboratory Number	99-1350-01	99-1350-02	99-1350-03	99-1350-04	99-1350-05	99-1350-06
Client ID	MW-1	R-1	R-2	R-3	RS-2	RS-5
Matrix	WATER	WATER	WATER	WATER	WATER	WATER
Analyte	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
1,2-Dibromoethane	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
Chlorobenzene	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
1,1,1,2-Tetrachloroethane	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
Ethylbenzene	ND<1	1100	120	ND<1	3	1800
m,p-Xylene	ND<1	ND<1	23	ND<1	17	5800
o-Xylene	ND<1	3	7	ND<1	7	2100
Styrene	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
Bromoform	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
Isopropylbenzene	ND<1	130	22	ND<1	ND<1	67
Bromobenzene	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
1,1,2,2-Tetrachloroethane	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
n-Propyl Benzene	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
2-Chlorotoluene	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
4-Chlorotoluene	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
1,3,5-Trimethylbenzene	ND<1	31	ND<1	ND<1	ND<1	400
tert-Butylbenzene	ND<1	1	ND<1	ND<1	ND<1	190
1,2,4-Trimethylbenzene	ND<1	40	39	ND<1	3	1200
1,3-Dichlorobenzene	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
1,4-Dichlorobenzene	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
sec-Butylbenzene	ND<1	14	6	ND<1	ND<1	ND<5
1,2-Dichlorobenzene	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
p-Isopropyltoluene	ND<1	ND<1	ND<1	ND<1	ND<1	9
n-Butylbenzene	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
1,2-Dibromo-3-chloropropa	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
Naphthalene	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
1,2,4-Trichlorobenzene	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
Hexachlorobutadiene	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
1,2,3-Trichlorobenzene	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
1,2,3-Trichloropropane	ND<1	ND<1	ND<1	ND<1	ND<1	ND<5
SUR-Dibromofluoromethane	94% Rec	96% Rec	98% Rec	93% Rec	100% Rec	104% Rec
SUR-Toluene d8	101% Rec	99% Rec	105% Rec	95% Rec	101% Rec	103% Rec
SUR-4-Bromofluorobenzene	103% Rec	99% Rec	99% Rec	97% Rec	99% Rec	94% Rec

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C E R T I F I C A T E O F A N A L Y S I S

Job Number: 99-1350
Client : Western Geo-Engineers
Project : DP793 Park Blvd

Date Sampled : 08/26/99
Date Analyzed: 09/02/99
Date Reported: 09/14/99

Volatile Organics by GC/MS Method 8260

Laboratory Number	99-1350-07	99-1350-08	99-1350-09	99-1350-10	99-1350-11	99-1350-12
Client ID	RS-6	RS-7	RS-8	RS-9	RS-10	T-1
Matrix	WATER	WATER	WATER	WATER	WATER	WATER
Analyte	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bromochloromethane	ND<5	ND<25	ND<500	ND<100	ND<5	ND<100
Dichlorodifluoromethane	ND<5	ND<25	ND<500	ND<100	ND<5	ND<100
Chloromethane	ND<5	ND<25	ND<500	ND<100	ND<5	ND<100
Vinyl Chloride	ND<5	ND<25	ND<500	ND<100	ND<5	ND<100
Bromomethane	ND<5	ND<25	ND<500	ND<100	ND<5	ND<100
Chloroethane	ND<5	ND<25	ND<500	ND<100	ND<5	ND<100
Trichlorofluoromethane	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
1,1-Dichloroethene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
Acetone	ND<50	ND<250	ND<5000	ND<1000	ND<50	ND<1000
Trichlorotrifluoroethane	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
Methylene Chloride	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
t-1,2-Dichloroethene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
Methyl-t-butyl Ether	ND<1	ND<5	ND<100	42	23	53
1,1-Dichloroethane	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
2,2-Dichloropropane	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
cis-1,2-Dichloroethene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
2-Butanone	ND<10	ND<50	ND<1000	ND<200	ND<10	ND<200
Chloroform	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
1,1,1-Trichloroethane	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
Carbon Tetrachloride	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
1,1-Dichloropropene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
Benzene	38	2500	23000	3200	110	6700
1,2-Dichloroethane	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
Trichloroethene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
1,2-Dichloropropane	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
Dibromomethane	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
Bromodichloromethane	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
trans-1,3-Dichloropropene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
4-Methyl-2-Pentanone	ND<10	ND<50	ND<1000	ND<200	ND<10	ND<200
Toluene	2	72	32000	840	260	4500
cis-1,3-Dichloropropene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
1,1,2-Trichloroethane	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
Tetrachloroethene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
1,3-Dichloropropane	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
2-Hexanone	ND<10	ND<50	ND<1000	ND<200	ND<10	ND<200
Dibromochloromethane	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20

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CERTIFICATE OF ANALYSIS

Job Number: 99-1350
Client : Western Geo-Engineers
Project : DP793 Park Blvd

Date Sampled : 08/26/99
Date Analyzed: 09/02/99
Date Reported: 09/14/99

Volatile Organics by GC/MS Method 8260

Laboratory Number	99-1350-07	99-1350-08	99-1350-09	99-1350-10	99-1350-11	99-1350-12
Client ID	RS-6	RS-7	RS-8	RS-9	RS-10	T-1
Matrix	WATER	WATER	WATER	WATER	WATER	WATER
Analyte	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
1,2-Dibromoethane	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
Chlorobenzene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
1,1,1,2-Tetrachloroethane	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
Ethylbenzene	25	660	3700	290	130	790
m,p-Xylene	4	550	14000	820	480	4700
o-Xylene	ND<1	45	5400	270	180	1900
Styrene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
Bromoform	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
Isopropylbenzene	3	28	ND<100	24	18	47
Bromobenzene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
1,1,2,2-Tetrachloroethane	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
n-Propyl Benzene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
2-Chlorotoluene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
4-Chlorotoluene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
1,3,5-Trimethylbenzene	ND<1	31	1000	110	130	390
tert-Butylbenzene	ND<1	110	470	46	51	120
1,2,4-Trimethylbenzene	3	720	3400	390	370	1200
1,3-Dichlorobenzene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
1,4-Dichlorobenzene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
sec-Butylbenzene	ND<1	ND<5	ND<100	ND<20	7	ND<20
1,2-Dichlorobenzene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
p-Isopropyltoluene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
n-Butylbenzene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
1,2-Dibromo-3-chloropropa	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
Naphthalene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
1,2,4-Trichlorobenzene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
Hexachlorobutadiene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
1,2,3-Trichlorobenzene	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
1,2,3-Trichloropropane	ND<1	ND<5	ND<100	ND<20	ND<1	ND<20
SUR-Dibromofluoromethane	98% Rec	98% Rec	99% Rec	99% Rec	104% Rec	100% Rec
SUR-Toluene d8	100% Rec	95% Rec	100% Rec	105% Rec	106% Rec	103% Rec
SUR-4-Bromofluorobenzene	99% Rec	99% Rec	112% Rec	109% Rec	100% Rec	105% Rec

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C E R T I F I C A T E O F A N A L Y S I S

Job Number: 99-1350
Client : Western Geo-Engineers
Project : DP793 Park Blvd

Date Sampled : 08/26/99
Date Analyzed: 09/02/99
Date Reported: 09/14/99

Volatile Organics by GC/MS Method 8260
Quality Control/Quality Assurance Summary

Laboratory Number	99-1350	MS/MSD	RPD
Client ID	Blank	Recovery	
Matrix	WATER	WATER	
Analyte	Results ug/L	%Recoveries	
Bromochloromethane	ND<5		
Dichlorodifluoromethane	ND<5		
Chloromethane	ND<5		
Vinyl Chloride	ND<5		
Bromomethane	ND<5		
Chloroethane	ND<5		
Trichlorofluoromethane	ND<1		
1,1-Dichloroethene	ND<1	81	5
Acetone	ND<50		
Trichlorotrifluoroethane	ND<1		
Methylene Chloride	ND<1		
t-1,2-Dichloroethene	ND<1		
Methyl-t-butyl Ether	ND<1		
1,1-Dichloroethane	ND<1		
2,2-Dichloropropane	ND<1		
cis-1,2-Dichloroethene	ND<1		
2-Butanone	ND<10		
Chloroform	ND<1		
1,1,1-Trichloroethane	ND<1		
Carbon Tetrachloride	ND<1		
1,1-Dichloropropene	ND<1		
Benzene	ND<1	102	3
1,2-Dichloroethane	ND<1		
Trichloroethene	ND<1	103	11
1,2-Dichloropropane	ND<1		
Dibromomethane	ND<1		
Bromodichloromethane	ND<1		
trans-1,3-Dichloropropene	ND<1		
4-Methyl-2-Pentanone	ND<10		
Toluene	ND<1	102	1
cis-1,3-Dichloropropene	ND<1		
1,1,2-Trichloroethane	ND<1		
Tetrachloroethene	ND<1		
1,3-Dichloropropane	ND<1		
2-Hexanone	ND<10		
Dibromochloromethane	ND<1		
1,2-Dibromoethane	ND<1		
Chlorobenzene	ND<1	106	1
1,1,1,2-Tetrachloroethane	ND<1		
Ethylbenzene	ND<1		
m,p-Xylene	ND<1		

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C E R T I F I C A T E O F A N A L Y S I S

Job Number: 99-1350
Client : Western Geo-Engineers
Project : DP793 Park Blvd

Date Sampled : 08/26/99
Date Analyzed: 09/02/99
Date Reported: 09/14/99

Volatile Organics by GC/MS Method 8260
Quality Control/Quality Assurance Summary

Laboratory Number	99-1350	MS/MSD	RPD
Client ID	Blank	Recovery	
Matrix	WATER	WATER	
Analyte	Results ug/L	%Recoveries	
o-Xylene	ND<1		
Styrene	ND<1		
Bromoform	ND<1		
Isopropylbenzene	ND<1		
Bromobenzene	ND<1		
1,1,2,2-Tetrachloroethane	ND<1		
n-Propyl Benzene	ND<1		
2-Chlorotoluene	ND<1		
4-Chlorotoluene	ND<1		
1,3,5-Trimethylbenzene	ND<1		
tert-Butylbenzene	ND<1		
1,2,4-Trimethylbenzene	ND<1		
1,3-Dichlorobenzene	ND<1		
1,4-Dichlorobenzene	ND<1		
sec-Butylbenzene	ND<1		
1,2-Dichlorobenzene	ND<1		
p-Isopropyltoluene	ND<1		
n-Butylbenzene	ND<1		
1,2-Dibromo-3-chloropropa	ND<1		
Naphthalene	ND<1		
1,2,4-Trichlorobenzene	ND<1		
Hexachlorobutadiene	ND<1		
1,2,3-Trichlorobenzene	ND<1		
1,2,3-Trichloropropane	ND<1		
SUR-Dibromofluoromethane	90% Rec	100/98	2
SUR-Toluene d8	98% Rec	102/99	3
SUR-4-Bromofluorobenzene	106% Rec	98/96	2

Reviewed and Approved

John A. Murphy
Laboratory Director

99-1350

North State Environmental Analytical Laboratory

90 South Spruce Avenue, Suite W, South San Francisco, CA 94080
Phone: (650) 266-4563 Fax: (650) 266-4560

Chain of Custody / Request for Analysis
Lab Job No.:_____ Page___ of___

Client: Desert Petroleum	Report to: Georg Converse	Phone: 530-668-5300	Turnaround Time
Mailing Address: WEGE 1386 E. Beamer St Woodland CA 95776	Billing to: Western Geo Engineers	Fax: 530-662-0273	
		PO# / Billing Reference:	Date: 8-26-99
			Sampler: Broadway

Project / Site Address: DP793 Park blvd

Analysis Requested

	Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	TPHg BTEX MTBE	8260 oxygenates						Comments / Hazards
1	MW-1	H_2O	4 VOAs	HCl	8-26-99 1110								
2	R-1				1653								
3	R-2				1501								
4	R-3				1417								
5	RS-2				1405								
6	RS-5				1559								
7	RS-6				1435								
8	RS-7				1724								
9	RS-8				1822								
10	RS-9				1733								
11	RS-10				1841								
12	T-1				1909	✓	✓						

Relinquished by: Stephen Broadway	Date: 8-27-99	Time: 1450	Received by:	Lab Comments
Relinquished by:	Date:	Time:	Received by:	
Relinquished by:	Date:	Time:	Received by:	

North State Environmental
Chemical Waste Disposal · Trucking · Consulting

FAX

Date 9/13/99

Number of pages including cover sheet- 10

TO: Roy Butler

Phone

Fax Phone 530 662-0273

FROM:
North State Environmental Lab
90 S. Spruce Avenue, Suite W
South San Francisco, CA 94080

Phone 650.266.4563
Fax Phone 650.266.4560

REMARKS: ☐ Urgent ☐ For your review ☐ Reply ASAP ☐ Please Comment

Orthophosphate results only

Garratt-Callahan Company

REPORT OF ANALYSES

Report Date: 09/10/99

Company Name: NORTH STATE ENVIRONMENTAL
Address: P.O. Box 5624
City/State/Zip: South San Francisco, CA 94083
Customer Number: 58480013

LABORATORY PROJECT NO.: 991481

Lab Sample ID No.: 991481-A

Name of Sample Source: MW-1
Sample Type: ☒ Grab ☐ Composite
Date/Time Sample Collected: 09/02/99 |0850
Date/Time Sample Received: 09/03/99 |1545
Name of Sampler: unknown
Employed By: North State Environmental

Analyte	Analysis Date	Analyst	Method	Result	Units	RDL
Orthophosphate, PO_4	09/03/99	W. Li	EPA 300.0	ND	mg/L	1

RDL = Reporting Detection Limit.
ND = None detected at or above the RDL.

COMMENTS:

The sample was analyzed at a 5x dilution.

Method Reference:

EPA: METHODS FOR THE DETERMINATION OF INORGANIC SUBSTANCES IN ENVIRONMENTAL SAMPLES, United States Environmental Protection Agency, EPA/600/R-93/100, August 1993.

Laboratory Name: GARRATT-CALLAHAN ANALYTICAL LABORATORY
Laboratory Certificate No: 1226

Laboratory Manager: _____
Signature

Garratt-Callahan Company

REPORT OF ANALYSES

Report Date: 09/10/99

Company Name: NORTH STATE ENVIRONMENTAL
Address: P.O. Box 5624
City/State/Zip: South San Francisco, CA 94083
Customer Number: 58480013

LABORATORY PROJECT NO.: 991481

Lab Sample ID No.: 991481-B

Name of Sample Source: RS5
Sample Type: ☒ Grab ☐ Composite
Date/Time Sample Collected: 09/02/99 0934
Date/Time Sample Received: 09/03/99 1545
Name of Sampler: unknown
Employed By: North State Environmental

Analyte	Analysis Date	Analyst	Method	Result	Units	RDL
Orthophosphate, PO_4	09/03/99	W. Li	EPA 300.0	ND	mg/L	1

RDL = Reporting Detection Limit
ND = None detected at or above the RDL.

COMMENTS:

The sample was analyzed at a 5x dilution.

Method Reference:

EPA: METHODS FOR THE DETERMINATION OF INORGANIC SUBSTANCES IN ENVIRONMENTAL SAMPLES, United States Environmental Protection Agency, EPA/600/R-93/100, August 1993.

Laboratory Name: GARRATT-CALLAHAN ANALYTICAL LABORATORY
Laboratory Certificate No: 1226
Laboratory Manager: _____
Signature

Garratt-Callahan Company

REPORT OF ANALYSES

Report Date: 09/10/99

Company Name: NORTH STATE ENVIRONMENTAL
Address: P.O. Box 5624
City/State/Zip: South San Francisco, CA 94083
Customer Number: 58480013

LABORATORY PROJECT NO.: 991481

Lab Sample ID No.: 991481-C

Name of Sample Source: RS6
Sample Type: ☒ Grab ☐ Composite
Date/Time Sample Collected: 09/02/99 |0910
Date/Time Sample Received: 09/03/99 |1545
Name of Sampler: unknown
Employed By: North State Environmental

Analyte	Analysis Date	Analyst	Method	Result	Units	RDL
Orthophosphate, PO_4	09/03/99	W. Li	EPA 300.0	ND	mg/L	1

RDL = Reporting Detection Limit.
ND = None detected at or above the RDL.

COMMENTS:

The sample was analyzed at a 5x dilution.

Method Reference:

EPA: METHODS FOR THE DETERMINATION OF INORGANIC SUBSTANCES IN ENVIRONMENTAL SAMPLES, United States Environmental Protection Agency, EPA/600/R-93/100, August 1993.

Laboratory Name: GARRATT-CALLAHAN ANALYTICAL LABORATORY
Laboratory Certificate No: 1226

Laboratory Manager: _____
Signature

Garratt-Callahan Company

REPORT OF ANALYSES

Report Date: 09/10/99

Company Name: NORTH STATE ENVIRONMENTAL
Address: P.O. Box 5624
City/State/Zip: South San Francisco, CA 94083
Customer Number: 58480013

LABORATORY PROJECT NO.: 991481

Lab Sample ID No.: 991481-D

Name of Sample Source: RS8
Sample Type: ☒ Grab ☐ Composite
Date/Time Sample Collected: 09/02/99 1330
Date/Time Sample Received: 09/03/99 1545
Name of Sampler: unknown
Employed By: North State Environmental

Analyte	Analysis Date	Analyst	Method	Result	Units	RDL
Orthophosphate, PO_4	09/03/99	W. Li	EPA 300.0	ND	mg/L	1

RDL = Reporting Detection Limit.
ND = None detected at or above the RDL.

COMMENTS:

The sample was analyzed at a 5x dilution.

Method Reference:

EPA: METHODS FOR THE DETERMINATION OF INORGANIC SUBSTANCES IN ENVIRONMENTAL SAMPLES, United States Environmental Protection Agency, EPA/600/R-93/100, August 1993.

Laboratory Name: GARRATT-CALLAHAN ANALYTICAL LABORATORY
Laboratory Certificate No: 1226
Laboratory Manager: _____
Signature

Garratt-Callahan Company

REPORT OF ANALYSES

Report Date: 09/10/99

Company Name: NORTH STATE ENVIRONMENTAL
Address: P.O. Box 5624
City/State/Zip: South San Francisco, CA 94083
Customer Number: 58480013

LABORATORY PROJECT NO.: 991481

Lab Sample ID No.: 991481-E

Name of Sample Source: RS9
Sample Type: ☒ Grab ☐ Composite
Date/Time Sample Collected: 09/02/99 |0950
Date/Time Sample Received: 09/03/99 |1545
Name of Sampler: unknown
Employed By: North State Environmental

Analyte	Analysis Date	Analyst	Method	Result	Units	RDL
Orthophosphate, PO_4	09/03/99	W. Li	EPA 300.0	ND	mg/L	1

RDL = Reporting Detection Limit.
ND = None detected at or above the RDL.

COMMENTS:

The sample was analyzed at a 5x dilution.

Method Reference:

EPA: METHODS FOR THE DETERMINATION OF INORGANIC SUBSTANCES IN ENVIRONMENTAL SAMPLES, United States Environmental Protection Agency, EPA/600/R-93/100, August 1993.

Laboratory Name: GARRATT-CALLAHAN ANALYTICAL LABORATORY
Laboratory Certificate No: 1226
Laboratory Manager: _____
Signature

Garratt-Callahan Company

REPORT OF ANALYSES

Report Date: 09/10/99

Company Name: NORTH STATE ENVIRONMENTAL
Address: P.O. Box 5624
City/State/Zip: South San Francisco, CA 94083
Customer Number: 58480013

LABORATORY PROJECT NO.: 991481

Lab Sample ID No.: 991481-F

Name of Sample Source: RS10
Sample Type: ☒ Grab ☐ Composite
Date/Time Sample Collected: 09/02/99 |1559
Date/Time Sample Received: 09/03/99 |1545
Name of Sampler: unknown
Employed By: North State Environmental

Analyte	Analysis Date	Analyst	Method	Result	Units	RDL
Orthophosphate, PO_4	09/03/99	W. Li	EPA 300.0	ND	mg/L	0.4

RDL = Reporting Detection Limit.
ND = None detected at or above the RDL.

COMMENTS:

The sample was analyzed at a 2x dilution.

Method Reference:

EPA: METHODS FOR THE DETERMINATION OF INORGANIC SUBSTANCES IN ENVIRONMENTAL SAMPLES, United States Environmental Protection Agency, EPA/600/R-93/100, August 1993.

Laboratory Name: GARRATT-CALLAHAN ANALYTICAL LABORATORY
Laboratory Certificate No: 1226

Laboratory Manager: _____
Signature

Garratt-Callahan Company

REPORT OF ANALYSES

Report Date: 09/10/99

Company Name: NORTH STATE ENVIRONMENTAL
Address: P.O. Box 5624
City/State/Zip: South San Francisco, CA 94083
Customer Number: 58480013

LABORATORY PROJECT NO.: 991481

Lab Sample ID No.: 991481-G

Name of Sample Source: T1
Sample Type: ☒ Grab ☐ Composite
Date/Time Sample Collected: 09/02/99 |1540
Date/Time Sample Received: 09/03/99 |1545
Name of Sampler: unknown
Employed By: North State Environmental

Analyte	Analysis Date	Analyst	Method	Result	Units	RDL
Orthophosphate, PO_4	09/03/99	W. Li	EPA 300.0	ND	mg/L	1

RDL = Reporting Detection Limit.
ND = None detected at or above the RDL.

COMMENTS:

The sample was analyzed at a 5x dilution.

Method Reference:

EPA: METHODS FOR THE DETERMINATION OF INORGANIC SUBSTANCES IN ENVIRONMENTAL SAMPLES, United States Environmental Protection Agency, EPA/600/R-93/100, August 1993.

Laboratory Name: GARRATT-CALLAHAN ANALYTICAL LABORATORY
Laboratory Certificate No: 1226

Laboratory Manager: _____
Signature

North State Environmental Analytical Laboratory
90 South Spruce Avenue, Suite W, South San Francisco, CA 94080
Phone: (650) 266-4563 Fax: (650) 266-4560

CERTIFIED SAMPLES

Chain of Custody / Request for Analysis

Lab Job No.: 991481 Page 1 of 1

Client: NSE	Report to: ERICA STANTON	Phone:	Turnaround Time: 5-DAY
Mailing Address:	Billing to:	Fax:	Date: 9.3.99
		PO# / Billing Reference: 99-1384	Sampler:

Project / Site Address: 99-1384

	Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	Analysis Requested: ORTHO PHOSPHATE	Comments / Hazards
A	MW-1	H_2O	250ml	—	9.2.99 / 8:50	X	
B	RS5	↓	↓	↓	/ 9:34	X	
C	RS6				/ 9:10	X	
D	RS8				/ 13:30	X	
E	RS9				/ 9:50	X	
F	RS10				/ 15:99	X	
	T1	↓	↓	↓	↓ / 15:40	X	

LX — GARRAT CALLAHAN CO. — SEP 3 1999 — MILBRAE — RCG

Lab Comments

Relinquished by: [signature] Date: 9/3/99 Time: [illegible] Received by: Matt Estes

Relinquished by: Matt Estes Date: 9/3/99 Time: 15:50 Received by: [signature]

Relinquished by: [signature] Date: 9/3/99 Time: 15:50 Received by:

SUBTO: GARRAT CALLAHAN

North State Environmental Analytical Laboratory

90 South Spruce Avenue, Suite W, South San Francisco, CA 94080
Phone: (650) 266-4563 Fax: (650) 266-4560

Chain of Custody / Request for Analysis
Lab Job No.:_____ Page___of___

Client: Desert Petroleum
Report to: Bob Butler
Phone: 530 668 5300
Fax: 530 662 0273
Turnaround Time
Mailing Address: Western Geo Engineers, 1386 E. Beamer St, Woodland, CA 95776
Billing to: SAME
PO# / Billing Reference:
Date: 9-2-99
Sampler: Broadbury
Project / Site Address: DP 793 Park Blvd
Analysis Requested

	Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	Ortho Phosphate	Ammonia Nitrogen	Hydrocarbon Degraders	CO_2/Methane	Comments / Hazards
1	MW 1	H_2O	2 Ambers	None	9-2-99 8:50	✓	✓	✓	✓	
2	RS 5				9:34					
3	RS 6				9:10					
4	RS 8				13:30					
5	RS 9				9:50					
6	RS 10				15:59					
7	TI	↓	↓	↓	15:40	↓	↓	↓	↓	

Lab Comments

Relinquished by: Stephen J Beardsley Date: 9-3-99 Time: 9:37 Received by:
Relinquished by: [signature] Date: 9-3-99 Time: 11(AM) Received by: NSE
Relinquished by: Date: Time: Received by: (NSE)

Sep-13-99 10:06A P.10

North State Environmental
Chemical Waste Disposal · Trucking · Consulting

FAX

Date 9.21.99

Number of pages including cover sheet- 4

TO: Roy Butler

Phone

Fax Phone 530-662-0273

FROM:
North State Environmental Lab
90 S. Spruce Avenue, Suite W
South San Francisco, CA 94080

Phone 650.266.4563
Fax Phone 650.266.4560

REMARKS: ☐ Urgent ☐ For your review ☐ Reply ASAP ☐ Please Comment

DP793 Park Blvd.

ammonia nitrogen only

GeoAnalytical Laboratories, Inc.

1405 Kansas Avenue Modesto, CA 95351 Phone (209) 572-0900 Fax (209) 572-0916

CERTIFICATE OF ANALYSIS

Date: 9/08/99

port # K250-04

orth State Environmental
South Spruce Ave
uth San CA 94080

Project: 99-1384

PO#

Date Rec'd: 9/07/99
Date Started: 9/07/99
Date Completed: 9/07/99

Date Sampled: 9/02/99
Time:
Sampler:

Sample ID	Lab ID	MDL	Method	Analyte	Results	Units
MW-1	K35182	0.5	350.2	Ammonia as N	ND	mg/L
RS-5	K35183	0.5	350.2	Ammonia as N	ND	mg/L
RS-6	K35184	0.5	350.2	Ammonia as N	ND	mg/L
RS-8	K35185	0.5	350.2	Ammonia as N	ND	mg/L
RS-9	K35186	0.5	350.2	Ammonia as N	ND	mg/L
RS-10	K35187	0.5	350.2	Ammonia as N	ND	mg/L
T-1	K35188	0.5	350.2	Ammonia as N	ND	mg/L

Ramiro Salgado

Certification # 1157

Donna Keller
Laboratory Director

GeoAnalytical Laboratories, Inc.

1405 Kansas Avenue Modesto, CA 95351 Phone (209) 572-0900 Fax (209) 572-0916

QC REPORT

eport# K250-04

Dates Analyzed 9/7/99

orth State Environmental
) South Spruce Ave
outh San Francisco CA 94080

nalyte	Batch #	Method	MS % Recovery	MSD % Recovery	RPD	Blank
mmonia as N	103275	350.2	101.5	101.0	0.5	ND

Ramiro Salgado

Certification # 1157

Donna Keller
Laboratory Director

North State Environmental Analytical Laboratory

90 South Spruce Avenue, Suite W, South San Francisco, CA 94080
Phone: (650) 266-4563 Fax: (650) 266-4560

Chain of Custody / Request for Analysis
Lab Job No.:_____ Page 1 of 1

Client: NORTH STATE ENVIRONMENTAL	Report to: Erica Stanton	Phone:	Turnaround Time: 5-DAY
Mailing Address:	Billing to:	Fax:	Date: 9.3.99
		PO# / Billing Reference: #99-1384	Sampler:

Project / Site Address: #99-1384

Analysis Requested

Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	AMMONIA AS NITROGEN			Comments / Hazards
MW1	H_2O	250ml/PL	NONE	9.2.99/ 8:50	X		K35182	
RS5				/ 9:32	X		K35183	
RS6				/ 9:10	X		K35184	
RS8				/ 13:30	X		K35185	
RS9				/ 9:50	X		K35186	
RS10				/ 15:59	X		K35187	
T1	↓	↓	↓	↓ / 15:40	X		K35188	

Lab Comments

Relinquished by: Erica Stanton NSE Date: 9/3/99 Time: PM Received by: Fed Ex

Relinquished by: Fed Ex Date: 9/7/99 Time: 10:45 Received by: Jennifer Hoffman

Relinquished by: Date: Time: Received by:

SUB TO: GEOANALYTICAL

Sep-21-99 02:00P

P.04

North State Environmental
Chemical Waste Disposal · Trucking · Consulting

FAX

Date 9.16.99

Number of pages including cover sheet- 9

TO: Western Geo

Phone

Fax Phone 530-668-5300

FROM:
North State Environmental Lab
90 S. Spruce Avenue, Suite W
South San Francisco, CA 94080

Phone 650.266.4563
Fax Phone 650.266.4560

REMARKS: ☐ Urgent ☐ For your review ☐ Reply ASAP ☐ Please Comment

DP 743 Park Blvd

CO_2 / methane

CHROMALAB, INC.

Environmental Services (SDB)

Submission #: 1999-09-0076

To: **North State Labs**
Attn.: Erica Stanton

Test Method: 3810M
Prep Method: 3810

Dissolved Gases by Headspace

Sample ID:	T 1	Lab Sample ID:	1999-09-0076-007
Project:	99-1384	Received:	09/07/1999 14:50
		Extracted:	09/15/1999 14:00
Sampled:	09/02/1999 15:40	QC-Batch:	1999/09/15-01.37
Matrix:	Water		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Methane	0.19	0.010	ug/ml	1.00	09/15/1999 18:36	
Carbon Dioxide	110	2.0	ug/ml	1.00	09/15/1999 18:36	

CHROMALAB, INC.
Environmental Services (SDB)

Submission #: 1999-09-0076

To: ***North State Labs***
Attn.: Erica Stanton

Test Method: 3810M
Prep Method: 3810

Dissolved Gases by Headspace

Sample ID:	**RS 10**	Lab Sample ID:	**1999-09-0076-006**
Project:	99-1384	Received:	09/07/1999 14:50
		Extracted:	09/15/1999 14:00
Sampled:	09/02/1999 15:59	QC-Batch:	1999/09/15-01.37
Matrix:	Water		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Methane	0.037	0.010	ug/ml	1.00	09/15/1999 18:28	
Carbon Dioxide	100	2.0	ug/ml	1.00	09/15/1999 18:28	

CHROMALAB, INC.

Environmental Services (SDB)

Submission #: 1999-09-0076

To: **North State Labs**
Attn.: Erica Stanton

Test Method: 3810M
Prep Method: 3810

Dissolved Gases by Headspace

Sample ID:	**RS 9**	Lab Sample ID:	**1999-09-0076-005**
Project:	99-1384	Received:	09/07/1999 14:50
		Extracted:	09/15/1999 14:00
Sampled:	09/02/1999 09:50	QC-Batch:	1999/09/15-01.37
Matrix:	Water		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Methane	2.1	0.010	ug/ml	1.00	09/15/1999 18:17	
Carbon Dioxide	250	2.0	ug/ml	1.00	09/15/1999 18:17	

CHROMALAB, INC.
Environmental Services (SDB)

Submission #: 1999-09-0076

To: **North State Labs**
Attn.: Erica Stanton

Test Method: 3810M
Prep Method: 3810

Dissolved Gases by Headspace

Sample ID:	**RS 8**	Lab Sample ID:	**1999-09-0076-004**
Project:	99-1384	Received:	09/07/1999 14:50
		Extracted:	09/15/1999 14:00
Sampled:	09/02/1999 13:30	QC-Batch:	1999/09/15-01.37
Matrix:	Water		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Methane	0.018	0.010	ug/ml	1.00	09/15/1999 18:09	
Carbon Dioxide	58	2.0	ug/ml	1.00	09/15/1999 18:09	

CHROMALAB, INC.
Environmental Services (SDB)

Submission #: 1999-09-0076

To: **North State Labs**
Attn.: Erica Stanton

Test Method: 3810M
Prep Method: 3810

Dissolved Gases by Headspace

Sample ID:	**RS 6**	Lab Sample ID:	**1999-09-0076-003**
Project:	99-1384	Received:	09/07/1999 14:50
		Extracted:	09/15/1999 14:00
Sampled:	09/02/1999 09:10	QC-Batch:	1999/09/15-01.37
Matrix:	Water		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Methane	ND	0.010	ug/ml	1.00	09/15/1999 17:33	
Carbon Dioxide	360	2.0	ug/ml	1.00	09/15/1999 17:33	

CHROMALAB, INC.

Environmental Services (SDB)

Submission #: 1999-09-0076

To: **North State Labs**
Attn.: Erica Stanton

Test Method: 3810M
Prep Method: 3810

Dissolved Gases by Headspace

Sample ID:	RS 5	Lab Sample ID:	1999-09-0076-002
Project:	99-1384	Received:	09/07/1999 14:50
		Extracted:	09/15/1999 14:00
Sampled:	09/02/1999 09:34	QC-Batch:	1999/09/15-01.37
Matrix:	Water		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Methane	0.21	0.010	ug/ml	1.00	09/15/1999 17:24	
Carbon Dioxide	160	2.0	ug/ml	1.00	09/15/1999 17:24	

CHROMALAB, INC.

Environmental Services (SDB)

- Submission #: 1999-09-0076

To: **North State Labs**
Attn.: Erica Stanton

Test Method: 3810M
Prep Method: 3810

Dissolved Gases by Headspace

Sample ID:	**MW 1**	Lab Sample ID:	**1999-09-0076-001**
Project:	99-1384	Received:	09/07/1999 14:50
		Extracted:	09/15/1999 14:00
Sampled:	09/02/1999 08:50	QC-Batch:	1999/09/15-01.37
Matrix:	Water		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Methane	ND	0.010	ug/ml	1.00	09/15/1999 17:16	
Carbon Dioxide	130	2.0	ug/ml	1.00	09/15/1999 17:16	

CHROMALAB, INC.
Environmental Services (SDB)

Submission #: 1999-09-0076

Dissolved Gases by Headspace

North State Labs	90 S. Spruce Street, Suite W So San Francisco, CA 94080
Attn: Erica Stanton	Phone: (650) 266-4583 Fax: (650) 266-4560
Project #: 99-1384	Project:

Samples Reported

Sample ID	Matrix	Date Sampled	Lab #
MW 1	Water	09/02/1999 08:50	1
RS 5	Water	09/02/1999 09:34	2
RS 6	Water	09/02/1999 09:10	3
RS 8	Water	09/02/1999 13:30	4
RS 9	Water	09/02/1999 09:50	5
RS 10	Water	09/02/1999 15:59	6
T 1	Water	09/02/1999 15:40	7

CytoCulture
ENVIRONMENTAL
BIOTECHNOLOGY
CytoCulture International, Inc. 1986

Attn: John Murphy
North State Environmental, Inc.
90 South Spruce Avenue Suite V
South San Francisco, CA 94080
Cyto Lab Number: 99-66

Reporting Date: September 14, 1999

Project Contract #: 99-1384
Tel: 650-588-2838 Fax: 650-588-1950

SAMPLES: Seven water sample (collected 9/2/99) were received at CytoCulture on 9/7/99. The samples were assayed the same day and stored at 4°C for any follow up work..

AEROBIC
Hydrocarbon-Degrading Bacteria Enumeration Assays

ANALYSIS REQUEST: Bacterial enumeration for aerobic hydrocarbon-degraders.

CARBON SOURCES: Gasoline, diesel and jet fuel hydrocarbons were dissolved into the agar as the sole carbon and energy sources for the growth of hydrocarbon-degrading aerobic bacteria.

PROTOCOLS:

Aerobic Hydrocarbon Degraders

Sterile agar plates (100 x 15 mm) were prepared with aerobic vs. anaerobic minimal salts medium at pH 6.8 with 1.5% noble agar. Dissolved phase petroleum hydrocarbons provided the only carbon/energy source. Triplicate plates were inoculated with 1.0 ml of sample, or a log dilution of the sample, at dilutions of 10^{0}, 10^{-1}, 10^{-2} and 10^{-3}. Hydrocarbon plates were poured on 9/7/99. The plates were counted after 7 days. The plate count data are reported as colony forming units (cfu) per milliliter (ml) of sample. Each bacteria population value represents a statistical average of the plate count data obtained with inoculations for at least two of the three log dilutions tested.

CytoCulture
ENVIRONMENTAL BIOTECHNOLOGY
CytoCulture International, Inc. 1986

INVOICE: LAB-NST 99-66
Company: North State Environmental
Street: South Spruce Avenue, Suite V
City/Zip: South San Francisco, CA 94080

Attn: John Murphy

Invoice Date: September 7, 1999
Reporting Date: September 14, 1999
Project Name:
No. Samples: 7 Water
Project Number: 99-1384
Tel: 650-588-2838 Fax: 650-588-1950

Chemistry Assay Description	**Qty**	**Unit Price**	**Amount**
Ammonia Nitrogen - Water		$25	$0.00
Ammonia Nitrogen - Soil		$30	$0.00
Nitrate Nitrogen - Water		$25	$0.00
Ortho-Phosphate - Water		$25	$0.00
Sulfate - Water		$25	$0.00
Ferrous Iron - Water		$40	$0.00
pH - Water		$10	$0.00
Dissolved Oxygen - Water		$15	$0.00
Percent Moisture - Soil		$15	$0.00
Redox potential (ORP)- water		$20	$0.00
Bacterial Plate Enumerations			
Aerobic Hydrocarbon Degraders (cfu/ml) - Water	7	$60	$420.00
Aerobic Hydrocarbon Degraders (cfu/g) - Soil		$70	$0.00
Aerobic Total Heterotrophs (cfu/ml) - Water	0	$60	$0.00
Aerobic Total Heterotrophs (cfu/g) - Soil		$70	$0.00
Anaerobic Hydrocarbon Degraders (cfu/ml) - Water		$90	$0.00
Anaerobic Hydrocarbon Degraders (cfu/g) - Soil		$100	$0.00
Anaerobic Total Heterotrophs (cfu/ml) - Water		$90	$0.00
Anaerobic Total Heterotrophs (cfu/g) - Soil		$100	$0.00
			$0.00
Bacterial MPN Enumerations (Priced per sets of 6)			
Nitrate Reducing Bacteria (cells/ml) - Water		$140	$0.00
Iron Reducing Bacteria (cells/ml) - Water		$140	$0.00
Sulfate Reducing Bacteria (cells/ml) - Water		$140	$0.00

Invoice Total **$420.00**

Please have checks mailed within 30 days, payable to:
CytoCulture International, Inc.
249 Tewksbury Avenue
Point Richmond, CA 94801-3829

Thank you.

North State Environmental
Chemical Waste Disposal · Trucking · Consulting

FAX

Date 9.16.99

Number of pages including cover sheet- 5

TO: Roy Butler

Phone

Fax Phone ~~530 666-5~~ 530 662-0273

FROM:
North State Environmental Lab
90 S. Spruce Avenue, Suite W
South San Francisco, CA 94080

Phone 650.266.4563
Fax Phone 650.266.4560

REMARKS: ☐ Urgent ☐ For your review ☐ Reply ASAP ☐ Please Comment

DP793 Park Blvd

Hydro carbon degraders results

Northstate Environmental

Subcontracted Microbiology Assays
performed by
***CytoCulture* Environmental Biotechnology** #99-66

CHAIN OF CUSTODY FORM

Project Name: 99-1384 Project No.	Northstate LOG IN #: 99-1384
Northstate Client Organization:	Northstate Project Manager: JOHN MURPHY
Address to Send Results: NORTH STATE ENVIRONMENTAL, 90 South Spruce Ave, SUITE V, SOUTH SAN FRANCISCO, CA 94080	
Client Fax for Sending Data: 650.588.1950	Client Contact / Project Manager: Mark
Client Tel for Follow-up: 650.588-2838	Client Sampler / Recorder:

Sample I.D. Indicate target Hydrocarbon range	Sampling Date	Sampling Time	Matrix Soil	Matrix Water	Analysis CFU Hydrocarbon Degraders	CFU Total Heterotrophic	pH	DO	NH_3	PO_4	NO_3	SO_4	Other Tests or Comments
MW1	9.2.99	8:50		↓	X								
RS5	↓	9:34		↓	X								
RS6	↓	9:10		↓	X								
RS8	↓	13:30		↓	X								
RS9	↓	9:50		↓	X								
RS10	↓	15:59		↓	X								
T1	↓	15:40		↓	X								

Signature of this form constitutes a firm Purchase Order for services requested above.

Chain of Custody Record			
Relinquished by: [signature]	Date/Hr:	Received by:	Date/Hr:
Received for CytoCulture Lab by: [signature]	Date/Hr: 9/7/99 3:12 pm (cold)	CytoCulture Lab Services Tel: 510-233-0102 Fax: 510-233-3777	Please fax Chain of Custody form to CytoCulture prior to delivery.

Plates poured 9/7/99

AEROBIC
Hydrocarbon Degrading Bacteria
Enumeration Results

CLIENT SAMPLE NUMBER	SAMPLE DATE	HYDROCARBON DEGRADERS (AEROBIC) (CFU/ML)	HYDROCARBON DEGRADERS (ANAEROBIC) (CFU/ML)
MW-1	9/2/99	1×10^1	Not Tested
RS-5	9/2/99	3.0×10^3	Not Tested
RS-6	9/2/99	4.0×10^2	Not Tested
RS-8	9/2/99	6.6×10^3	Not Tested
RS-9	9/2/99	1.0×10^4	Not Tested
RS-10	9/2/99	8.8×10^3	Not Tested
T-1	9/2/99	1.3×10^3	Not Tested

1.0×10^1 cfu/ml is the lowest detection level for this assay

A hydrocarbon-degrading bacteria positive control sample was run on 9/7/99. The plate count results obtained were $>1.0 \times 10^8$ cfu/ml. The positive control sample used was a previously characterized culture of hydrocarbon-degrading bacteria from a Northern California groundwater site.

Other notes: MW-1, RS-5 and RS-9 had small, diffuse colonies. RS-6 and RS-8 had predominantly large, white colonies. RS-10 displayed a greater variety of colonies, including a few unusual dark red colonies.

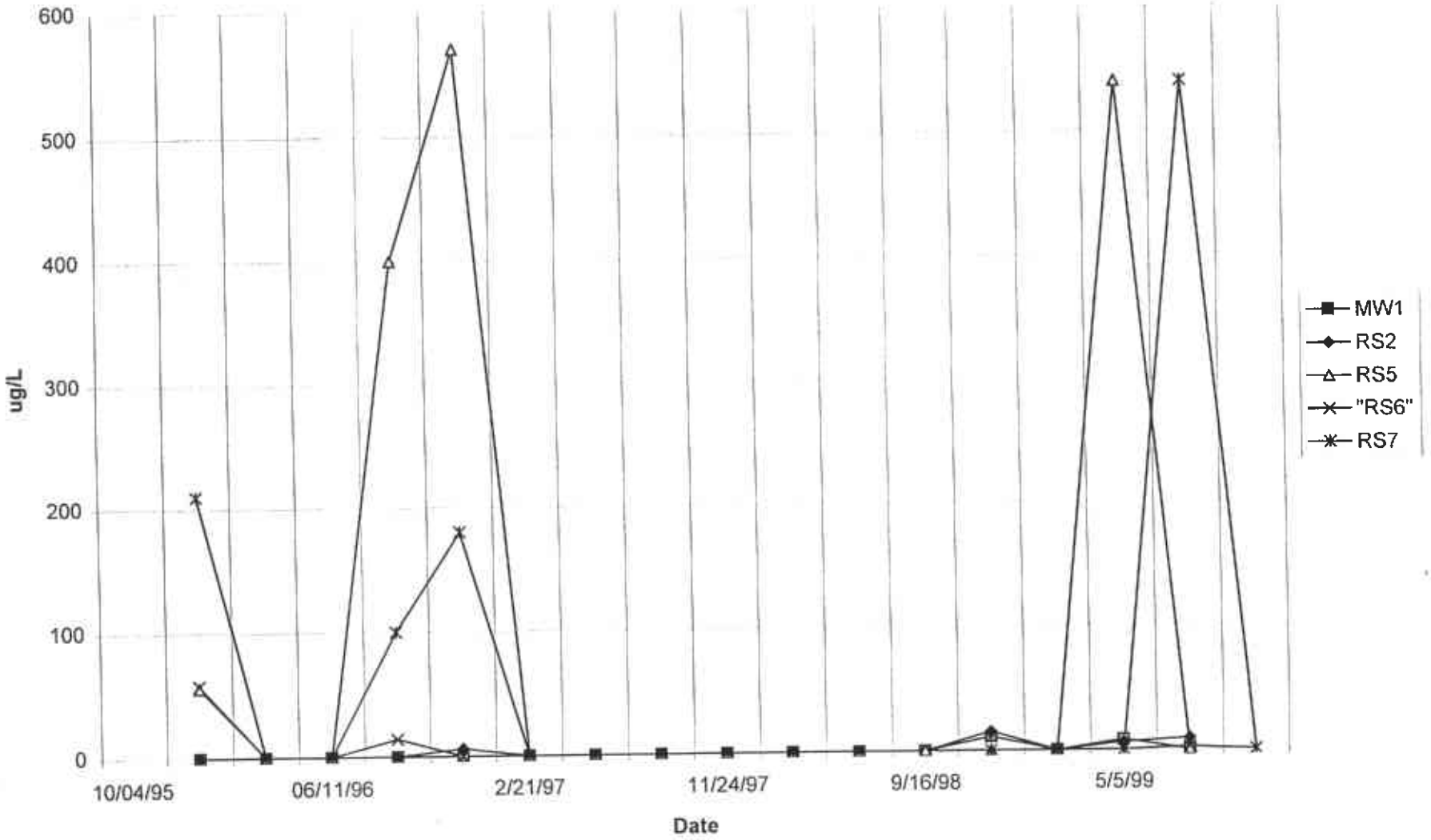
CytoCulture is available on a consulting basis to help with the interpretation of these data and their application to predictions of field conditions for biodegradation. Thank you.

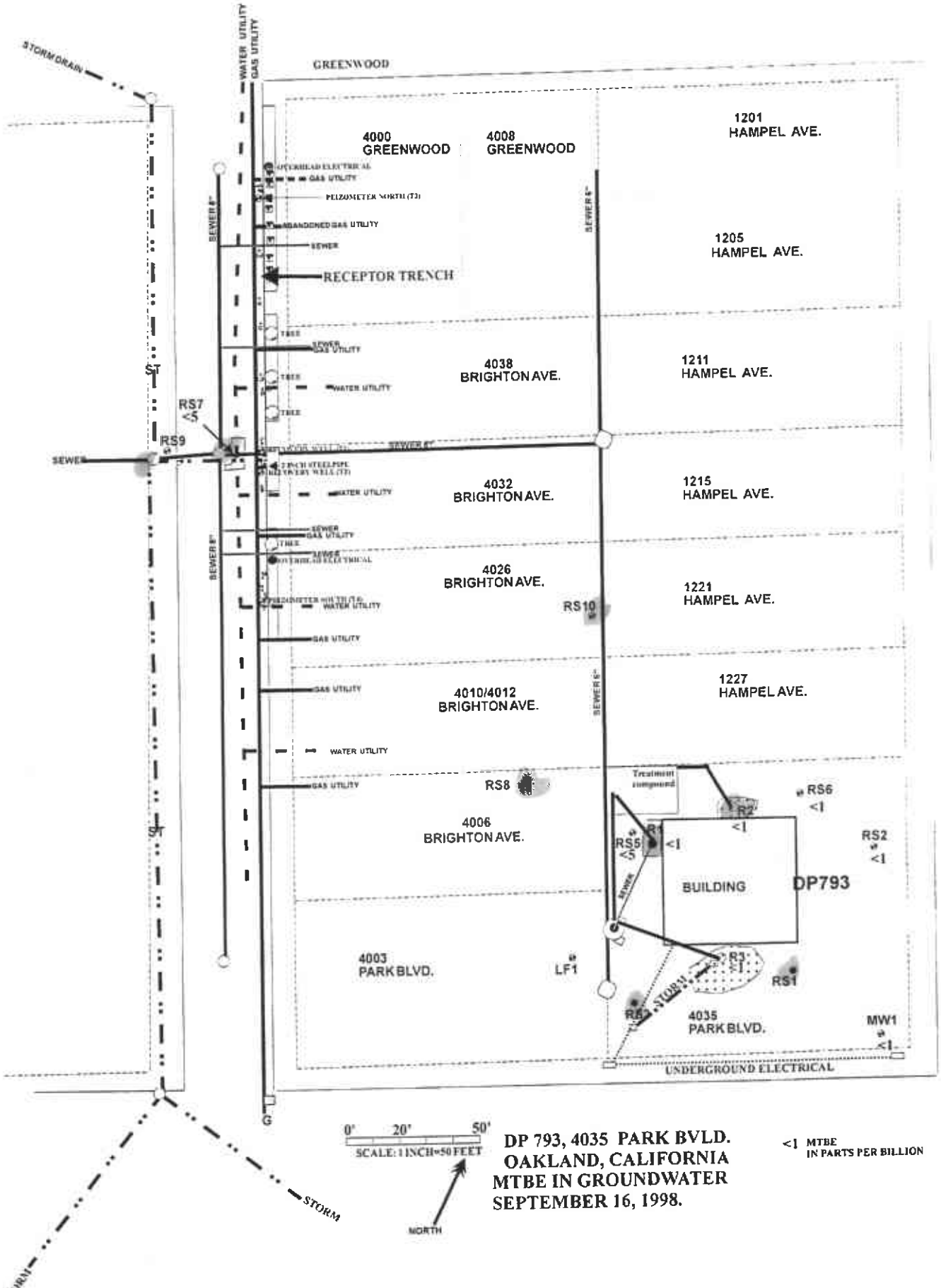
Lucas Cantin
Laboratory Services

Randall von Wedel, Ph.D.
Principal Biochemist and Director of Research

APPENDIX D

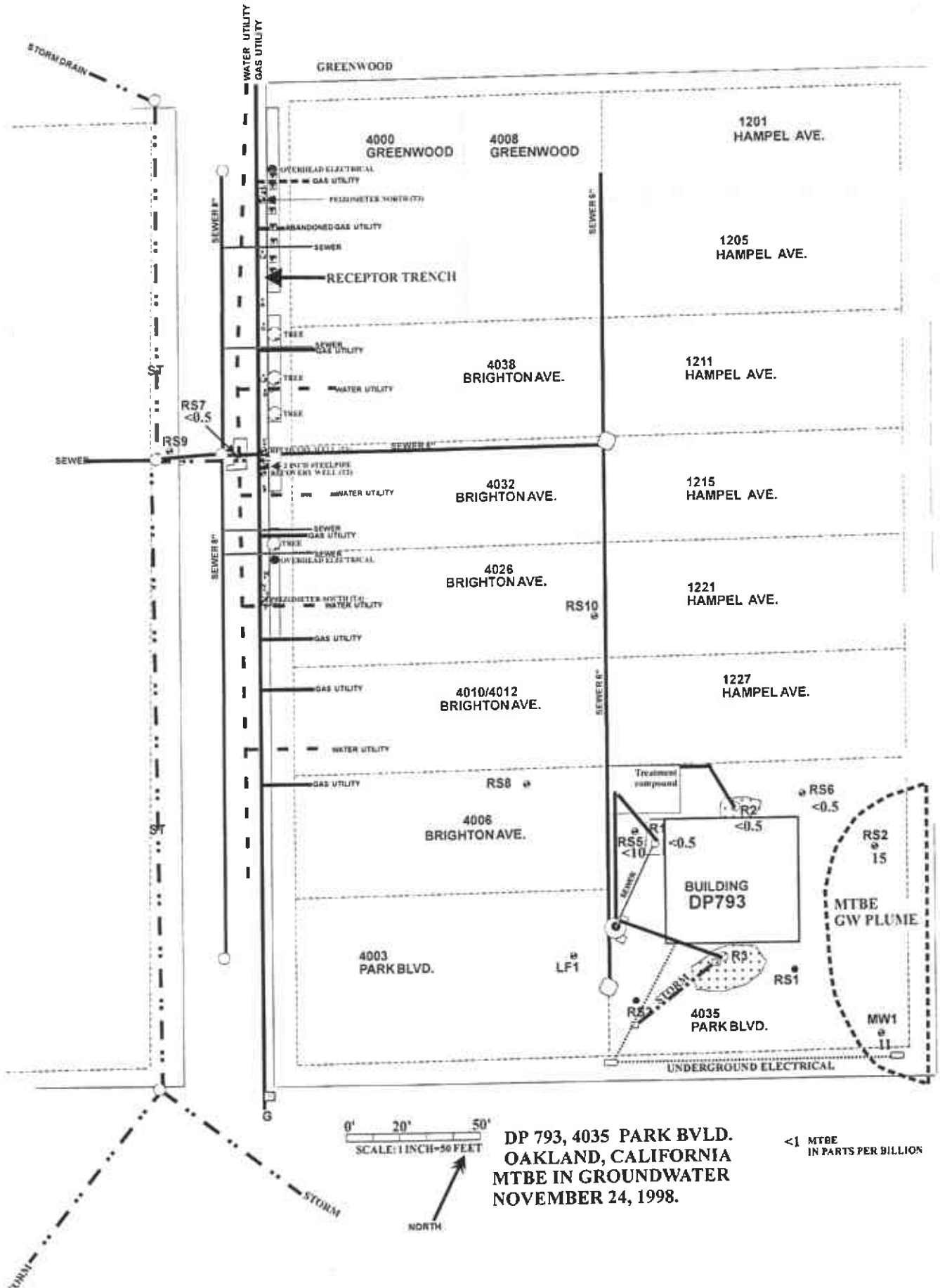
MTBE IN WELLS





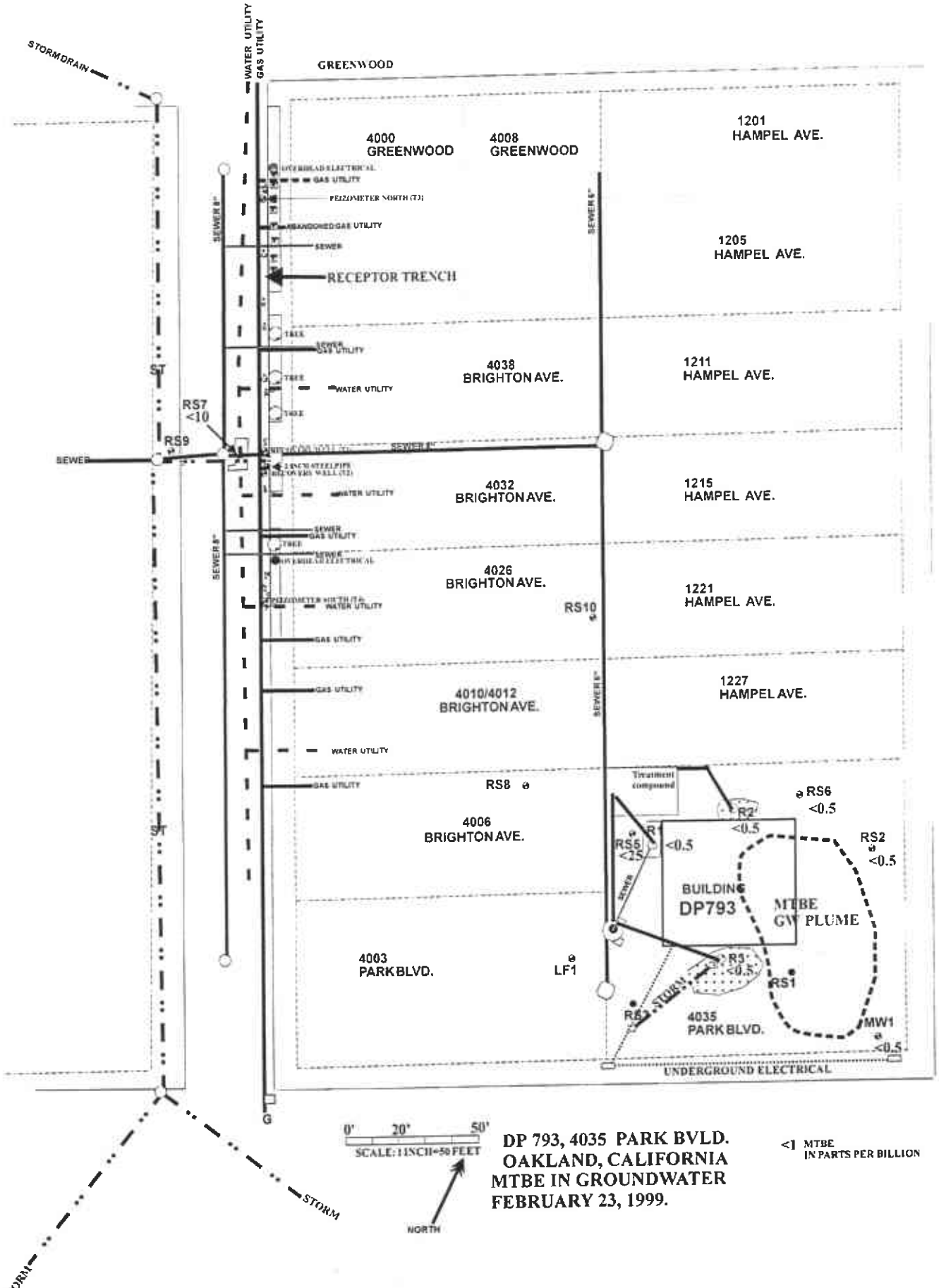
DP 793, 4035 PARK BVLD. OAKLAND, CALIFORNIA MTBE IN GROUNDWATER SEPTEMBER 16, 1998.

<1 MTBE IN PARTS PER BILLION



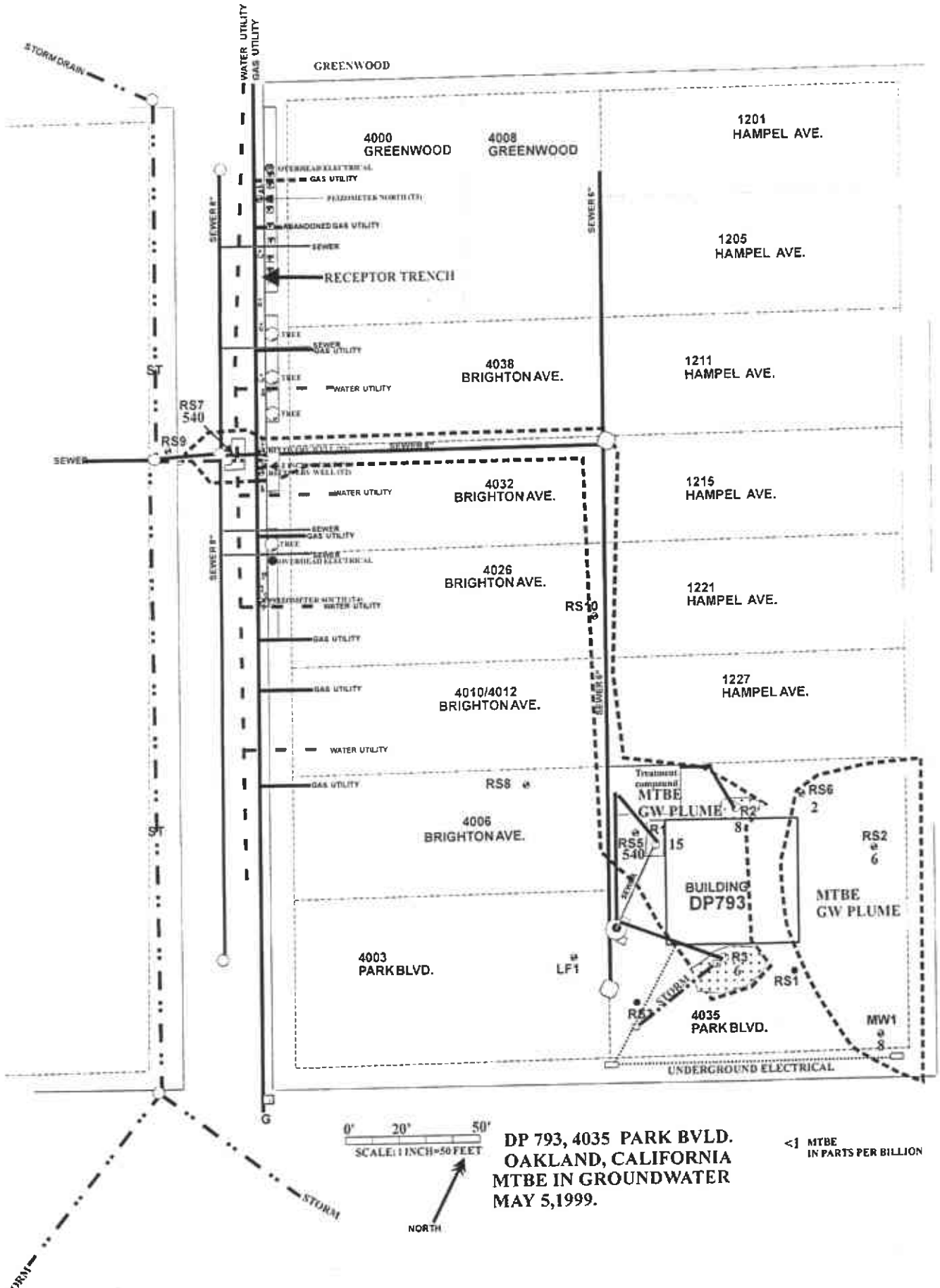
DP 793, 4035 PARK BVLD.
OAKLAND, CALIFORNIA
MTBE IN GROUNDWATER
NOVEMBER 24, 1998.

<1 MTBE IN PARTS PER BILLION



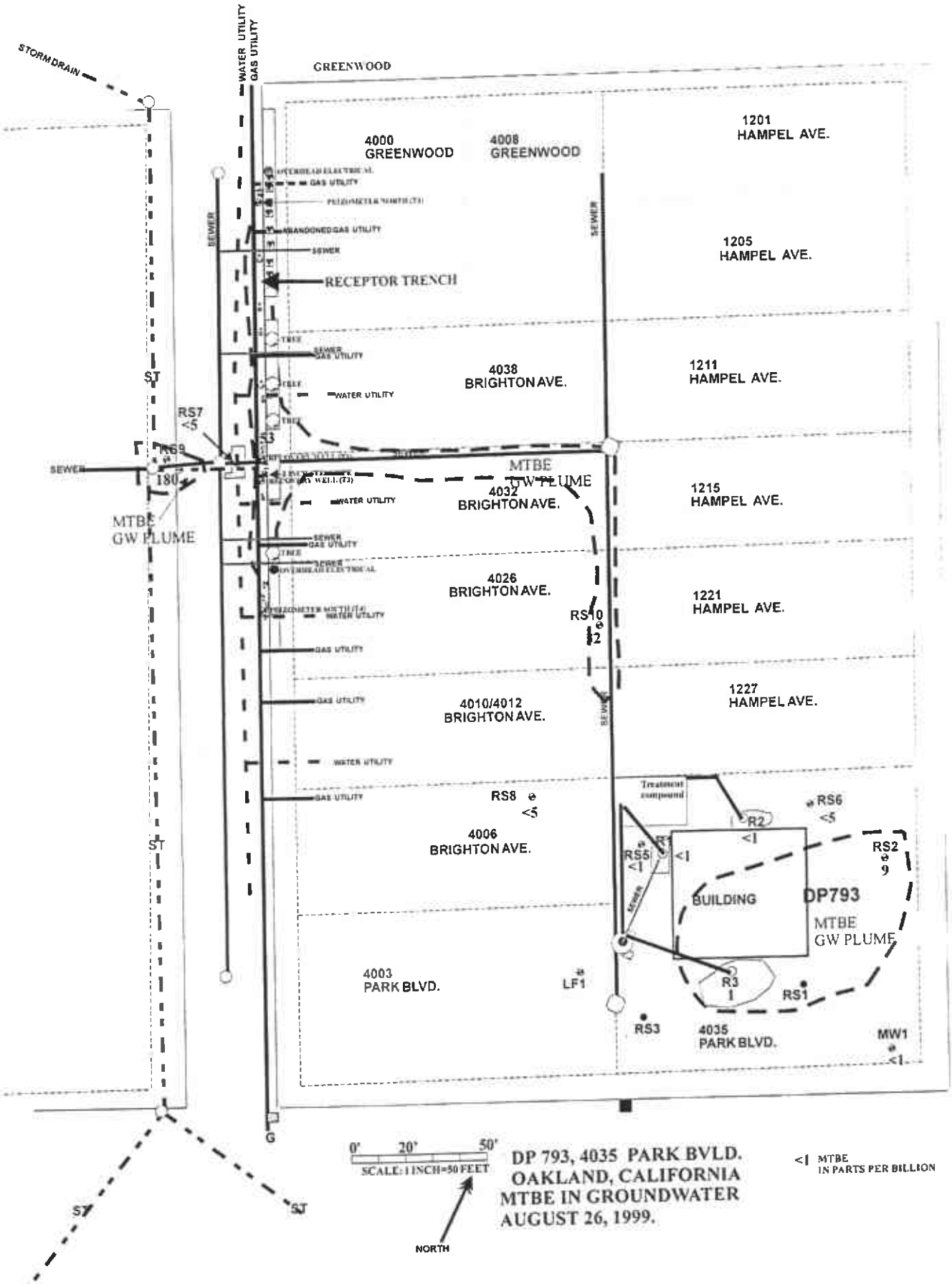
DP 793, 4035 PARK BVLD. OAKLAND, CALIFORNIA MTBE IN GROUNDWATER FEBRUARY 23, 1999.

<1 MTBE IN PARTS PER BILLION



DP 793, 4035 PARK BVLD.
OAKLAND, CALIFORNIA
MTBE IN GROUNDWATER
MAY 5,1999.

<1 MTBE IN PARTS PER BILLION


STORM DRAIN
WATER UTILITY
GAS UTILITY
GREENWOOD
4000 GREENWOOD
4008 GREENWOOD
1201 HAMPEL AVE.
1205 HAMPEL AVE.
1211 HAMPEL AVE.
1215 HAMPEL AVE.
1221 HAMPEL AVE.
1227 HAMPEL AVE.
RECEPTOR TRENCH
4038 BRIGHTON AVE.
4032 BRIGHTON AVE.
4026 BRIGHTON AVE.
4010/4012 BRIGHTON AVE.
4006 BRIGHTON AVE.
4003 PARK BLVD.
4035 PARK BLVD.
SEWER
ABANDONED GAS UTILITY
WATER UTILITY
TREE
ST
RS7 <5
RS9 180
MTBE GW PLUME
RS10 2
RS8 <5
RS6 <5
R2 <1
RS5 <1
R1 <1
RS2 9
BUILDING
DP793
MTBE GW PLUME
R3 1
RS1
RS3
LF1
MW1 <1
Treatment compound
0' 20' 50'
SCALE: 1 INCH=50 FEET
NORTH
DP 793, 4035 PARK BVLD.
OAKLAND, CALIFORNIA
MTBE IN GROUNDWATER
AUGUST 26, 1999.
<1 MTBE IN PARTS PER BILLION

APPENDIX E

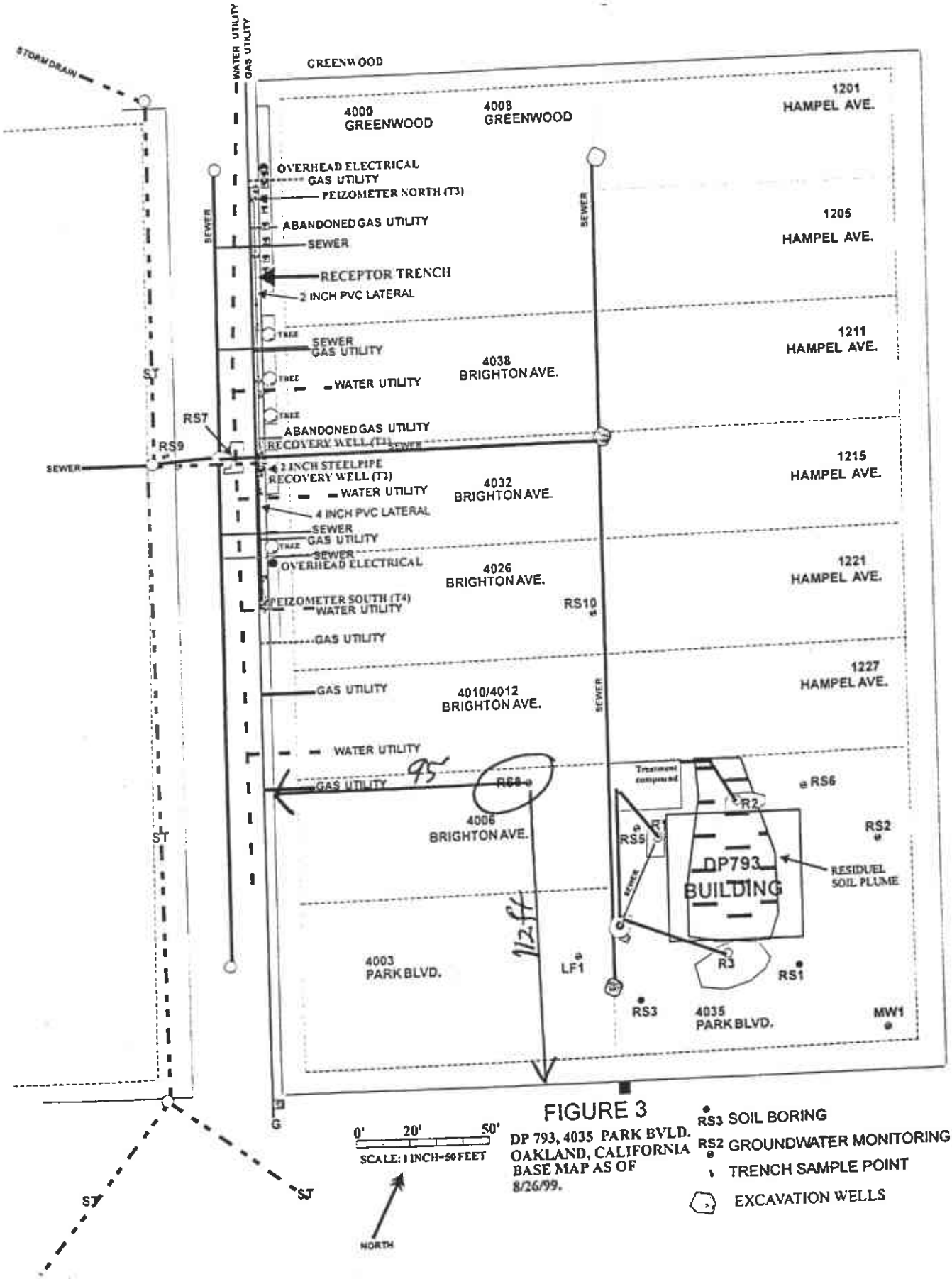


FIGURE 3

DP 793, 4035 PARK BVLD.
OAKLAND, CALIFORNIA
BASE MAP AS OF
8/26/99.

RS3 SOIL BORING
RS2 GROUNDWATER MONITORING WELL
TRENCH SAMPLE POINT
EXCAVATION WELLS

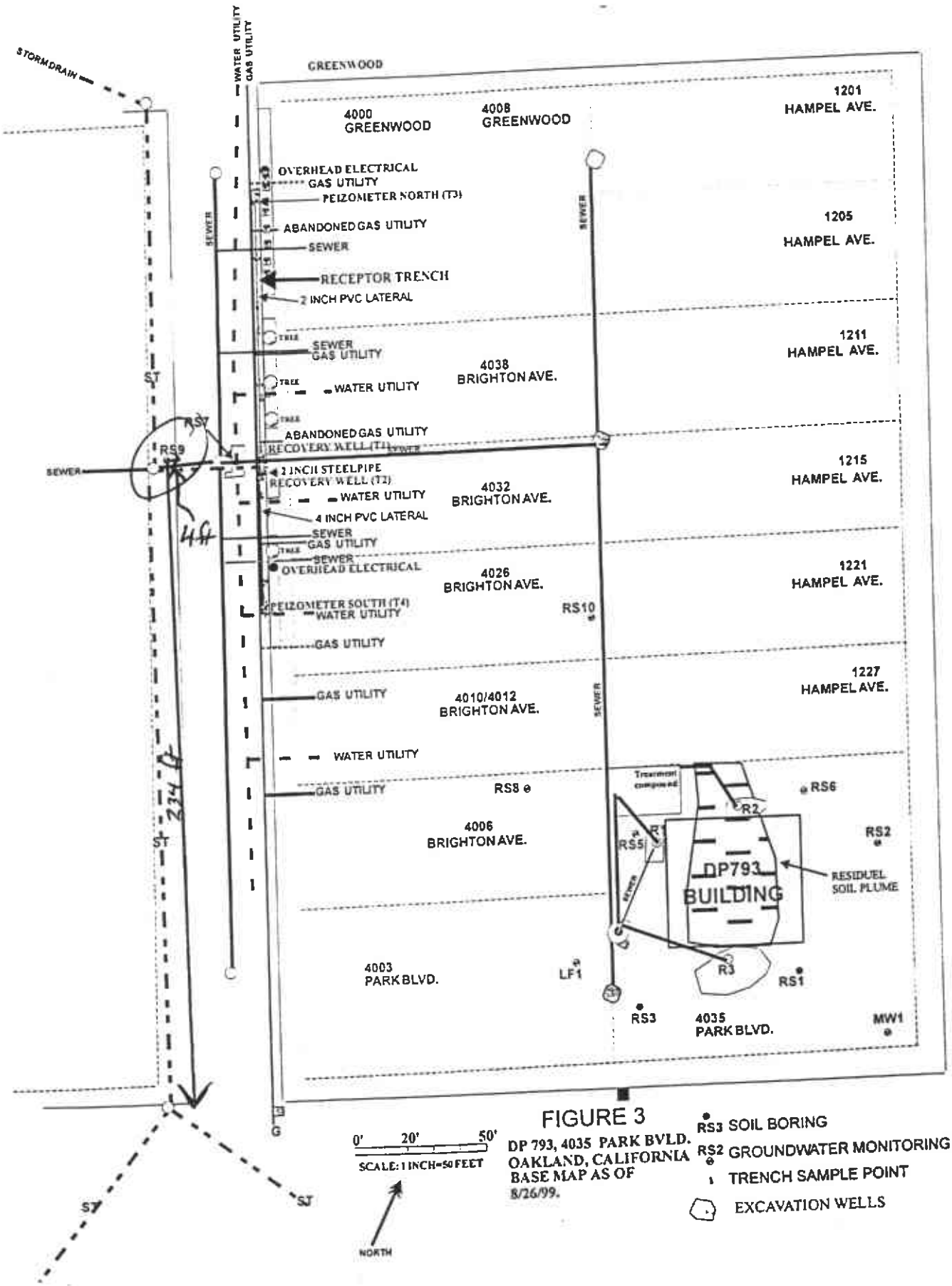


FIGURE 3

DP 793, 4035 PARK BVLD.
OAKLAND, CALIFORNIA
BASE MAP AS OF
8/26/99.

RS3 SOIL BORING

RS2 GROUNDWATER MONITORING WELL

TRENCH SAMPLE POINT

EXCAVATION WELLS

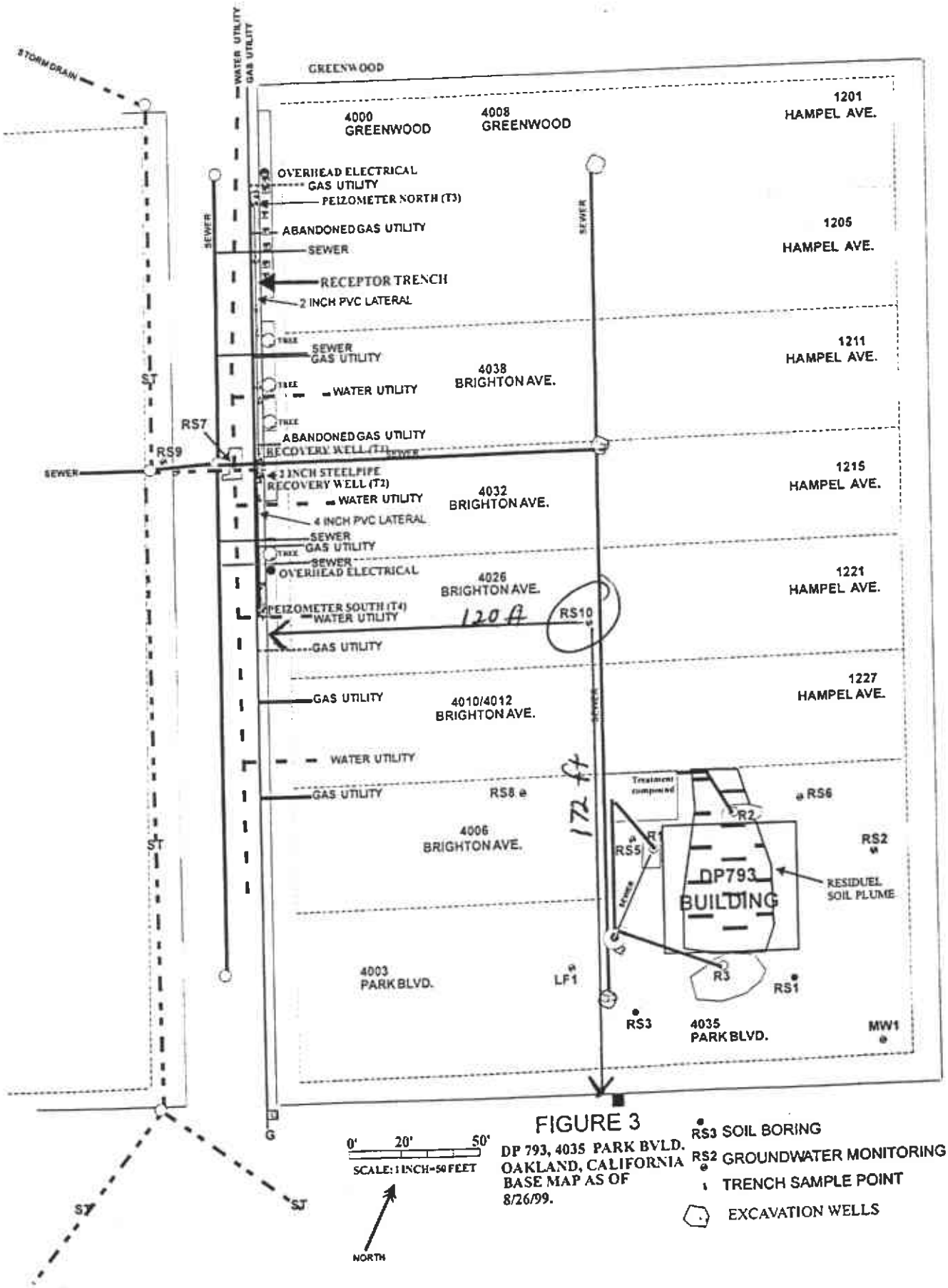


FIGURE 3

DP 793, 4035 PARK BVLD.
OAKLAND, CALIFORNIA
BASE MAP AS OF 8/26/99.

RS3 SOIL BORING
RS2 GROUNDWATER MONITORING WELL
TRENCH SAMPLE POINT
EXCAVATION WELLS

WEGE WELL CONSTRUCTION LOG

PROJECT NAME DP 793
4006 BRIGHTON AVENUE

PROJECT NUMBER

MONITOR WELL NUMBER RS-8

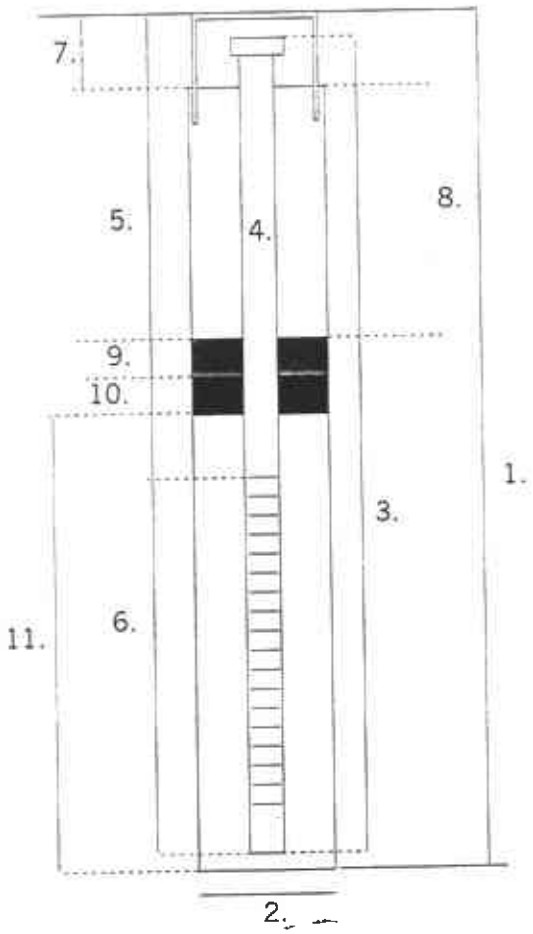
TOP OF CASING ELEVATION 214.67'

DATE COMPLETED AUGUST 3, 1999

WELL TYPE GROUNDWATER MONITORING WELL

REMARKS: WELL INSTALLED THROUGH 8 INCH HAND AUGERED BORING

TYPICAL MONITORING WELL



WELL CONSTRUCTION

1. Total Depth of hole 14'
2. Diameter of boring 8"
3. Casing length 14'
4. Diameter of casing 2"
5. Depth to top of screen 4.0'
6. Length of screen 10'
   screen interval 4' - 14.0"
   screen type MONOFLEX F480
   screen size 0.020"
7. Surface seal 6" TRAFFIC BOX
   seal material CONCRETE
8. Backfill 8" - 3'
   seal material NEAT CEMENT
9. Upper seal 3' - 3.5'
   seal material BENTONITE
10. Lower seal
    seal material
11. Annulus 3.5'-14'
    material #3 MONTERAY SAND

NOTE: Well constructed with poly-vinyl chloride (PVC) casing with threaded bottom cap and slip on top cap. Also, PVC steam cleaned before constructing each well. Traffic boxes are water tight and locked for security.

Western Geo-Engineers

PAGE 1 OF 1

BORING: RS-8
DATE DRILLED: 8-2-99

▮ SAMPLE INTERVAL

▼ WATER

BORE HOLE LOG

PROJECT: DP 793 - SEWER LATERAL	GEOLOGIST: GEORGE CONVERSE	SURFACE ELEVATION: 214.98
LOCATION: 4006 BRIGHTON AVE. OAKLAND, CA	DRILLER: STEVE BROADWAY	TOTAL DEPTH: 14 FT
DRILLING CONTRACTOR: WESTERN GEO-ENGINEERS	DEPTH TO WATER: 11'	CASING: 2" SCH 40 PVC

REMARKS: HAND AUGERED WITH 8" BUCKET
SCREENED WITH MINIRAE PID WITH 10.6 EV. BULB.

DEPTH (FT)	SAMPLE No.	BLOWS/FT.	PPM TVO VAPOR	CORE DESCRIPTION	GRAPHIC LOG	REMARKS
			0.0	SILTY CLAY, BROWN, HARD, DRY NO ODOR (CL-ML)		
2'			0.0			
4'			0.0	SILTY CLAY, DARK BROWN, HARD, MOIST, NO ODOR (CL-ML)		
6'			0.0	CLAY, MEDIUM GRAY, STIFF, MOIST, NO ODOR (CL)		
8'						
10' ▼	RS8 -10		177	SILT, CLAY GRAY-GREEN TRACE OF FINE SAND, DEG. PET. ODOR WET. (CL-ML)		
12'						
14'				Total depth drilled 14'		

REGISTERED GEOLOGIST
JACK E. NAPPER
No. 3037
STATE OF CALIFORNIA

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

WEGE WELL CONSTRUCTION LOG

PROJECT NAME DP 793
4037 BRIGHTON AVENUE

PROJECT NUMBER

MONITOR WELL NUMBER RS-9

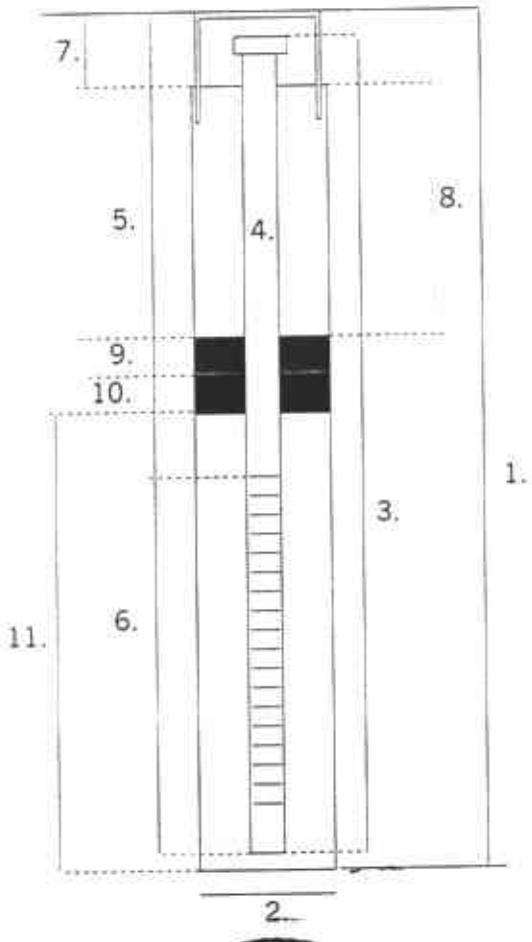
TOP OF CASING ELEVATION 195.63'

DATE COMPLETED AUGUST 3, 1999

WELL TYPE GROUNDWATER MONITORING WELL

REMARKS: WELL INSTALLED THROUGH 8 INCH HAND AUGERED BORING

TYPICAL MONITORING WELL



WELL CONSTRUCTION

1. Total Depth of hole 15'
2. Diameter of boring 8"
3. Casing length 15'
4. Diameter of casing 2"
5. Depth to top of screen 5.0'
6. Length of screen 10'
   screen interval 5' - 15.0"
   screen type MONOFLEX F480
   screen size 0.020"
7. Surface seal 6" TRAFFIC BOX
   seal material CONCRETE
8. Backfill 8" - 3'
   seal material NEAT CEMENT
9. Upper seal 3' - 4.5'
   seal material BENTONITE
10. Lower seal
    seal material
11. Annulus 4.5' - 15'
    material #3 MONTERAY SAND

REGISTERED GEOLOGIST
JACK E. NAPFER
No. 3037
STATE OF CALIFORNIA

NOTE: Well constructed with poly-vinyl chloride (PVC) casing with threaded bottom cap and slip on top cap. Also, PVC steam cleaned before constructing each well. Traffic boxes are water tight and locked for security.

-WEGE-

Western Geo-Engineers

PAGE 1 OF 1

BORING: RS-9
DATE DRILLED: 8-3-99

▮ SAMPLE INTERVAL

▼ WATER

BORE HOLE LOG

PROJECT: DP 793 - SEWER LATERAL	GEOLOGIST: GEORGE CONVERSE	SURFACE ELEVATION: 195.86
LOCATION: 4037 BRIGHTON AVE. OAKLAND, CA	DRILLER: STEVE BROADWAY	TOTAL DEPTH: 15 FT
DRILLING CONTRACTOR: WESTERN GEO-ENGINEERS	DEPTH TO WATER: 9'	CASING: 2" SCH 40 PVC

REMARKS: HAND AUGERED WITH 8" BUCKET
SCREENED WITH MINIRAE PID WITH 10.6 EV. BULB.

DEPTH (FT)	SAMPLE No.	BLOWS/FT.	PPM TVO VAPOR	CORE DESCRIPTION	GRAPHIC LOG	REMARKS
			0.0	SILTY CLAY, BROWN, HARD, DRY W/OCC ROCK NO ODOR (CL-ML)		
2'			0.0	SILTY CLAY, DARK BROWN, HARD, NO ODOR (CL-ML)		
4'			0.0	SILTY CLAY, DARK BROWN, HARD, MOIST, NO ODOR (CL-ML)		
6'	RS9-6		0.2	CLAY GRAY STIFF NO ODOR WET. (CL-ML)		
8'				CLAY BROWN STIFF NO ODOR WET. (CL-ML)		
▼10'	RS9-10		3.7	TRACE ODOR WET. (CL-ML)		
12'			0.2	SILT, CLAY BROWN W/TRACE OF CHARCOAL INCLUSIONS ODOR WET. (CL-ML)		
14'			0.2	SILT, CLAY MED. GRAY, W/SAND FN- GRANULAR RED-BLACK W/ WHITE CHERT. WET. (CL-ML-SC)		

Total depth drilled 15'

REGISTERED GEOLOGIST
JACK E. NAPPER
No. 3037
STATE OF CALIFORNIA

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

-WEGE-

Western Geo-Engineers

BORING: RS-10
DATE DRILLED: 8-5-99

▮ SAMPLE INTERVAL

▼ WATER

BORE HOLE LOG

PROJECT: DP 793 - SEWER LATERAL	GEOLOGIST: DAVID THRELFALL	SURFACE ELEVATION: 208.71
LOCATION: 4026 BRIGHTON AVE. OAKLAND, CA.	DRILLER: STEVE BROADWAY	TOTAL DEPTH: 10.5 FT
DRILLING CONTRACTOR: WESTERN GEO-ENGINEERS	DEPTH TO WATER: 5'	CASING: 2" SCH 40 PVC

REMARKS: HAND AUGERED WITH 6" BUCKET
SCREENED WITH MINIRAE PID WITH 10.6 EV. BULB.

DEPTH (FT)	SAMPLE No.	BLOWS/FT.	PPM TVO VAPOR	CORE DESCRIPTION	GRAPHIC LOG	REMARKS
2'				PLANTER SOIL, DRK BROWN SILTY W/ORGANICS NO ODOR (CL-ML)		
4'				CLAY, GRAY, STICKY, WET (CL-ML)		
6' ▼	RS10 -6			CLAY, SILTY, RED W/OCC. ANGUL GRAVEL, PET. ODOR (CL-ML-SC)		
8'						
10'	RS10 -9.5					
12'				Total depth drilled 10.5'		

REGISTERED GEOLOGIST
JACK E. NAPPER
No. 3037
STATE OF CALIFORNIA

WEGE WELL CONSTRUCTION LOG

PROJECT NAME DP 793
4026 BRIGHTON AVENUE

MONITOR WELL NUMBER RS-10

TOP OF CASING ELEVATION 208.46'

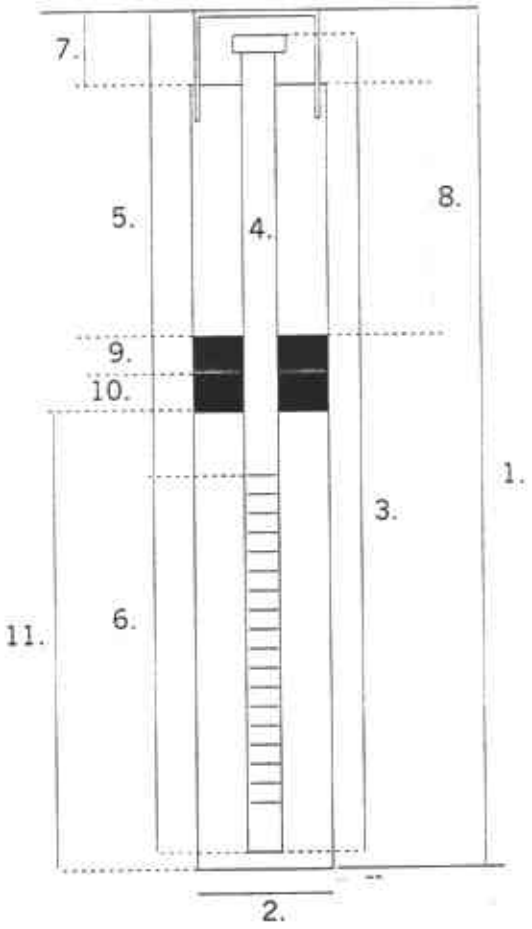
PROJECT NUMBER

DATE COMPLETED AUGUST 6, 1999

WELL TYPE GROUNDWATER MONITORING WELL

REMARKS: WELL INSTALLED THROUGH 6 INCH HAND AUGERED BORING

TYPICAL MONITORING WELL



WELL CONSTRUCTION

1. Total Depth of hole 10'
2. Diameter of boring 6"
3. Casing length 10'
4. Diameter of casing 2"
5. Depth to top of screen 1.5'
6. Length of screen 8.5'
   screen interval 1.5' - 10.0"
   screen type MONOFLEX F480
   screen size 0.020"
7. Surface seal 6" TRAFFIC BOX
   seal material CONCRETE
8. Backfill SURFACE -1'
   seal material NEAT CEMENT
9. Upper seal 1.0' -1.5'
   seal material BENTONITE
10. Lower seal
    seal material
11. Annulus 1.5'-10'
    material #3 MONTERAY SAND

NOTE: Well constructed with poly-vinyl chloride (PVC) casing with threaded bottom cap and slip on top cap. Also, PVC steam cleaned before constructing each well. Traffic boxes are water tight and locked for security.

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

APPENDIX F

1" = 50'

North

415 875 1245
Paul Shamon BJ landfill

roger 415 780 2847

Tim Mueller
997 9393

FAX (415) 875 1154

TCLP (and below few)

Total pb

fill and code disposal application

50 mg/kg = TC
STCP

Chain of Cust. 3 for 92 ycls

Transdup

5.3 mg

Backup info

DTW 5.02'
8-4-99 9Am start to prime pump
9:11 start pump
9:48 230 gl 5.40'

[Gas levels from back fill]

Stockpile info on original lab

PID=0 L= 10' in clay silt w/ sand

PID=0 near L= 12½ feet to gray sand

5'
7'

31¼

06
04
12½

Tie well 2" well

10½

PID 9' 497

PID 7' = 0 → D D'

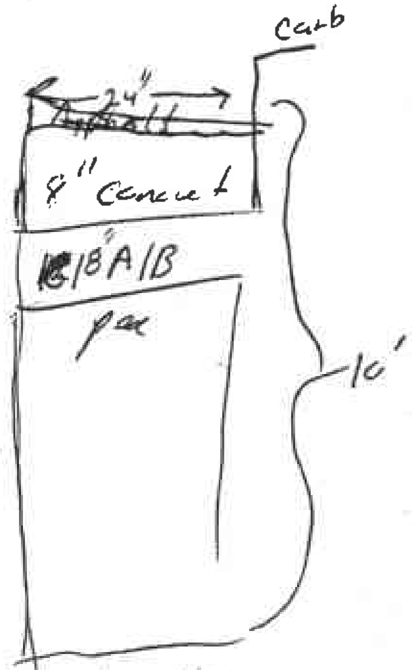
2½ L 2½ d

Unmarked Gas line

10½

Power Pole

Computer



Long Hr
20
50
154

D–	D'	
Asphalt	3"	
Clay	4'	brown
[illegible]	7'	PID=5
Silty clay green gray-green	9'	PID=0
Sand fine	gray & green stiff water seepage	PID= 497
Clay silty, gray-brown	10' 10½	PID= 0.0

DP793

50 scale
1" = 5 feet

Hg 13 - 24 1/2 - Oakland
→ 3rd Lt Colless

Sub Bradley → 9107
w/dye / flopping Drive
rt turn

G1 ?? 13'

Shields Farm - Oakland
510 653-9119
1 800 772-2300

muffler - F480
2 thread / inch

Western Hydro Cap
?0-783-9166

Gas Store

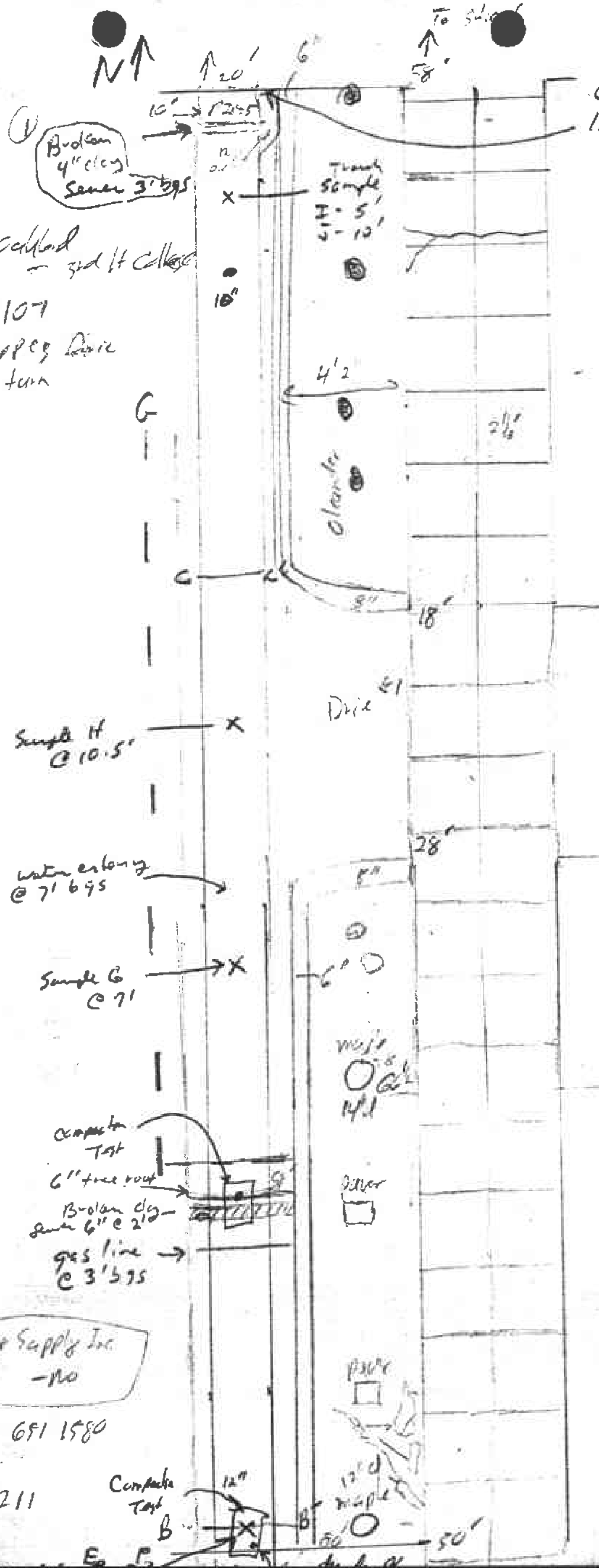
Diners Ed

1-4" - 0.02 - 5'
1-4" - 0.02 - 10'
2- 4" Blank - 5'
3- sk #3 sand
1 4" Bottom Plug
1 4" Locking cap

Drilling & Trench Supply Inc.
1800 331-9988 - no

- DE Drilling - 510 691 1580

1 800 999 0211



Trench ended @ 3' N of broken sewer lateral (4") on 8/6/99 @ 1500 - odor in soil beginning @ 4' bgs.

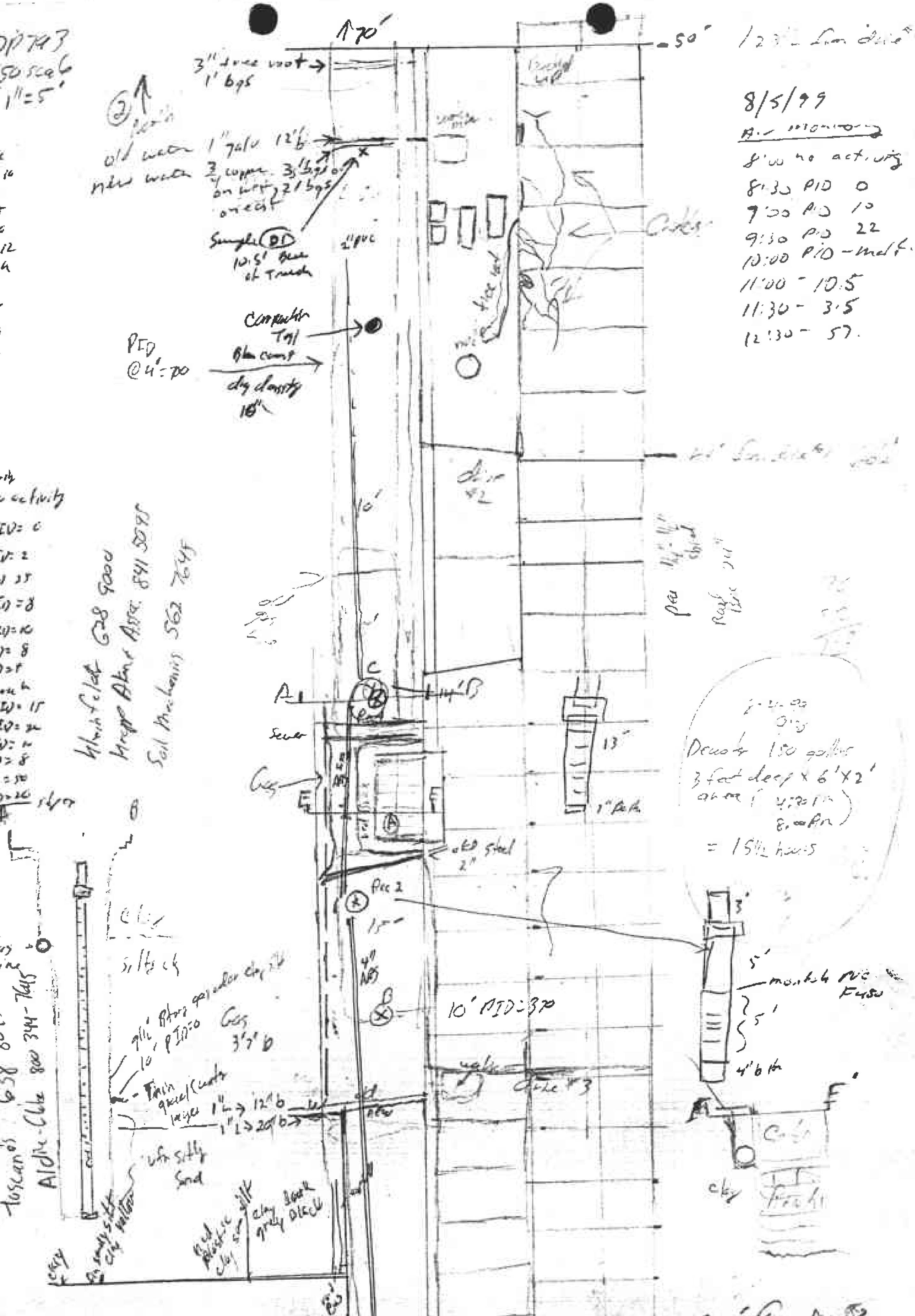
C - C'

0-1 - roadbase
1 - 3.5 - med brown clay with silt.
→ no odor.
3.5 - 10' - mottled green + red brown clay silt with some clay + inclusions of angular gravel pet- odor
10 - 10.5 - Stiffer red clay than above - little to no odor
water entering trench @ 7.0 ft

B - B'

0-1 roadbase
1-3 yellow reddish brown clay no odor
3-5 more fine sand + silt
Sample @ 5' Strong DE pet - odor
6- mottled green + yellow silt with some clay, pet-odor.
8-, same as above with angular gravel
9-10.5 - red clay less odor

DP743
50 scale
1" = 5'



8/5/99
Air monitoring
8:00 no activity
8:30 PID 0
9:00 PID 10
9:30 PID 22
10:00 PID - malf.
11:00 - 10.5
11:30 - 3.5
12:30 - 57.

8/4/99
Air monitoring
8:00 no activity
8:30 PID = 0
8:45 PID = 2
9:00 PID 25
9:30 PID = 8
PID = 10
PID = 8
PID = 5
Lunch
1:00 PID = 15
1:30 PID = 30
2:00 PID = 10
2:30 PID = 8
3:00 PID = 30
3:30 PID = 20 stop
4:00

638 9000
841 5095
Soil Mechanics 562 7645

Consolidated
Toscano's 638 8095
Aldie-Clbe 800 344-7445

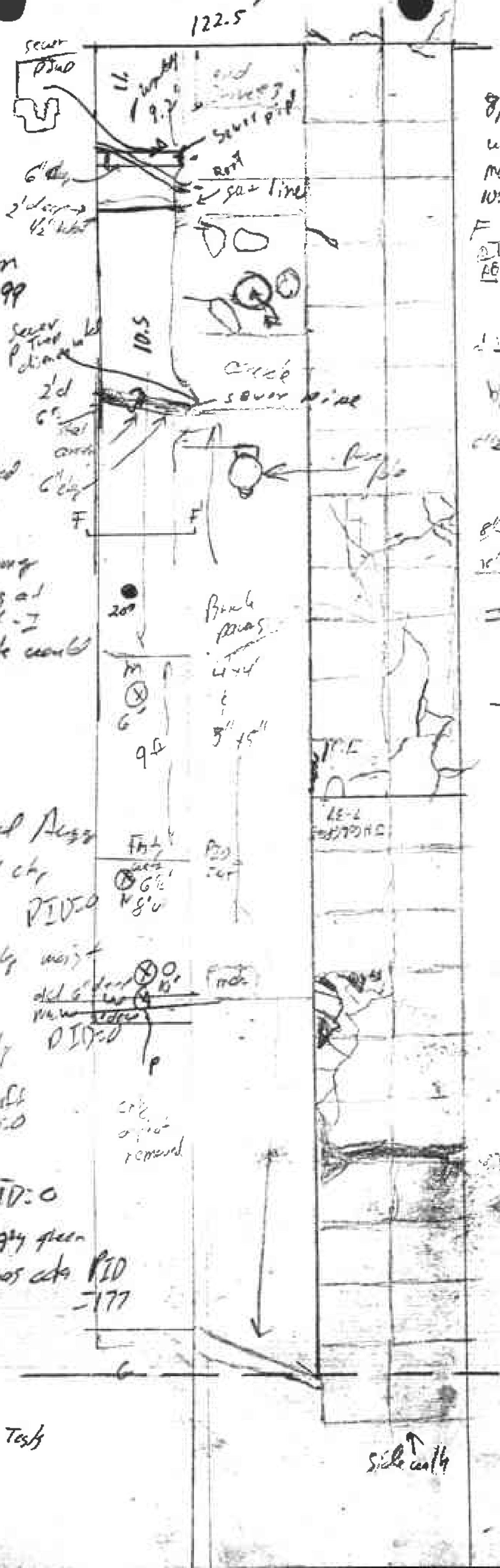
Decant 150 gallons
3 feet deep × 6' × 2'
= 1 1/2 hours

DPTM3 (3) ↑N (9-10)

(96 percent)

Ali Shirikazian 11:30 Am 8-2-99
Stop by to discuss what we are doing ... reports from 96-percent. Told him I would need to get permission from ... He asked how long will take to clean-up. I told him can only guess, we need to do some ... idea probably 3 years.
Told him he'd ... us ... from ... at their ... "He ... I told him ... He would try to work something out.

8/13/99 working back under sew line high reads max 100 ppm, stopped work 10:00 – 10:23



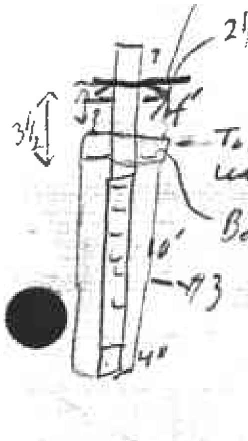
46' 28'
RS-8

4006 Brighton
RS-9 8" Ahead Agg. surface ...
Brown ... clay
1'
2' Lt Brown clay moist
Dk brown silty clay
5' med gray ... clay PID 0
10' PID: 0
11' Soil gray green clay gas odor PID 177
TD 14'

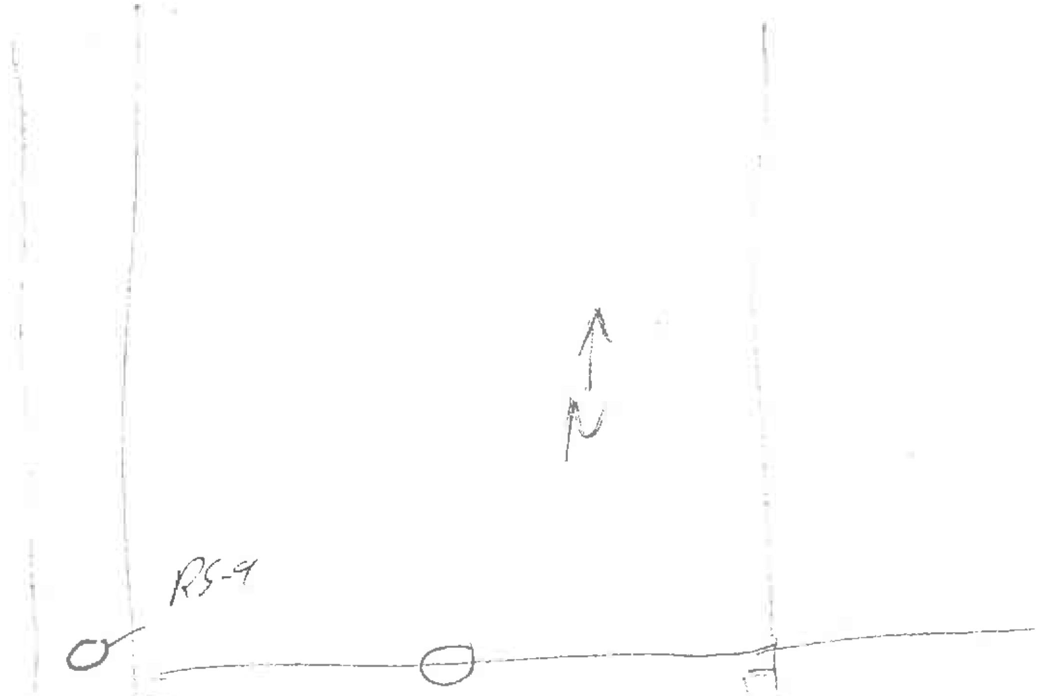
Sample N ... blue gray clay ... odor @ 8'4" depth

Sample O Brown clay w/ blue gray staining ... @ 10'

Sample P Brown @ 6' clay ... w/ blue gray mottles ... no odor



• Compaction Tests



0-3 PID=0
Brown silt
clay w/ orc Rock

3' Dk brown clayey silt Tr moist
PID=0

4' moist - no odor PID=0

6' Clay gray stiff moist PID=0.0

7' Clay brown stiff PID=6.2

9' wet Tr pet odor PID=3.7

10'12 brown silty clay w
charcoal pieces 1/2"-1" long

brown silty w/ sand & granular
white chert subangular red-black slag grains

12' med gray silty clay fine sand

15' TD

Mon-to-well RS-10- @ 4026 Brighton

0-2' - Flower-bed Fill - dark brown, silt no odor + organics

3' - Same as above with additional clay - wet @ 3', no odor

4' - grey sticky clay - wet

4.5-6.5 red clay + silt with occasional angular gravel - petroleum odor

Sample @ 6.0 -

6.5-7.5 - red brown clay with occasional angular gravel

Sample @ 9.5' less silt - ~~[redacted]~~ then clay moderate petr. odor

7.5-10.5 - Same as above

---

water @ 5.0 ft bgs on 8/6/99 before completion -

well drilled with 6" auger 8/5/99

completed 8/6/99

Completion

TD - 10.0 ft. bgs

2", 0.20 slotted PVC 1.5' - 10' ft. bgs

2" blank 1.5' - Surface

Sand #3 Lapis Lustre - 10 ft - 1.5' bgs

bentonite pellets - 1.5' - 1.0' bgs

neat cement - 1.0' - Surface

Set 5" traffic box in concrete to grade

Dearfeuir

8-9-99 9Am [illegible] pump DTW 5.02
9:11 Start pumping PID= 75 ppmv
9:48 230 gl DTW 5.40'

10:14 [illegible] pump DTW 5.36'
10:30 Start pumping
DTW 5.78'

11:26 [illegible] DTW 5.74'

11:50 250 gl DTW 6.19'

12:07 DTW 6.13'

12:23 250 gal 6.73'
13:33 250 gal. 7.17'
7.13'

14:18 250 gallons pumping 8.38 Collapsed breem in pit water dropped to 7.73'

14:40 start pumping 8.22

15:03 250 gallons. 9.10
~~10.63~~

15:44 10.63 gallons

8/10/99 8:08 7.89

8:39 250 gallons 8.82

9:32 start pumping 8.58

9:49. 300 gallons 9.42

10:20 Start 9.78
10:47 13.68
10:46 (250 gallons) 13.42

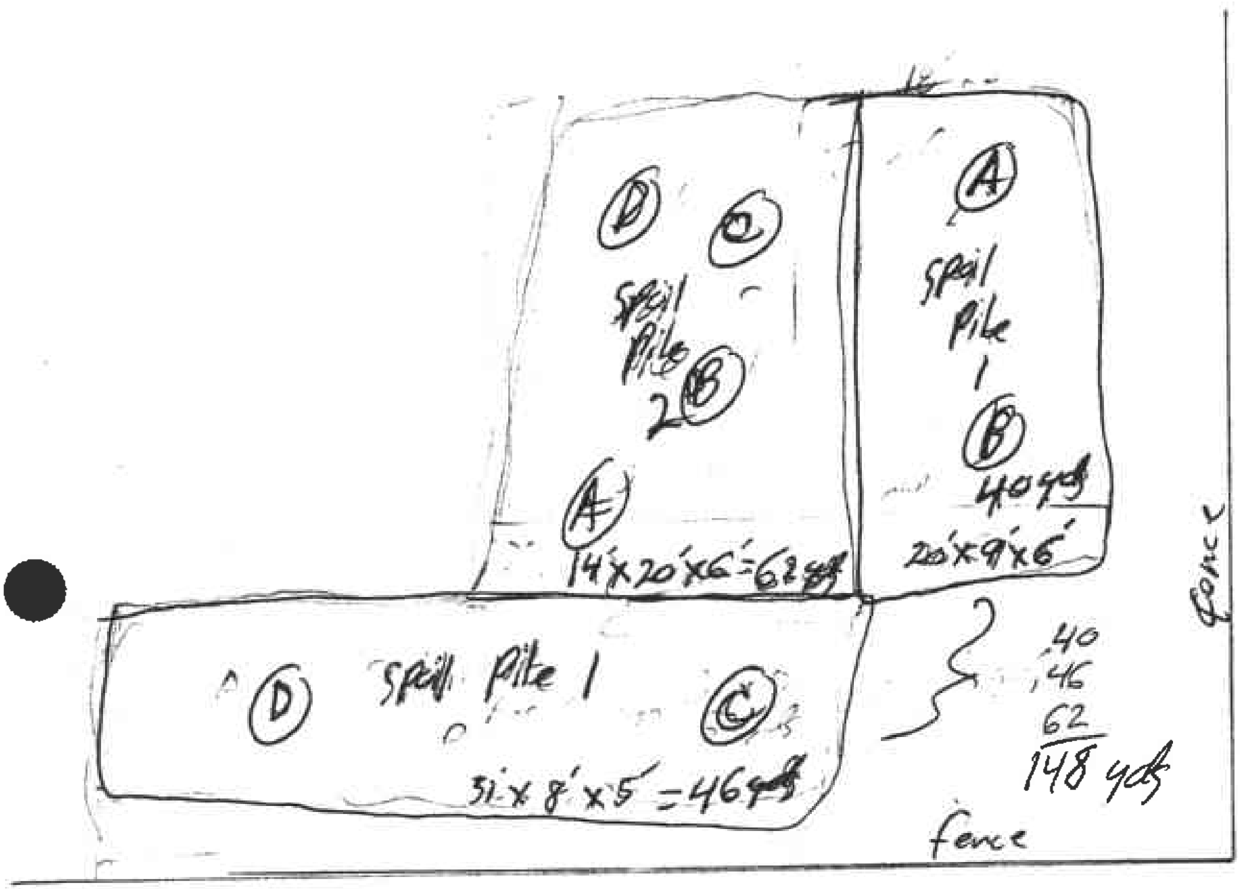
11:14 12.5 A 41.0 B

12:06 could not get pump to check. 12.5 13.8' — 160'

8-12-99 8:15 Am DTW 8.12'

12:33 250 gb DTW 8.90'

250 gb DTW 9.42'



SP1
96 yds
SP2 = 62 yd

north

4035 Park Blvd
Oakland, CA

4'5
62
148

SITE SAFETY PLAN

FOR

FORMER DESERT PETROLEUM DP 793

FACILITY BACKGROUND:

SITE ADDRESS: 4035 Park Blvd., Oakland, CA 94602

OWNER NAME: Environmental – Desert Petroleum Inc.
Station – Mr. Tony Razzi

DIRECTIONS TO SITE: From Hyw 680 take Hyw 12 west. South on Hwy 13 (Warren Freeway) to Park Blvd. West on Park Blvd. to Brighton (non active gas station).

TYPE FACILITY: NON-ACTIVE FENCED, GASOLINE SERVICE STATION: ONLY REMAINING IMPROVEMENTS STATION STORE AND TREATMENT COMPOUND.

KEY PERSONNEL AND RESPONSIBILITIES

CONSULTANT: Western Geo-Engineers - Sampling
1386 E. Beamer Street
Woodland, Ca. 95776-6003
(530) 668-5300
Field Geologist – George Converse
CA. REG. Geologist #3037 – Jack E. Napper

CONTRACTOR: Pile Construction
P.O. Box 293688
Sacramento, CA 95829
(916) 387-7453
(Fax 916) 387-7423

SAFETY OFFICER: George Converse

ENTRY OBJECTIVIES Excavate and install receptor trench along eastern gutter of Brighton Avenue. Trench will be approximately 6 feet deep by 170 feet long. Three water recovery wells will be installed and manifolded in trench. Access to wells will be through traffic rated traffic boxes at grade. Surface will be replaced with asphalt and concrete.

Install two 2 inch 15 foot deep ground water monitoring wells in backyards and one 2 inch 15 foot deep monitor well in City of Oakland easement west of Brighton Avenue. Sampling excavations as per Alameda County Health and City of Oakland directives. Back filling excavations with clean 1/2" rounded pea gravel to surface. Work areas will be baricaded to prevent public from access. Trench plates and shoring will be placed over and in excavations, until excavations are backfilled and resurfaced. The station site is fenced from public access, this fence will remain in place during construction and storage of excavated soils and removed groundwater generated from dewatering activities.

SITE ACTIVITIES:

1. Removal of asphalt over area to be excavated.
2. Construct soil stockpile area at service station.
3. Excavate and dewater receptor trench area
4. Line receptor excavation
5. Place ½" clean pea gravel and 2 – 2" and 1 – 4" recovery wells into excavation.
6. Set traffic boxes
7. Place clean road base ontop of pea gravel to within 4 inches of surface
8. Resurface with 4 inch asphalt
9. Clean site
10. Cover soil stockpiles nightly with plastic liner.

JOB HAZARD ANALYSES

PHYSICAL HAZARDS

X NOISE	X TRAFFIC
X UNDERGROUND HAZARDS	__OVERHEAD HAZARDS
X EXCAVATIONS/TRENCHES	X MECHANICAL EQUIPMENT
__OTHER_____	

LEVEL OF PROTECTIVE EQUIPMENT

__A __B __C X__D

PERSONAL PROTECTIVE EQUIPMENT

R = REQUIRED A = AS NEEDED

R__HARD HAT
R_ SAFETY BOOTS
R__ORANGE VEST
R__HEARING PROTECTION

R__SAFETY EYEWEAR (TYPE)SAFETY GLASSES
__RESPIRATOR (TYPE)_____
__FILTER (TYPE)_____
R__GLOVES (TYPES)NYTRIL INNER GLOOVE
LEATHER OUTER GLOOVE

A__TYVEK COVERALLS
__5 MIN ESCAPE RESPIRATOR

__OTHER_____
_____

MONITORING EQUIPMENT ON SITE

__OGRANIC VAPOR ANALYZER
R_OXYGEN METER
R_COMBUSTIBLE GAS METER
__H_2S METER
__W.B.G.T.

R__PID WITH LAMP OF _10.6Ev
__SORBENT SAMPLE TUBES (TYPE)____
__PASSIVE DOSIMETER
__AIR SAMPLING PUMP
__FILTER MEDIA_____

RISK ASSESSMENT

FIRE AND EXPLOSION REVENTION: THE SITE IS FENCED OR BARRICADED TO KEEP THE GENERAL PUBLIC OUT. NO SMOKING SIGNS WILL BE POSTED ON THE FENCE AND BARRICADES. SMOKING WILL NOT BE PERMITTED INSIDE THE WORK AREA. ALL ELECTRICAL EQUIPMENT USED WILL BE IN GOOD WORKING CONDITION WITH NO EXPOSED WIRES. SPARK ARRESTORS WILL BE ON ALL MOTOR AND EXHUASTS. HAND TOOLS WILL BE SPARK RESISTANT.

FIRE EXTINGUISHERS WILL BE PLACE AROUND THE EXCAVATION FOR EASY ACCESS. EXTINGUISHERS WILL BE CARBON DIOXIDE TYPE (FLAMMABLE LIQUIDS AND ELECTRICAL FIRES).

TRAFFIC: THE SITE IS EITHER BARRICADED OR FENCED TO KEEP OUT THE GENERAL PUBLIC. A GATE IS SITUATED ON THE STATION ENTRANCE OFF OF PARK BLVD. FOR ACCESS BY CONTRACTORS AND EQUIPMENT. BRIGHTON AVENUE EXCAVATION WILL HAVE BARRICADES, CONES AND CAUTION TAPE TO ISOLATE THE SITE ACTIVITIES FROM THE GENERAL PUBLIC.

EXCAVATION: A BACKHOE WITH A REACH CAPABILITY OF 15 FEET AND A 24 INCH BUCKET WILL BE USED TO EXCAVATE THE RECEPTOR TRENCH. PRIOR TO USING THE BACKHOE ALL UNDERGROUND UTILITES WILL BE LOCATED BY HAND DIGGING.

WEATHER: WARM TEMPERATURES ARE EXPECTED, 65-85 DEGREE F TEMPERATURE.

CONTAMINATED SOILS: EXCAVATED SOILS ARE EXPECTED TO CONTAIN GASOLINE RANGE HYDROCARBONS.

CONTAMINATED GROUNDWATER: EXPECTED TO CONTAIN GASOLINE RANGE HYDROCARBONS.

EXPOSURE MONITORING PLAN

SITE CLOSURE: THE SITE IS CLOSED AND PROTECTED WITH A SIX FOOT HIGH SECURITY FENCE. BRIGHTON AVENUE EXCAVATION AREA WILL BE CLOSED OFF WITH CONES, BARRICADES AND CAUTION TAPE. TRAFFIC PLATES WILL BE PLACED OVER EXCAVATIONS AFTER EVERY WORK SHIFT AND OVER PORTIONS OF EXCAVATION THAT ARE NOT BEING WORKED ON AT THE TIME. NON-SMOKING SIGNS WILL BE POSTED. WORKERS WILL WEAR ORANGE SAFETY VESTS, STEEL TOE BOOTS (SHOES) HARD HATS AND EAR PROTECTION. ALL WORK WILL BE CONDUCTED INSIDE OF THE FENCED AREA OR INSIDE THE BARRICADES AND TAPE AREAS. THE HEALTH AND SAFETY OFFICER WILL WATCH FOR UNAUTHORIZED TRAFFIC AND THE WORKERS WILL USE THE BUDDY SYSTEM.

COLD: WORKERS WILL DRINK PLENTY OF FLUIDS, WEAR APPROPRIATE CLOTHING TO SHEILD FROM FOGGY WEATHER THAT MAY BE AS COLD AS 35 DEGREES AND WILL PERFORM SELF MONITORING FOR EXTREMITY NUMBNESS, FATIGUE, DIZZINESS, ALERTNESS. HEALTH AND SAFETY OFFICER WILL MONITOR WORKERS FOR ALERTNESS AND FLUID INTAKE. IF NECESSARY WORK WILL BE SLOWED OR PERFORMED IN SHIFTS IF COLD FATIGUE IS NOTICED.

HEAT: THE FIELD OPERATIONS ARE ANTICIPATED TO BE PERFORMED DURING SUMMER TIME, WHEN MEAN DAYTIME DAILY TEMPERATUREA ARE EXPECTED TO EXCEED 70^0F. WHEN WEARING STANDARD LEVEL D WORK UNIFORMS A HEAT MONITORING PROGRAM IS INITIATED AT AMBIENT TEMPERATURE EXCEEDING 85^0F.

Monitoring: Pulse for 30 seconds multiplied by 2 should not exceed 110 beats per minute
Workers will take breaks as needed.
Workers will intake fluids as needed.

EXCAVATOR AND EXCAVATION: WORKERS WILL USE COMMON SENSE AND GOOD WORK HABITS TO PERFORM THEIR DESIGNATED JOBS.

CONTAMINANT EXPOSURE: GEOLOGIST/HEALTH AND SAFETY OFFICER WILL MONITOR THE EXCAVATING ACTIVITIES AND SOILS/FLUIDS GENERATED BY THE EXCAVATING AND UST REMOVAL ACTIVITIES FOR ORGANIC VAPORS USING A PHOTO IONIZING DETECTOR WITH A 10.6 EV BULB. IF WORK AREA EXCEDES 25 PPMV THE EXCAVATING WILL BE SLOWED TO DECREASE THE PPMV VALUE.

WORK ZONES AND SECURITY MEASURES

The site presently is secured with a 6-foot high security fence with a entry gate at the drive on Park Blvd.

East curb area of Brighton Avenue will be barricaded.

THE IMMEDIATE WORK ZONES WILL BE CONED OFF AND THE HEALTH AND SAFETY OFFICER WILL INSURE THAT NO UNAUTHORIZED PERSONNEL ENTER THE WORK AREA.

DECONTAMINATION MEASURES

At the end of each workday all personnel (and subcontractors) will thoroughly wash their hands, face and footwear before leaving the site. In the event that personnel protective equipment is necessary, all disposable items will be deposited into a steel drum container on site and all reusable items will be washed with TSP detergent and rinsed with clean water. Residual liquid will be placed in the 1000 gallon ConVault that is currently be used for water treatment on site. Personnel will not be allowed to leave the contaminated area without completing the decontamination process. All waste material will be placed in environmental drums or tanks and stored at site. All containers will be properly labeled as per current City, County and State regulations.

GENERAL SAFE WORK PRACTICES

All personnel performing sampling will wear disposable gloves. Anyone entering the site without authorization will be asked to leave and escorted out of the control area. All workers will practice good hygiene practices: no smoking in control area, wash hands and face prior to handling food and drinks, be aware of the public at all times.

MEDICAL CONTINGENCY PLAN

HOSPITAL/CLINIC: Highland General Hsopital
ADDRESS: 1411 E. 31st Street
PHONE NUMBER: (415) 534-8055
PARAMEDIC: 911 FIRE: 911 POLICE: 911

Any personnel at the site who are injured must notify the Site Safety Officer. Paramedics can be at the site location within 10 minutes for extreme emergencies. If any chemical exposures are exceeded, a medical exam will be required.

JOB HAZARD ANALYSIS

MAIN COMPOUND (S) OF INTEREST: IN PPMV

EXPOSURE TABLE

COMPOUND	TLV-8HR	IDLH	STEL(st)	C	NIOSH PAGE
BENZENE	0.1	500	1.0	Ca	26
TOLUENE	100	500	150	300	310
XYLENES	100	900	150		336
ETHYLBENZENE	100	800	125		132
MTBE				Ca?	

Ca – CARCINOGENS, SEE PAGE 344 OF NIOSH
Ca? – QUESTIONABLE CARCINOGEN
TLV-8HR, THRESHOLD LIMIT VALUE AVERAGED OVER AN 8-HOUR DAY– NIOSH RECOMMENDED. OSHA USES PEL'S (PERMISSABLE EXPOSURE LEVELS) WHICH ARE LESS CONSERVATIVE THAN THE TLV'S.
IDLH – IMMEDIALTLY DANGEROUS TO LIFE AND HEALTH WITH 30 MINUTE EXPOSURE.
STEL – SHORT TERM EXPOSURE LEVEL, CAN BE EXPOSED FOR 15 MINUTES 4 TIMES A SHIFT WITH AT LEASE 1 HOUR BETWEEN EXPOSURES.
C – CEILING, DO NOT EXCEED THIS EXPOSURE WITHOUT SOME SORT OF AIR PURIFYING DEVISE.

TARGET ORGANS

EYES, SKIN, RESPITORY SYSTEM, BLOOD, CENTRAL NERVOUS SYSTEM, BONE MARROW, LIVER, KIDNEYS AND GASTROINTESTINAL TRACT.

ROUTES OF EXPOSURE

INHALLATION, ABSORBTION, INGESTION AND CONTACT

SYMPTOMS

IRRITATION TO EYES, NOSE, SKIN, THROAT, AND UPPER RESPORATORY SYSTEM. SKIN BURNS MUSCLE SPASMS, SLOW PULSE. WEAK, CONFUSED, DIZZY, LIGHT HEADED, EUPHORIC, EXCITED, NARCOUSIS.

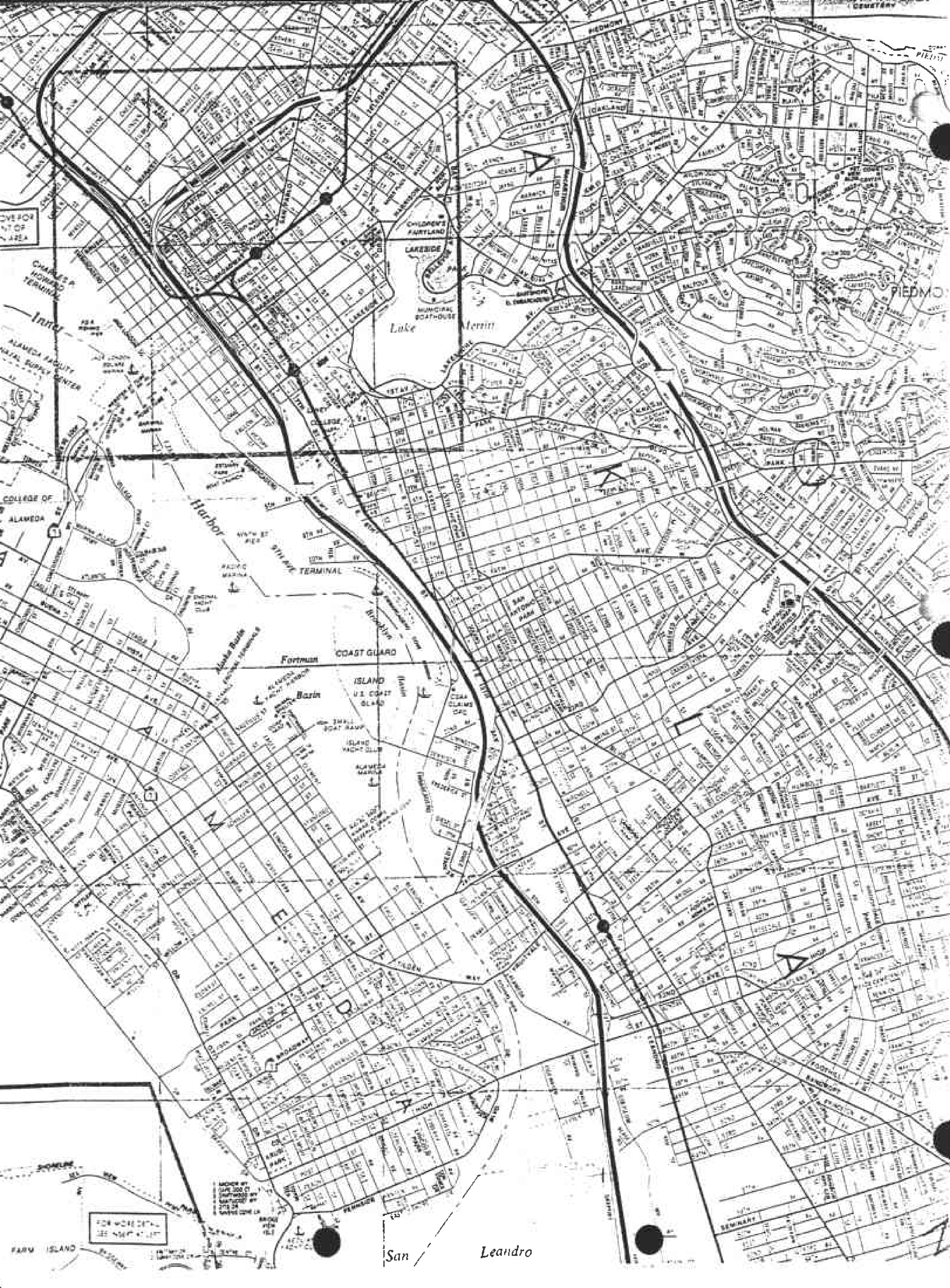
SITE HAZARD INFORMATION PROVIDED BY: GEORGE CONVERSE

PHONE NUMBER (530 668-5300 **DATE** August 1, 1999

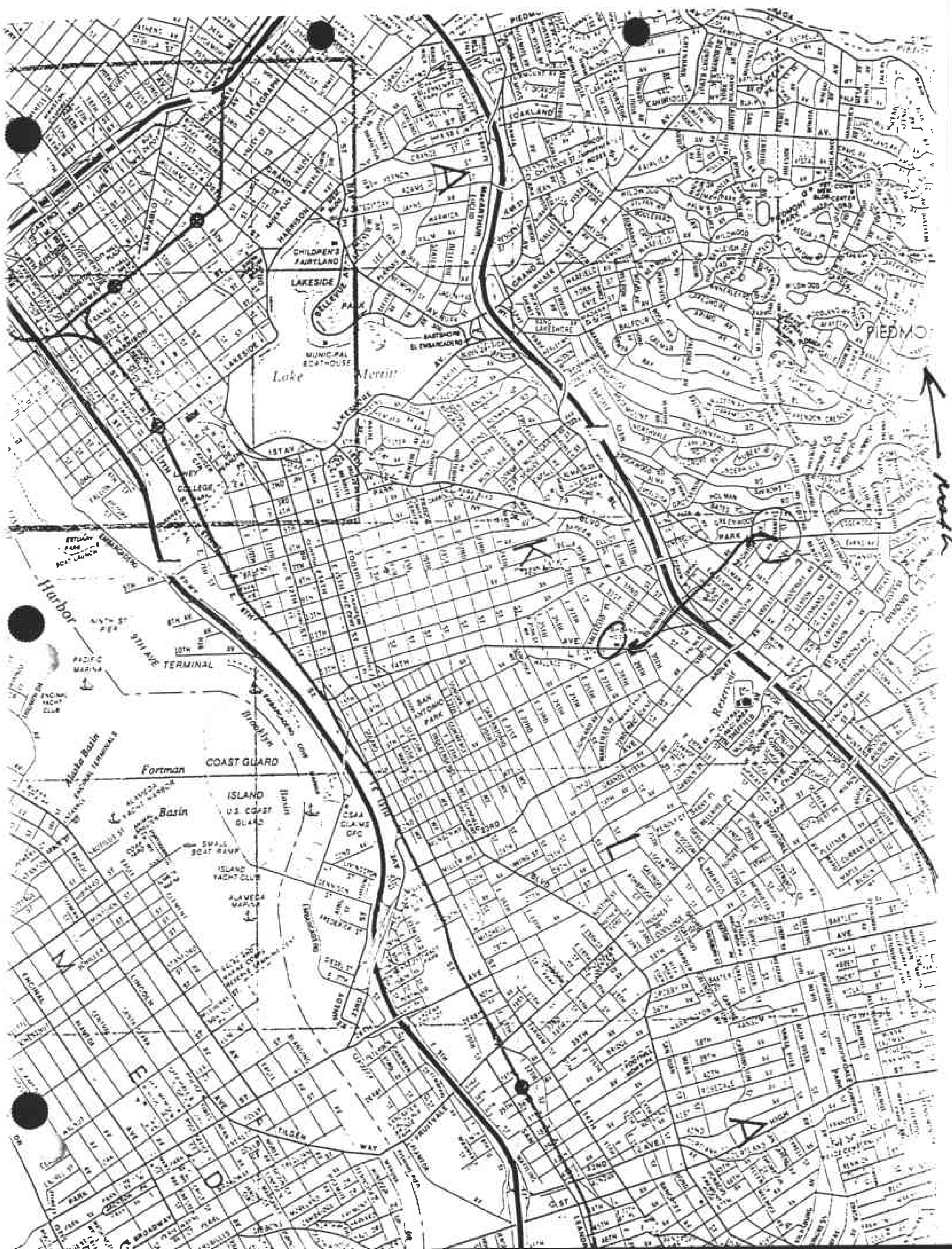
I HAVE READ AND FULLY UNDERSTAND THE INFORMATION AND SAFETY REQUIREMENTS IN THIS SITE SAFETY PLAN.

SIGNATURES

John Price	8-2-99
Bob White	Bob White 8-2-99
JEREMY BERG	8-2-99
Salvador R Martinez	8-2 99
Geo Converse	8-2-99



Lake Merritt
MUNICIPAL BOATHOUSE
CHILDREN'S FAIRYLAND
LAKESIDE
Harbor
TERMINAL
COAST GUARD
ISLAND
U.S. COAST GUARD
Fortman
Basin
Alaska Basin
PACIFIC MARINA
ALAMEDA MARINA
ISLAND YACHT CLUB
SAN ANTONIO PARK
COLLEGE OF ALAMEDA
ALAMEDA FACILITY NAVAL SUPPLY CENTER
CHARLES P. HOWARD TERMINAL
Inner
PIEDMONT
CEMETERY
San Leandro
FARM ISLAND
SHORELINE
FOR MORE DETAIL SEE INSET AT LEFT


Lake Merritt
CHILDREN'S FAIRYLAND
LAKESIDE
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MUNICIPAL BOATHOUSE
Harbor
NINTH ST PIER
9TH AVE TERMINAL
PACIFIC MARINA
ENCINAL YACHT CLUB
Alaska Basin
Fortman
COAST GUARD
ISLAND
U.S. COAST GUARD
Basin
Brooklyn
Basin
SMALL BOAT RAMP
ISLAND YACHT CLUB
ALAMEDA MARINA
SAN ANTONIO PARK
Reservoir
PIEDMO
OAKLAND
GRAND
LAKESHORE
BROADWAY
TELEGRAPH
SAN PABLO
HARRISON
LAKESIDE
FRUITVALE
TILDEN
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APPENDIX G

North State Environmental Analytical Laboratory

90 South Spruce Avenue, Suite W, South San Francisco, CA 94080
Phone: (650) 266-4563 Fax: (650) 266-4560

Chain of Custody / Request for Analysis
Lab Job No.:_____ Page 1 of 2

Client: WEGE	Report to: WEGE	Phone: 530-668-5300	Turnaround Time: Standard
Mailing Address: 1386 East Beamer Woodland, CA 95776	Billing to: Western Geo-Engineers	Fax: 530-662-0273	Date: 8-6-99
		PO# / Billing Reference:	Sampler:

Project / Site Address: Desert Petroleum 793 4035 Park Blvd., Oakland, CA

Analysis Requested

Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	TPH-G, BTEX, MTBE	Comments / Hazards
RS8-10'	Soil	sleeve		8/2/99	X	
RS9-6'				8/3/99	X	
RS9-10'				8/3/99	X	
RS10-6'				8/5/99	X	
RS10-9.5'				8/5/99	X	
Trench-A-15'				8/4/99 11:00	X	
Trench-B-10'				8/4/99 11:30	X	
Trench-C-14'				8/4/99 1400	X	
Trench-D-10.5'				8/5/99 10:00	X	
Trench-E-5'				8/5/99 11:30	X	
Trench-F-10.5'				8/5/99 12:20	X	
Trench-G-7'				8/6/99 10:00	X	
Trench-H-10.5'				8/6/99 11:00	X	
Trench-I-5'	Soil	sleeve		8/6/99 1319	X	

Relinquished by:	Date: 8/6/99	Time: 1440	Received by:	Lab Comments
Relinquished by:	Date:	Time:	Received by:	
Relinquished by:	Date:	Time:	Received by:	

North State Environmental Analytical Laboratory

90 South Spruce Avenue, Suite W, South San Francisco, CA 94080
Phone: (650) 266-4563 Fax: (650) 266-4560

Chain of Custody / Request for Analysis
Lab Job No.:_____ Page 2 of 2

Client: WEGE	Report to: George Lowrance, WEGE	Phone: 530-668-5300	Turnaround Time: Standard
Mailing Address: 1386 East Beamer Woodland CA 95776	Billing to: Western Geo-Engineers	Fax: 530-667-0273	Date: 8.6.99
		PO# / Billing Reference:	Sampler:
Project / Site Address: Desert Petroleum 793 4035 Jack Black Oakland CA		Analysis Requested	

Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	TPH-G BTEX MTBE							Comments / Hazards
Trench-J-10'	Soil	Sleeve		8/6/99 1350	X							
Soil Pile-A-1'				8/6/99	X		G	MTD	B	T		
Soil Pile-B-1'					X		7.9		.006	.051		composite 4 pts / at lab
Soil Pile-C-1'					X				ND	X		
Soil Pile-D-1'	Soil	Sleeve		8/6/99	X				.064	.052		

				Lab Comments
Relinquished by:	Date: 8/6/99	Time: 1440	Received by: WSELAB	
Relinquished by:	Date:	Time:	Received by:	
Relinquished by:	Date:	Time:	Received by:	

North State Environmental

Remit To:
North State Environmental
P.O. Box 5624
So. San Francisco,CA94083-5624
(650)588-2838

Invoice

Invoice No.016514
Inv.Date 08/13/99
Po.No. Mailed 8/20/99
Rec 8/24/99

Accounts Payable
Western Geo-Engineers
1386 East Beamer Street
Woodland CA 95776

Samples Received:08/06/99
Samples Reported:08/13/99
Project:Desert Petroleum 793 / 4035 Park Blvd
Jobnumber:99-1216

Service	Item	Number	Unitprice	Lineprice
analysis	Gas/BTEX/MTBE	16.00	40.00	640.00
			TOTAL	640.00

To Colusa
8/24/99

Geo.
copy FYI

Accounts due and payable 30 days from date of invoice. All past due

North State Environmental Laboratory
CA ELAP # 1753
90 South Spruce Avenue, Suite V • South San Francisco, CA 94080 • **(650) 266-4563** • FAX (650) 266-4560

C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 99-1216
Client: Western Geo-Engineers
Project: Desert Petoleum 793 / 4035 Park Blvd.
Oakland, CA
Date Reported: 08/13/99

Gasoline, BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 99-1216-01 Client ID: RS8-10'				08/02/99	SOIL
Gasoline	8015M	160	mg/Kg		08/12/99
Benzene	8020	0.49	mg/Kg		
Ethylbenzene	8020	2.6	mg/Kg		
MTBE	8020	ND			
Toluene	8020	0.79	mg/Kg		
Xylenes	8020	6.2	mg/Kg		
Sample: 99-1216-02 Client ID: RS9-6'				08/03/99	SOIL
Gasoline	8015M	ND			08/12/99
Benzene	8020	ND			
Ethylbenzene	8020	ND			
MTBE	8020	ND			
Toluene	8020	ND			
Xylenes	8020	ND			
Sample: 99-1216-03 Client ID: RS9-10'				08/03/99	SOIL
Gasoline	8015M	67	mg/Kg		08/12/99
Benzene	8020	0.41	mg/Kg		
Ethylbenzene	8020	0.87	mg/Kg		
MTBE	8020	ND			
Toluene	8020	2.0	mg/Kg		
Xylenes	8020	4.9	mg/Kg		

*Confirmed by GC/MS method 8260

North State Environmental Laboratory
CA ELAP # 1753
90 South Spruce Avenue, Suite V • South San Francisco, CA 94080 • (650) 266-4563 • FAX (650) 266-4560

C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 99-1216
Client: Western Geo-Engineers
Project: Desert Petoleum 793 / 4035 Park Blvd.
Oakland, CA
Date Reported: 08/13/99

Gasoline, BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 99-1216-04 Client ID: RS10-6'				08/05/99	SOIL
Gasoline	8015M	ND			08/12/99
Benzene	8020	0.005	mg/Kg		
Ethylbenzene	8020	ND			
MTBE	8020	ND			
Toluene	8020	ND			
Xylenes	8020	ND			
Sample: 99-1216-05 Client ID: RS10-9.5'				08/05/99	SOIL
Gasoline	8015M	870	mg/Kg		08/12/99
Benzene	8020	11	mg/Kg		
Ethylbenzene	8020	21	mg/Kg		
MTBE	8020	ND			
Toluene	8020	62	mg/Kg		
Xylenes	8020	120	mg/Kg		
Sample: 99-1216-06 Client ID: TRENCH-A-15'				08/04/99	SOIL
Gasoline	8015M	ND			08/12/99
Benzene	8020	0.072	mg/Kg		
Ethylbenzene	8020	0.008	mg/Kg		
MTBE	8020	ND			
Toluene	8020	0.011	mg/Kg		
Xylenes	8020	0.015	mg/Kg		

*Confirmed by GC/MS method 8260

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C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 99-1216
Client: Western Geo-Engineers
Project: Desert Petoleum 793 / 4035 Park Blvd.
Oakland, CA
Date Reported: 08/13/99

Gasoline, BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 99-1216-07	Client ID: TRENCH-B-10'			08/04/99	SOIL
Gasoline	8015M	140	mg/Kg		08/12/99
Benzene	8020	2.0	mg/Kg		
Ethylbenzene	8020	2.4	mg/Kg		
MTBE	8020	ND			
Toluene	8020	4.0	mg/Kg		
Xylenes	8020	10	mg/Kg		
Sample: 99-1216-08	Client ID: TRENCH-C-14'			08/04/99	SOIL
Gasoline	8015M	ND			08/12/99
Benzene	8020	0.009	mg/Kg		
Ethylbenzene	8020	0.005	mg/Kg		
MTBE	8020	ND			
Toluene	8020	0.017	mg/Kg		
Xylenes	8020	0.031	mg/Kg		
Sample: 99-1216-09	Client ID: TRENCH-D-10.5'			08/05/99	SOIL
Gasoline	8015M	ND			08/12/99
Benzene	8020	ND			
Ethylbenzene	8020	ND			
MTBE	8020	ND			
Toluene	8020	0.006	mg/Kg		
Xylenes	8020	0.017	mg/Kg		

*Confirmed by GC/MS method 8260

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C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 99-1216
Client: Western Geo-Engineers
Project: Desert Petoleum 793 / 4035 Park Blvd.
Oakland, CA
Date Reported: 08/13/99

Gasoline,BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 99-1216-10 Client ID: TRENCH-E-5'				08/05/99	SOIL
Gasoline	8015M	4000	mg/Kg		08/12/99
Benzene	8020	17	mg/Kg		
Ethylbenzene	8020	110	mg/Kg		
MTBE	8020	*ND<0.5	mg/Kg		
Toluene	8020	260	mg/Kg		
Xylenes	8020	580	mg/Kg		
Sample: 99-1216-11 Client ID: TRENCH-F-10.5'				08/05/99	SOIL
Gasoline	8015M	ND			08/12/99
Benzene	8020	0.064	mg/Kg		
Ethylbenzene	8020	0.010	mg/Kg		
MTBE	8020	ND			
Toluene	8020	0.015	mg/Kg		
Xylenes	8020	0.046	mg/Kg		
Sample: 99-1216-12 Client ID: TRENCH-G-7'				08/06/99	SOIL
Gasoline	8015M	1100	mg/Kg		08/12/99
Benzene	8020	1.4	mg/Kg		
Ethylbenzene	8020	34	mg/Kg		
MTBE	8020	4.5	mg/Kg		
Toluene	8020	70	mg/Kg		
Xylenes	8020	180	mg/Kg		

*Confirmed by GC/MS method 8260

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C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 99-1216
Client: Western Geo-Engineers
Project: Desert Petoleum 793 / 4035 Park Blvd.
Oakland, CA
Date Reported: 08/13/99

Gasoline,BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 99-1216-13 Client ID: TRENCH-H-10.5'				08/06/99	SOIL
Gasoline	8015M	ND			08/12/99
Benzene	8020	ND			
Ethylbenzene	8020	ND			
MTBE	8020	ND			
Toluene	8020	ND			
Xylenes	8020	0.018	mg/Kg		
Sample: 99-1216-14 Client ID: TRENCH-I-S'				08/06/99	SOIL
Gasoline	8015M	ND			08/12/99
Benzene	8020	ND			
Ethylbenzene	8020	ND			
MTBE	8020	ND			
Toluene	8020	ND			
Xylenes	8020	ND			
Sample: 99-1216-15 Client ID: TRENCH-J-10'				08/06/99	SOIL
Gasoline	8015M	ND			08/12/99
Benzene	8020	0.021	mg/Kg		
Ethylbenzene	8020	0.011	mg/Kg		
MTBE	8020	ND			
Toluene	8020	0.079	mg/Kg		
Xylenes	8020	0.057	mg/Kg		

*Confirmed by GC/MS method 8260

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C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 99-1216
Client: Western Geo-Engineers
Project: Desert Petoleum 793 / 4035 Park Blvd.
Oakland, CA
Date Reported: 08/13/99

Gasoline,BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
mple: 99-1216-16	Client ID: SOIL PILE-A,B,C,D-1			08/06/99	SOIL COMP.
Gasoline	8015M	7.9	mg/Kg		08/12/99
Benzene	8020	0.006	mg/Kg		
Ethylbenzene	8020	0.064	mg/Kg		
MTBE	8020	ND			
Toluene	8020	0.051	mg/Kg		
Xylenes	8020	0.52	mg/Kg		

*Confirmed by GC/MS method 8260

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C E R T I F I C A T E O F A N A L Y S I S

Quality Control/Quality Assurance

Lab Number: 99-1216
Client: Western Geo-Engineers
Project: Desert Petoleum 793 / 4035 Park Blvd.
Oakland, CA
Date Reported: 08/13/99

Gasoline,BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Reporting Limit	Unit	Blank	Avg MS/MSD Recovery	RPD
Gasoline	8015M	0.5	mg/Kg	ND	101	3
Benzene	8020	.005	mg/Kg	ND	85	2
Ethylbenzene	8020	.005	mg/Kg	ND	102	0
Toluene	8020	.005	mg/Kg	ND	100	1
Xylenes	8020	.010	mg/Kg	ND	107	1
MTBE	8020	.005	mg/Kg	ND	77	2

ELAP Certificate NO:1753
Reviewed and Approved

John A.Murphy,Laboratory Director

99-1216

North State Environmental Analytical Laboratory

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Chain of Custody / Request for Analysis
Lab Job No.:_____ Page 1 of 2

Client: WEGE	Report to: WEGE	Phone: 530-668-5300	Turnaround Time: standard
Mailing Address: 1386 East Beamer Woodland, CA 95776	Billing to: Western Geo-Engineers	Fax: 530-662-0273	
		PO# / Billing Reference:	Date: 8.6.99
			Sampler:

Project / Site Address: Desert Petroleum 793 4035 Park Blvd., Oakland, CA

Analysis Requested: TPH-G, BTEX, MTBE

	Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time		Comments / Hazards
1	RS8-10'	Soil	Sleeve		8/2/99	X	
2	RS9-6'				8/3/99	X	
3	RS9-10'				8/3/99	X	
4	RS10-6'				8/5/99	X	
5	RS10-9.5'				8/5/99	X	
6	Trench-A-15'				8/4/99 11:00	X	
7	Trench-B-10'				8/4/99 11:30	X	
8	Trench-C-14'				8/4/99 1400	X	
9	Trench-D-10.5'				8/5/99 10:00	X	
10	Trench-E-5'				8/5/99 11:30	X	
11	Trench-F-10.5'				8/5/99 12:20	X	
12	Trench-G-7'				8/6/99 10:00	X	
13	Trench-H-10.5'				8/6/99 11:00	X	
14	Trench-I-5'	Soil	Sleeve		8/6/99 1319	X	

				Lab Comments
Relinquished by:	Date: 8/6/99	Time: 1440	Received by: NSEL AB	
Relinquished by:	Date:	Time:	Received by:	
Relinquished by:	Date:	Time:	Received by:	

99-106

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Phone: (650) 266-4563 Fax: (650) 266-4560

Chain of Custody / Request for Analysis
Lab Job No.: _____ Page 2 of 2

Client: WEGE	Report to: George Lowrose, WEGE	Phone: 530-666-5300	Turnaround Time: Standard
Mailing Address: 1386 East Beamer Woodland CA 95776	Billing to: Western Geo-Engineers	Fax: 530-662-0273	
		PO# / Billing Reference:	Date: 8.6.99
			Sampler:

Project / Site Address: Desert Petroleum 793 4035 Jack Black Oakland CA

Analysis Requested: TPH-G BTEX MTBE

	Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	TPH-G BTEX MTBE	Comments / Hazards
17	Trench-J-10'	Soil	Sleeve		8/6/99 1350	X	
16	Soil Pile 1-A-1'				8/6/99	X	
	Soil Pile-B-1'					X	composite 4 into 1 at lab
	Soil Pile-C-1'					X	
	Soil Pile-D-1'	Soil	Sleeve		8/6/99	X	

Relinquished by:		Date: 8/6/99	Time: 1440	Received by:	Lab Comments
Relinquished by:		Date:	Time:	Received by:	
Relinquished by:		Date:	Time:	Received by:	

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Chain of Custody / Request for Analysis
Lab Job No.:_____ Page___ of___

Client: Western Geo- Engineers	Report to: George Conrow	Phone: 530 668 5300	Turnaround Time
Mailing Address: 1386 E. Beamer St Woodland, CA 95776	Billing to: Wege	Fax:	
		PO# / Billing Reference: DP 793 - Trench	Date: 12-8-99
			Sampler:

Project / Site Address: DP 793

Analysis Requested

Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	TPHg BTEX MTBE							Comments / Hazards
Trench K - 12½	Soil	1 / Brass	No	8-9-99 / Noon	✓							
Trench L - 10	〃	1 / 〃	〃	〃 / Noon	✓							
Trench M- 6	〃	1 / 〃	No	8-9-99 / K	✓							
Trench N- 8	〃	1 / 〃	〃	〃 / 11	✓							
Trench O - 10	〃	1 / 〃	〃	〃 / 1035	✓							
Trench P- 6	〃	1 / 〃	〃	〃 / 1045	✓							

Relinquished by: [signature]	Date: 12-9-99	Time: 2:50	Received by: [signature] #690	Lab Comments
Relinquished by:	Date:	Time:	Received by:	
Relinquished by:	Date:	Time:	Received by:	

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C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 99-1244
Client: Western Geo-Engineers
Project: DP 793-Trench

Date Reported: 08/20/99

Gasoline, BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 99-1244-01 Client ID: TRENCH K-12.5				08/09/99	SOIL
Gasoline	8015M	ND			08/18/99
Benzene	8020	ND			
Ethylbenzene	8020	ND			
MTBE	8020	ND			
Toluene	8020	ND			
Xylenes	8020	ND			
Sample: 99-1244-02 Client ID: TRENCH L-10				08/09/99	SOIL
Gasoline	8015M	ND			08/18/99
Benzene	8020	ND			
Ethylbenzene	8020	ND			
MTBE	8020	ND			
Toluene	8020	ND			
Xylenes	8020	ND			
Sample: 99-1244-03 Client ID: TRENCH M-6				08/12/99	SOIL
Gasoline	8015M	ND			08/18/99
Benzene	8020	ND			
Ethylbenzene	8020	ND			
MTBE	8020	ND			
Toluene	8020	ND			
Xylenes	8020	ND			

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C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 99-1244
Client: Western Geo-Engineers
Project: DP 793-Trench

Date Reported: 08/20/99

Gasoline, BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 99-1244-04 Client ID: TRENCH N-8				08/12/99	SOIL
Gasoline	8015M	ND			08/18/99
Benzene	8020	0.012	mg/Kg		
Ethylbenzene	8020	ND			
MTBE	8020	ND			
Toluene	8020	0.005	mg/Kg		
Xylenes	8020	0.012	mg/Kg		
Sample: 99-1244-05 Client ID: TRENCH O-10				08/12/99	SOIL
Gasoline	8015M	ND			08/18/99
Benzene	8020	0.011	mg/Kg		
Ethylbenzene	8020	ND			
MTBE	8020	ND			
Toluene	8020	ND			
Xylenes	8020	0.011	mg/Kg		
Sample: 99-1244-06 Client ID: TRENCH P-6				08/12/99	SOIL
Gasoline	8015M	ND			08/18/99
Benzene	8020	0.045	mg/Kg		
Ethylbenzene	8020	ND			
MTBE	8020	ND			
Toluene	8020	ND			
Xylenes	8020	ND			

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C E R T I F I C A T E O F A N A L Y S I S

Quality Control/Quality Assurance

Lab Number: 99-1244
Client: Western Geo-Engineers
Project: DP 793-Trench

Date Reported: 08/20/99

Gasoline, BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Reporting Limit	Unit	Blank	Avg MS/MSD Recovery	RPD
Gasoline	8015M	0.5	mg/Kg	ND	99	2
Benzene	8020	.005	mg/Kg	ND	113	1
Ethylbenzene	8020	.005	mg/Kg	ND	112	1
Toluene	8020	.005	mg/Kg	ND	113	1
Xylenes	8020	.010	mg/Kg	ND	116	1
MTBE	8020	.005	mg/Kg	ND	79	8

ELAP Certificate NO:1753
Reviewed and Approved

John A.Murphy, Laboratory Director

North State Environmental Laboratory
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C E R T I F I C A T E O F A N A L Y S I S

Quality Control/Quality Assurance

Lab Number: 99-1244
Client: Western Geo-Engineers
Project: DP 793-Trench

Date Reported: 08/20/99

Gasoline,BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Reporting Limit	Unit	Blank	Avg MS/MSD Recovery	RPD
Gasoline	8015M	0.5	mg/Kg	ND	99	2
Benzene	8020	.005	mg/Kg	ND	113	1
Ethylbenzene	8020	.005	mg/Kg	ND	112	1
Toluene	8020	.005	mg/Kg	ND	113	1
Xylenes	8020	.010	mg/Kg	ND	116	1
MTBE	8020	.005	mg/Kg	ND	79	8

ELAP Certificate NO:1753
Reviewed and Approved

John A.Murphy,Laboratory Director

99-1244

North State Environmental Analytical Laboratory

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Chain of Custody / Request for Analysis
Lab Job No.:_____ Page___of___

Client: Western Geo- Engineers	Report to: George Converse	Phone: 530 668 5300	Turnaround Time
Mailing Address: 1386 E. Beamer St Woodland, CA 95776	Billing to: Wege	Fax:	
		PO# / Billing Reference: DP 793 - Trench	Date: 12-8-99
			Sampler: Converse

Project / Site Address: DP 793

Analysis Requested

	Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	TPHg BTE+ MTBE							Comments / Hazards
1	Trench K - 12½	Soil	1 / Brass	NO	8-9-99 / Noon	✓							
2	Trench L - 10		1		/ Noon	✓							
3	Trench M - 6		1	NO	8-12-99 / 10	✓							
4	Trench N - 8		1		/ 11	✓							
5	Trench O - 10		1		/ 1300	✓							
6	Trench P - 6		1		/ 12:15	✓							

Relinquished by: [signature]	Date: 12-8-99	Time: 2:50	Received by: [signature] #680	Lab Comments
Relinquished by:	Date: 12/13/99	Time:	Received by: [signature] NSE	
Relinquished by:	Date:	Time:	Received by:	

APPENDIX H

RBCA TIER 1/TIER 2 EVALUATION

Output Table

Site Name: DP793 | Job Identification: DP793 -1 | Software: GSI RBCA Spreadsheet
Site Location: 4035 Park Blvd., Oakland, Calif. | Date Completed: 9/23/99 | Version: 1.0.1
Completed By: George Converse

NOTE: values which differ from Tier 1 default values are shown in bold italics and underlined.

Exposure Parameter	Definition (Units)	Residential Adult	Residential (1-6yrs)	Residential (1-16 yrs)	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
ATc	Averaging time for carcinogens (yr)	70				
ATn	Averaging time for non-carcinogens (yr)	30	6	16	25	1
BW	Body Weight (kg)	70	15	35	70	
ED	Exposure Duration (yr)	30	6	16	25	1
t	Averaging time for vapor flux (yr)	30			25	1
EF	Exposure Frequency (days/yr)	350			250	180
EF.Derm	Exposure Frequency for dermal exposure	350			250	
IRgw	Ingestion Rate of Water (L/day)	2			1	
IRs	Ingestion Rate of Soil (mg/day)	100	200		50	100
IRadj	Adjusted soil ing. rate (mg-yr/kg-d)	1.1E+02			9.4E+01	
IRa.in	Inhalation rate indoor (m^3/day)	15			20	
IRa.out	Inhalation rate outdoor (m^3/day)	20			20	10
SA	Skin surface area (dermal) (cm^2)	5.8E+03		2.0E+03	5.8E+03	5.8E+03
SAadj	Adjusted dermal area (cm^2-yr/kg)	2.1E+03			1.7E+03	
M	Soil to Skin adherence factor	1				
AAFs	Age adjustment on soil ingestion	FALSE			FALSE	
AAFd	Age adjustment on skin surface area	FALSE			FALSE	
tox	Use EPA tox data for air (or PEL based)?	TRUE				
gwMCL?	Use MCL as exposure limit in groundwater?	FALSE				

Matrix of Exposed Persons to Complete Exposure Pathways		Residential	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
Outdoor Air Pathways:				
SS.v	Volatiles and Particulates from Surface Soils	FALSE	FALSE	FALSE
S.v	Volatilization from Subsurface Soils	TRUE	TRUE	
GW.v	Volatilization from Groundwater	FALSE	TRUE	
Indoor Air Pathways:				
S.b	Vapors from Subsurface Soils	FALSE	TRUE	
GW.b	Vapors from Groundwater	FALSE	TRUE	
Soil Pathways:				
SS.d	Direct Ingestion and Dermal Contact	FALSE	FALSE	TRUE
Groundwater Pathways:				
GW.i	Groundwater Ingestion	TRUE	TRUE	
S.l	Leaching to Groundwater from all Soils	TRUE	TRUE	

Matrix of Receptor Distance and Location On- or Off-Site		Residential Distance	Residential On-Site	Commercial/Industrial Distance	Commercial/Industrial On-Site
GW	Groundwater receptor (cm)	2.0E+03	FALSE		TRUE
S	Inhalation receptor (cm)	2.0E+03	FALSE		TRUE

Matrix of Target Risks		Individual	Cumulative
TRab	Target Risk (class A&B carcinogens)	1.0E-06	
TRc	Target Risk (class C carcinogens)	1.0E-05	
THQ	Target Hazard Quotient	1.0E+00	
Opt	Calculation Option (1, 2, or 3)	2	
Tier	RBCA Tier	2	

Surface Parameters	Definition (Units)	Residential	Constrctn
A	Contaminated soil area (cm^2)	***2.3E+06***	***2.3E+06***
W	Length of affect. soil parallel to wind (cm)	***1.2E+03***	***1.2E+03***
W.gw	Length of affect. soil parallel to groundwater (cm	***2.1E+03***	
Uair	Ambient air velocity in mixing zone (cm/s)	2.3E+02	
delta	Air mixing zone height (cm)	2.0E+02	
Lss	Thickness of affected surface soils (cm)	1.0E+02	
Pe	Particulate areal emission rate (g/cm^2/s)	6.9E-14	

Groundwater	Definition (Units)	Value
delta.gw	Groundwater mixing zone depth (cm)	***4.9E+02***
I	Groundwater infiltration rate (cm/yr)	***6.1E+01***
Ugw	Groundwater Darcy velocity (cm/yr)	***3.1E+03***
Ugw.lr	Groundwater seepage velocity (cm/yr)	***1.1E+04***
Ks	Saturated hydraulic conductivity(cm/s)	1.0E-03
grad	Groundwater gradient (cm/cm)	1.0E-01
Sw	Width of groundwater source zone (cm)	2.1E+03
Sd	Depth of groundwater source zone (cm)	4.9E+02
phi.eff	Effective porosity in water-bearing unit	3.0E-01
foc.sat	Fraction organic carbon in water-bearing unit	***4.6E-02***
BIO?	Is bioattenuation considered?	TRUE
BC	Biodegradation Capacity (mg/L)	7.3E+00

Soil	Definition (Units)	Value
hc	Capillary zone thickness (cm)	***3.0E+01***
hv	Vadose zone thickness (cm)	***2.7E+02***
rho	Soil density (g/cm^3)	1.7
foc	Fraction of organic carbon in vadose zone	***0.24***
phi	Soil porosity in vadose zone	0.38
Lgw	Depth to groundwater (cm)	***3.0E+02***
Ls	Depth to top of affected subsurface soil (cm)	***2.1E+02***
Lsubs	Thickness of affected subsurface soils (cm)	***7.6E+02***
pH	Soil/groundwater pH	6.5

		capillary	vadose	foundation
phi.w	Volumetric water content	0.342	0.12	0.12
phi.a	Volumetric air content	0.038	0.26	0.26

Building	Definition (Units)	Residential	Commercial
Lb	Building volume/area ratio (cm)	2.0E+02	3.0E+02
ER	Building air exchange rate (s^-1)	1.4E-04	2.3E-04
Lcrk	Foundation crack thickness (cm)	1.5E+01	
eta	Foundation crack fraction	0.01	

Transport Parameters	Definition (Units)	Residential	Commercial
Groundwater			
ax	Longitudinal dispersivity (cm)	6.1E+01	
ay	Transverse dispersivity (cm)	6.1E+00	
az	Vertical dispersivity (cm)	6.1E-01	
Vapor			
dcy	Transverse dispersion coefficient (cm)	2.3E+02	
dcz	Vertical dispersion coefficient (cm)	1.6E+02	

RBCA CHEMICAL DATABASE

Physical Property Data

CAS Number	Constituent	type	Molecular Weight (g/mole) MW	ref	Diffusion Coefficients in air (cm2/s) Dair	ref	in water (cm2/s) Dwat	ref	log (Koc) or log(Kd) (@ 20 - 25 C) log(l/kg)	ref	Henry's Law Constant (@ 20 - 25 C) (atm-m3/mol)	(unitless)	ref	Vapor Pressure (@ 20 - 25 C) (mm Hg)	ref	Solubility (@ 20 - 25 C) (mg/L)	ref	acid pKa	base pKb	ref
71-43-3	Benzene CA	O	78.1		9.30E-02		1.10E-05		1.58		5.29E-03	2.20E-01		9.52E+01		1.75E+03				
100-41-4	Ethylbenzene CA	O	106.2		7.60E-02		8.50E-06		1.98		7.69E-03	3.20E-01		1.00E+01		1.52E+02				
110-54-3	Hexane, n-	O	86.2	5	2.00E-01	4	7.77E-06	4	2.68	4	1.22E-01	5.07E+00	4	1.50E+02	4	1.30E+01	5			
1634-04-4	Methyl t-Butyl Ether CA	O	88.146		7.92E-02		9.41E-05		1.08		5.77E-04	2.40E-02		2.49E+02		4.80E+04				
108-88-3	Toluene CA	O	92.4		8.50E-02		9.40E-06		2.13		6.25E-03	2.60E-01		3.00E+01		5.15E+02				
1330-20-7	Xylene CA	O	106.2		7.20E-02		8.50E-06		2.38		6.97E-03	2.90E-01		7.00E+00		1.98E+02				

Site Name: DP793 Site Location: 4035 Park Blvd., Oaklan Completed By: George Converse Date Completed: 9/23/1999

Software version: 1.0.1

RBCA CHEMICAL DATABASE

Physical Property Data

CAS Number	Constituent	type	Molecular Weight (g/mole) MW	ref	Diffusion Coefficients in air (cm2/s) Dair	ref	in water (cm2/s) Dwat	ref	log (Koc) or log(Kd) (@ 20 - 25 C) log(l/kg)	ref	Henry's Law Constant (@ 20 - 25 C) (atm-m3/mol)	(unitless)	ref	Vapor Pressure (@ 20 - 25 C) (mm Hg)	ref	Solubility (@ 20 - 25 C) (mg/L)	ref	acid pKa	base pKb	ref
71-43-3	Benzene CA	O	78.1		9.30E-02		1.10E-05		1.58		5.29E-03	2.20E-01		9.52E+01		1.75E+03				
100-41-4	Ethylbenzene CA	O	106.2		7.60E-02		8.50E-06		1.98		7.69E-03	3.20E-01		1.00E+01		1.52E+02				
110-54-3	Hexane, n-	O	86.2	5	2.00E-01	4	7.77E-06	4	2.68	4	1.22E-01	5.07E+00	4	1.50E+02	4	1.30E+01	5			
1634-04-4	Methyl t-Butyl Ether CA	O	88.146		7.92E-02		9.41E-05		1.08		5.77E-04	2.40E-02		2.49E+02		4.80E+04				
108-88-3	Toluene CA	O	92.4		8.50E-02		9.40E-06		2.13		6.25E-03	2.60E-01		3.00E+01		5.15E+02				
1330-20-7	Xylene CA	O	106.2		7.20E-02		8.50E-06		2.38		6.97E-03	2.90E-01		7.00E+00		1.98E+02				

Site Name: DP793 Site Location: 4035 Park Blvd., Oaklan Completed By: George Converse Date Completed: 9/23/1999

Software version: 1.0.1

RBCA CHEMICAL DATABASE

Toxicity Data

CAS Number	Constituent	Reference Dose (mg/kg/day) Oral RfD_oral	ref	Inhalation RfD_inhal	ref	Slope Factors 1/(mg/kg/day) Oral SF_oral	ref	Inhalation SF_inhal	ref	EPA Weight of Evidence	Is Constituent Carcinogenic ?
71-43-3	Benzene CA	2.00E-02		2.00E-02	30	1.00E-01		1.00E-01		A	TRUE
100-41-4	Ethylbenzene CA	1.00E-01		2.86E-01	30						FALSE
110-54-3	Hexane, n-	6.00E-02	A	5.71E-02	R	-		-			FALSE
1634-04-4	Methyl t-Butyl Ether CA	5.00E-03				1.73E-03		1.73E-03	31	?	RUE OEHHA draf
108-88-3	Toluene CA	1.10E-01		5.70E-02	30					D	FALSE
1330-20-7	Xylene CA	2.50E-01		8.57E-02	30					D	FALSE

Site Name: DP793 Site Location: 4035 Park Blvd., Oakl Completed By: George Converse Date Completed: 9/23/1999

Software version: 1.0.1

RBCA CHEMICAL DATABASE

Miscellaneous Chemical Data

CAS Number	Constituent	Maximum Contaminant Level MCL (mg/L)	reference	Permissible Exposure Limit PEL/TLV (mg/m3)	ref	Relative Absorption Factors Oral	Dermal	Detection Limits Groundwater (mg/L)	ref	Soil (mg/kg)	ref	Half Life (First-Order Decay) (days) Saturated	Unsaturated	ref
71-43-3	Benzene CA	1.00E-03		3.20E+00		1	0.5	0.0005		0.005		720	720	
100-41-4	Ethylbenzene CA	7.00E-02		4.34E+02		1	0.5	0.0005		0.005		228	228	
110-54-3	Hexane, n-					1	0.5							
1634-04-4	Methyl t-Butyl Ether CA			1.44E+02		1	0.5	0.005		0.05				
108-88-3	Toluene CA	1.50E-01		1.47E+02		1	0.5	0.0005		0.005		28	28	
1330-20-7	Xylene CA	1.75E+00		4.34E+02		1	0.5	0.002		0.005		360	360	

Site Name: DP793 Site Location: 4035 Park Blvd., Oakland, California Completed By: George Converse Date Completed: 9/23/1999

Software version: 1.0.1

RBCA SITE ASSESSMENT | **Input Screen 7**

REPRESENTATIVE COC CONCENTRATIONS IN SOURCE MEDIA

(Complete the following table)

CONSTITUENT	Representative COC Concentration in Groundwater		in Surface Soil		in Subsurface Soil	
	value (mg/L)	note	value (mg/kg)	note	value (mg/kg)	note
Benzene CA	5.3E+0	max	5.0E-3		4.5E+0	I SW
Ethylbenzene CA	3.0E+0	max	5.0E-3		1.8E+1	I SW
Hexane, n-	8.9E+1	max	5.0E-3		2.0E+3	I SW
Methyl t-Butyl Ether CA	5.4E-1	max	5.0E-3		5.0E-3	
Toluene CA	1.5E+1	max	5.0E-3		3.5E+1	I SW
Xylene CA	1.5E+1	max	1.0E-2		1.3E+2	I SW

Site Name: DP793
Site Location: 4035 Park Blvd., Oakland, California

Completed By: George Converse
Date Completed: 9/23/1999

RBCA SITE ASSESSMENT | **Input Screen 6.3**

CONSTITUENT MOLE FRACTIONS

(Complete the following table)

CONSTITUENT	Mole Fraction of Constituent in Source Material
Benzene CA	
Ethylbenzene CA	
Hexane, n-	
Methyl t-Butyl Ether CA	
Toluene CA	
Xylene CA	

Site Name: DP793 Completed By: George Converse

Site Location: 4035 Park Blvd., Oakland Date Completed: 9/23/1999

RBCA SITE ASSESSMENT | **Input Screen 9.4**

GROUNDWATER DAF VALUES

(Enter DAF values in the grey area of the following table)

CONSTITUENT	Dilution Attenuation Factor (DAF) in Groundwater	
	Residential Receptor	Comm./Ind. Receptor
Benzene CA	1.0E+0	1.0E+0
Ethylbenzene CA	1.0E+0	1.0E+0
Hexane, n-	1.0E+0	1.0E+0
Methyl t-Butyl Ether CA	1.0E+0	1.0E+0
Toluene CA	1.0E+0	1.0E+0
Xylene CA	1.0E+0	1.0E+0

Site Name: DP793
Site Location: 4035 Park Blvd., Oakland, California

Completed By: George Converse
Date Completed: 9/23/1999

RBCA SITE ASSESSMENT | **Input Screen 9.1**

CONSTITUENT HALF-LIFE VALUES

(Complete the following table)

CONSTITUENT	Half-Life of Constituent (day)
Benzene CA	
Ethylbenzene CA	
Hexane, n-	
Methyl t-Butyl Ether CA	
Toluene CA	
Xylene CA	

Site Name: DP793
Site Location: 4035 Park Blvd., Oakland,

Completed By: George Converse
Date Completed: 9/23/1999

RBCA SITE ASSESSMENT

EXPOSURE LIMITS IN GROUNDWATER AND AIR

CONSTITUENT	Exposure Limits Applied to Receptors	
	Groundwater (MCL) (mg/L)	Air (Comm. only) (PEL/TLV) (mg/m^3)
Benzene CA		
Ethylbenzene CA		
Hexane, n-		
Methyl t-Butyl Ether CA		
Toluene CA		
Xylene CA		

Site Name: DP793
Site Location: 4035 Park Blvd., Oakland, California

Completed By: George Converse
Date Completed: 9/23/1999

Site Name: DP793 | Site Location: 4035 Park Blvd., Oakland, Californi | Completed By: George Convers | Date Completed: 9/23/1999 | 1 OF 9

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS: VAPOR AND DUST INHALATION

Constituents of Concern	Exposure Concentration 1) Source Medium: Surface Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor		3) Exposure Medium: Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		4) Exposure Multiplier: (IRxEFxED)/(BWxAT) (m^3/kg-day)		5) Average Daily Intake Rate: (mg/kg-day) (3) X (4)	
Benzene CA	5.0E-3								
Ethylbenzene CA	5.0E-3								
Hexane, n-	5.0E-3								
Methyl t-Butyl Ether CA	5.0E-3								
Toluene CA	5.0E-3								
Xylene CA	1.0E-2								

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequency (days/yr); ET = Exposure time (hrs/day); IR = Inhalation rate (m^3/day); POE = Point of exposure; SA = Skin exposure area (cm^2/day)

Software: GSI RBCA Spreadsheet Version: 1.0.1 | Serial: G-443-CSX-444

Site Name: DP793 Site Location: 4035 Park Blvd., Oakland, Californi Completed By: George Convers Date Completed: 9/23/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SUBSURFACE SOILS: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium: Subsurface Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor: On-Site Commercial	2) NAF Value (m^3/kg) Receptor: Off-Site Residential	3) Exposure Medium: Outdoor Air: POE Conc. (mg/m^3) (1) / (2): On-Site Commercial	3) Exposure Medium: Outdoor Air: POE Conc. (mg/m^3) (1) / (2): Off-Site Residential	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m^3/kg-day): On-Site Commercial	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m^3/kg-day): Off-Site Residential	5) Average Daily Intake Rate (mg/kg-day) (3) X (4): On-Site Commercial	5) Average Daily Intake Rate (mg/kg-day) (3) X (4): Off-Site Residential
Benzene CA	4.5E+0	4.6E+4	4.6E+4	9.9E-5	9.9E-5	7.0E-2	1.2E-1	6.9E-6	1.2E-5
Ethylbenzene CA	1.8E+1	9.6E+4	9.6E+4	1.9E-4	1.9E-4	2.0E-1	2.7E-1	3.7E-5	5.2E-5
Hexane, n-	2.0E+3	2.2E+4	2.7E+4	8.9E-2	7.4E-2	2.0E-1	2.7E-1	1.7E-2	2.0E-2
Methyl t-Butyl Ether CA	5.0E-3	1.6E+5	1.6E+5	3.2E-8	3.2E-8	7.0E-2	1.2E-1	2.2E-9	3.8E-9
Toluene CA	3.5E+1	1.5E+5	1.5E+5	2.4E-4	2.4E-4	2.0E-1	2.7E-1	4.6E-5	6.5E-5
Xylene CA	1.3E+2	2.8E+5	2.8E+5	4.7E-4	4.7E-4	2.0E-1	2.7E-1	9.1E-5	1.3E-4

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequencey (days/yr); ET = Exposure time (hrs/day); IR = Inhalation rate (m^3/day); POE = Point of exposure; SA = Skin exposue area (cm^2/day)

Site Name: DP793 Site Location: 4035 Park Blvd., Oakland, Ca Completed By: George Converse Date Completed: 9/23/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium: Groundwater Conc. (mg/L)	2) NAF Value (m^3/L) Receptor: On-Site Commercial		3) Exposure Medium: Outdoor Air: POE Conc. (mg/m^3) (1) / (2): On-Site Commercial		4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m^3/kg-day): On-Site Commercial		5) Average Daily Intake Rate (mg/kg-day) (3) X (4): On-Site Commercial		TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from surface, subsurface & groundwater routes.): On-Site Commercial	Off-Site Residential
Benzene CA	5.3E+0	2.4E+5		2.2E-5		7.0E-2		1.5E-6		8.4E-6	1.2E-5
Ethylbenzene CA	3.0E+0	2.4E+5		1.2E-5		2.0E-1		2.4E-6		3.9E-5	5.2E-5
Hexane, n-	8.9E+1	8.6E+3		1.0E-2		2.0E-1		2.0E-3		1.9E-2	2.0E-2
Methyl t-Butyl Ether CA	5.4E-1	1.3E+5		4.2E-6		7.0E-2		2.9E-7		3.0E-7	3.8E-9
Toluene CA	1.5E+1	2.5E+5		6.1E-5		2.0E-1		1.2E-5		5.8E-5	6.5E-5
Xylene CA	1.5E+1	2.6E+5		5.7E-5		2.0E-1		1.1E-5		1.0E-4	1.3E-4

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m^3/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: DP793 Site Location: 4035 Park Blvd., Oakland, Californi Completed By: George Convers Date Completed: 9/23/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SUBSURFACE SOILS:
VAPOR INTRUSION TO BUILDINGS

Constituents of Concern	Exposure Concentration 1) Source Medium: Subsurface Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor: On-Site Commercial	3) Exposure Medium: Indoor Air: POE Conc. (mg/m^3) (1) / (2): On-Site Commercial	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m^3/kg-day): On-Site Commercial	5) Average Daily Intake Rate (mg/kg-day) (3) X (4): On-Site Commercial
Benzene CA	4.5E+0	6.8E+2	6.6E-3	7.0E-2	4.6E-4
Ethylbenzene CA	1.8E+1	1.4E+3	1.3E-2	2.0E-1	2.5E-3
Hexane, n-	2.0E+3	1.7E+2	1.2E+1	2.0E-1	2.3E+0
Methyl t-Butyl Ether CA	5.0E-3	2.4E+3	2.1E-6	7.0E-2	1.5E-7
Toluene CA	3.5E+1	2.2E+3	1.6E-2	2.0E-1	3.1E-3
Xylene CA	1.3E+2	4.2E+3	3.1E-2	2.0E-1	6.1E-3

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m^3/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: DP793 | Site Location: 4035 Park Blvd., Oakland, Ca | Completed By: George Converse | Date Completed: 9/23/1999 | 5 OF 9

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER:
VAPOR INTRUSION TO BUILDINGS

Constituents of Concern	Exposure Concentration 1) Source Medium: Groundwater Conc. (mg/L)	2) NAF Value (m^3/L) Receptor: On-Site Commercial	3) Exposure Medium: Indoor Air: POE Conc. (mg/m^3) (1) / (2) — On-Site Commercial	4) Exposure Multiplier: (IRxEFxED)/(BWxAT) (m^3/kg-day) — On-Site Commercial	5) Average Daily Intake Rate: (mg/kg-day) (3) X (4) — On-Site Commercial	TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from subsurface & groundwater routes.) — On-Site Commercial
Benzene CA	5.3E+0	5.2E+2	1.0E-2	7.0E-2	7.2E-4	1.2E-3
Ethylbenzene CA	3.0E+0	5.0E+2	6.0E-3	2.0E-1	1.2E-3	3.6E-3
Hexane, n-	8.9E+1	1.7E+1	5.1E+0	2.0E-1	1.0E+0	3.3E+0
Methyl t-Butyl Ether CA	5.4E-1	9.4E+2	5.8E-4	7.0E-2	4.0E-5	4.0E-5
Toluene CA	1.5E+1	5.2E+2	2.9E-2	2.0E-1	5.6E-3	8.7E-3
Xylene CA	1.5E+1	5.6E+2	2.7E-2	2.0E-1	5.3E-3	1.1E-2

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m^3/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: DP793 Site Location: 4035 Park Blvd., Oakland, California Completed By: George Co Date Completed: 9/23/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS OR SEDIMENTS:
DERMAL CONTACT

Constituents of Concern	Exposure Concentration 1) Source Medium: Surface Soil Conc. (mg/kg)	2) Exposure Multiplier (SAxAFxABSxCFxEFxED)/(BWxAT) (kg/kg-day): On-Site Residential	2) Exposure Multiplier: On-Site Commercial	3) Average Daily Intake Rate (mg/kg-day) (1) x (2): On-Site Residential	3) Average Daily Intake Rate: On-Site Commercial
Benzene CA	5.0E-3				
Ethylbenzene CA	5.0E-3				
Hexane, n-	5.0E-3				
Methyl t-Butyl Ether CA	5.0E-3				
Toluene CA	5.0E-3				
Xylene CA	1.0E-2				

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequencey (days/; ET = Exposure time (hrs/day); IR = Intake rate (mg/day); POE = Point of exposure; SA = Skin exposure area (cm^2/day)

Site Name: DP793 Site Location: 4035 Park Blvd., Oakland, C Completed By: George Convers Date Completed: 9/23/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS OR SEDIMENTS:

INGESTION

Constituents of Concern	Exposure Concentration: 1) Source Medium — Surface Soil Conc. (mg/kg)	2) Exposure Multiplier (IRxCFxEFxED)/(BWxAT) (kg/kg-day) — On-Site Residential	2) Exposure Multiplier — On-Site Commercial	3) Average Daily Intake Rate (mg/kg-day) (1) x (2) — On-Site Residential	3) Average Daily Intake Rate — On-Site Commercial	TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from dermal & ingestion routes.) — On-Site Residential	TOTAL PATHWAY INTAKE — On-Site Commercial
Benzene CA	5.0E-3						
Ethylbenzene CA	5.0E-3						
Hexane, n-	5.0E-3						
Methyl t-Butyl Ether CA	5.0E-3						
Toluene CA	5.0E-3						
Xylene CA	1.0E-2						

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequency (days/yr); ET = Exposure time (hrs/day); IR = Intake rate (mg/day); POE = Point of exposure; SA = Skin exposure area (cm^2/day)

Site Name: DP793 Site Location: 4035 Park Blvd., Oakland, California Completed By: George Convers Date Completed: 9/23/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS (CHECKED IF PATHWAY IS ACTIVE)

SOIL: LEACHING TO GROUNDWATER/ GROUNDWATER INGESTION

Constituents of Concern	Exposure Concentration 1) Source Medium: Soil Concentration (mg/kg)	2) NAF Value (L/kg) Receptor: On-Site Commercial	2) NAF Value (L/kg) Receptor: Off-Site Residential	3) Exposure Medium: Groundwater: POE Conc. (mg/L) (1)/(2) On-Site Commercial	3) Exposure Medium: Groundwater: POE Conc. (mg/L) (1)/(2) Off-Site Residential	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg-day) On-Site Commercial	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg-day) Off-Site Residential	5) Average Daily Intake Rate (mg/kg-day) (3) x (4) On-Site Commercial	5) Average Daily Intake Rate (mg/kg-day) (3) x (4) Off-Site Residential
Benzene CA	4.5E+0	1.2E+2	1.2E+2	3.8E-2	3.8E-2	3.5E-3	1.2E-2	1.3E-4	4.5E-4
Ethylbenzene CA	1.8E+1	2.9E+2	2.9E+2	6.1E-2	6.1E-2	9.8E-3	2.7E-2	6.0E-4	1.7E-3
Hexane, n-	2.0E+3	1.5E+3	1.5E+3	1.4E+0	1.4E+0	9.8E-3	2.7E-2	1.3E-2	3.7E-2
Methyl t-Butyl Ether CA	5.0E-3	3.8E+1	3.8E+1	1.3E-4	1.3E-4	3.5E-3	1.2E-2	4.6E-7	1.6E-6
Toluene CA	3.5E+1	4.1E+2	4.1E+2	8.4E-2	8.4E-2	9.8E-3	2.7E-2	8.3E-4	2.3E-3
Xylene CA	1.3E+2	7.4E+2	7.4E+2	1.8E-1	1.8E-1	9.8E-3	2.7E-2	1.7E-3	4.8E-3

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body Weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequency (days/yr); ET = Exposure time (hrs/day); IR = Intake rate (L/day); POE = Point of exposure; SA = Skin exposure area (cm^2/day)

Site Name: DP793 Site Location: 4035 Park Blvd., Oakland, California Completed By: George Converse Date Completed: 9/23/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAY IS ACTIVE)**

GROUNDWATER: INGESTION

Constituents of Concern	Exposure Concentration: 1) Source Medium — Groundwater Conc. (mg/L)	2) NAF Value (dim) — Receptor: On-Site Commercial	2) NAF Value (dim) — Receptor: Off-Site Residential	3) Exposure Medium — Groundwater: POE Conc. (mg/L) (1)/(2): On-Site Commercial	3) Exposure Medium — Groundwater: POE Conc. (mg/L) (1)/(2): Off-Site Residential	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg-day): On-Site Commercial	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg-day): Off-Site Residential	5) Average Daily Intake Rate (mg/kg-day) (3) x (4): On-Site Commercial	5) Average Daily Intake Rate (mg/kg-day) (3) x (4): Off-Site Residential
Benzene CA	5.3E+0	1.0E+0	1.0E+0	5.3E+0	5.3E+0	3.5E-3	1.2E-2	1.9E-2	6.2E-2
Ethylbenzene CA	3.0E+0	1.0E+0	1.0E+0	3.0E+0	3.0E+0	9.8E-3	2.7E-2	2.9E-2	8.2E-2
Hexane, n-	8.9E+1	1.0E+0	1.0E+0	8.9E+1	8.9E+1	9.8E-3	2.7E-2	8.7E-1	2.4E+0
Methyl t-Butyl Ether CA	5.4E-1	1.0E+0	1.0E+0	5.4E-1	5.4E-1	3.5E-3	1.2E-2	1.9E-3	6.3E-3
Toluene CA	1.5E+1	1.0E+0	1.0E+0	1.5E+1	1.5E+1	9.8E-3	2.7E-2	1.5E-1	4.1E-1
Xylene CA	1.5E+1	1.0E+0	1.0E+0	1.5E+1	1.5E+1	9.8E-3	2.7E-2	1.5E-1	4.1E-1

MAX. PATHWAY INTAKE (mg/kg-day)

(Maximum intake of active pathways soil leaching & groundwater routes.)

On-Site Commercial	Off-Site Residential
1.9E-2	6.2E-2
2.9E-2	8.2E-2
8.7E-1	2.4E+0
1.9E-3	6.3E-3
1.5E-1	4.1E-1
1.5E-1	4.1E-1

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Intake rate (L/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: DP793 | Site Location: 4035 Park Blvd., Oakland, California | Completed By: George Converse | Date Completed: 9/23/1999 | 1 OF 4

TIER 2 PATHWAY RISK CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS (CHECKED IF PATHWAYS ARE ACTIVE)

Constituents of Concern	(1) EPA Carcinogenic Classification	CARCINOGENIC RISK: (2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site Commercial	(2) Total Carcinogenic Intake Rate (mg/kg/day) Off-Site Residential	(3) Inhalation Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) On-Site Commercial	(4) Individual COC Risk (2) x (3) Off-Site Residential	TOXIC EFFECTS: (5) Total Toxicant Intake Rate (mg/kg/day) On-Site Commercial	(5) Total Toxicant Intake Rate (mg/kg/day) Off-Site Residential	(6) Inhalation Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) On-Site Commercial	(7) Individual COC Hazard Quotient (5) / (6) Off-Site Residential
Benzene CA	A	8.4E-6	1.2E-5	1.0E-1	8.4E-7	1.2E-6	2.4E-5	2.7E-5	2.0E-2	1.2E-3	1.4E-3
Ethylbenzene CA							3.9E-5	5.2E-5	2.9E-1	1.4E-4	1.8E-4
Hexane, n-							1.9E-2	2.0E-2	5.7E-2	3.4E-1	3.6E-1
Methyl t-Butyl Ether CA	?	3.0E-7	3.8E-9	1.7E-3	5.1E-10	6.5E-12					
Toluene CA	D						5.8E-5	6.5E-5	5.7E-2	1.0E-3	1.1E-3
Xylene CA	D						1.0E-4	1.3E-4	8.6E-2	1.2E-3	1.5E-3
Total Pathway Carcinogenic Risk =					8.4E-7	1.2E-6	***Total Pathway Hazard Index =***			3.4E-1	3.6E-1

Site Name: DP793 | Site Location: 4035 Park Blvd., Oakland, California | Completed By: George Converse | Date Completed: 9/23/1999 | 2 OF 4

TIER 2 PATHWAY RISK CALCULATION

INDOOR AIR EXPOSURE PATHWAYS (CHECKED IF PATHWAYS ARE ACTIVE)

Constituents of Concern	(1) EPA Carcinogenic Classification	CARCINOGENIC RISK: (2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site	Commercial	(3) Inhalation Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) On-Site	Commercial	TOXIC EFFECTS: (5) Total Toxicant Intake Rate (mg/kg/day) On-Site	Commercial	(6) Inhalation Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) On-Site	Commercial
Benzene CA	A		1.2E-3	1.0E-1		1.2E-4		3.3E-3	2.0E-2		1.6E-1
Ethylbenzene CA								3.6E-3	2.9E-1		1.3E-2
Hexane, n-								3.3E+0	5.7E-2		5.7E+1
Methyl t-Butyl Ether CA	?		4.0E-5	1.7E-3		7.0E-8					
Toluene CA	D							8.7E-3	5.7E-2		1.5E-1
Xylene CA	D							1.1E-2	8.6E-2		1.3E-1

Total Pathway Carcinogenic Risk = 0.0E+0 | 1.2E-4

Total Pathway Hazard Index = 0.0E+0 | 5.8E+1

Site Name: DP793 | Site Location: 4035 Park Blvd., Oakland, California | Completed By: George Converse | Date Completed: 9/23/1999 | 3 OF 4

TIER 2 PATHWAY RISK CALCULATION

SOIL EXPOSURE PATHWAYS ☐ CHECKED IF PATHWAYS ARE ACTIVE

Constituents of Concern	(1) EPA Carcinogenic Classification	CARCINOGENIC RISK: (2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site Residential	(2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site Commercial	(3) Oral Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) On-Site Residential	(4) Individual COC Risk (2) x (3) On-Site Commercial	TOXIC EFFECTS: (5) Total Toxicant Intake Rate (mg/kg/day) On-Site Residential	(5) Total Toxicant Intake Rate (mg/kg/day) On-Site Commercial	(6) Oral Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) On-Site Residential	(7) Individual COC Hazard Quotient (5) / (6) On-Site Commercial
Benzene CA	A			1.0E-1					2.0E-2		
Ethylbenzene CA									1.0E-1		
Hexane, n-									6.0E-2		
Methyl t-Butyl Ether CA	?			1.7E-3					5.0E-3		
Toluene CA	D								1.1E-1		
Xylene CA	D								2.5E-1		

Total Pathway Carcinogenic Risk = 0.0E+0 | 0.0E+0

Total Pathway Hazard Index = 0.0E+0 | 0.0E+0

Site Name: DP793 | Site Location: 4035 Park Blvd., Oakland, California | Completed By: George Converse | Date Completed: 9/23/1999 | 4 OF 4

TIER 2 PATHWAY RISK CALCULATION

GROUNDWATER EXPOSURE PATHWAYS (CHECKED IF PATHWAYS ARE ACTIVE)

	CARCINOGENIC RISK							TOXIC EFFECTS		
Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site Commercial	(2) Total Carcinogenic Intake Rate (mg/kg/day) Off-Site Residential	(3) Oral Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) On-Site Commercial	(4) Individual COC Risk (2) x (3) Off-Site Residential	(5) Total Toxicant Intake Rate (mg/kg/day) On-Site Commercial	(5) Total Toxicant Intake Rate (mg/kg/day) Off-Site Residential	(6) Oral Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) On-Site Commercial	(7) Individual COC Hazard Quotient (5) / (6) Off-Site Residential
Benzene CA	A	1.9E-2	6.2E-2	1.0E-1	1.9E-3	6.2E-3	5.2E-2	1.5E-1	2.0E-2	2.6E+0	7.3E+0
Ethylbenzene CA							2.9E-2	8.2E-2	1.0E-1	2.9E-1	8.2E-1
Hexane, n-							8.7E-1	2.4E+0	6.0E-2	1.5E+1	4.1E+1
Methyl t-Butyl Ether CA	?	1.9E-3	6.3E-3	1.7E-3	3.3E-6	1.1E-5	5.3E-3	1.5E-2	5.0E-3	1.1E+0	3.0E+0
Toluene CA	D						1.5E-1	4.1E-1	1.1E-1	1.3E+0	3.7E+0
Xylene CA	D						1.5E-1	4.1E-1	2.5E-1	5.9E-1	1.6E+0
Total Pathway Carcinogenic Risk =					1.9E-3	6.2E-3	***Total Pathway Hazard Index =***			2.0E+1	5.7E+1

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-443-CSX-444

RBCA SITE ASSESSMENT | **Tier 2 Worksheet 8.3**

Site Name: DP793
Site Location: 4035 Park Blvd., Oakland, California

Completed By: George Converse
Date Completed: 9/23/1999

TIER 2 BASELINE RISK SUMMARY TABLE

EXPOSURE PATHWAY	BASELINE CARCINOGENIC RISK: Individual COC Risk – Maximum Value	Individual COC Risk – Target Risk	Cumulative COC Risk – Total Value	Cumulative COC Risk – Target Risk	Risk Limit(s) Exceeded?	BASELINE TOXIC EFFECTS: Hazard Quotient – Maximum Value	Hazard Quotient – Applicable Limit	Hazard Index – Total Value	Hazard Index – Applicable Limit	Toxicity Limit(s) Exceeded?
OUTDOOR AIR EXPOSURE PATHWAYS										
Complete:	1.2E-6	1.0E-6	1.2E-6	N/A	■	3.6E-1	1.0E+0	3.6E-1	N/A	□
INDOOR AIR EXPOSURE PATHWAYS										
Complete:	1.2E-4	1.0E-6	1.2E-4	N/A	■	5.7E+1	1.0E+0	5.8E+1	N/A	■
SOIL EXPOSURE PATHWAYS										
Complete:	NC	1.0E-6	NC	N/A	■	NC	1.0E+0	NC	N/A	■
GROUNDWATER EXPOSURE PATHWAYS										
Complete:	6.2E-3	1.0E-6	6.2E-3	N/A	■	4.1E+1	1.0E+0	5.7E+1	N/A	■
CRITICAL EXPOSURE PATHWAY (Select Maximum Values From Complete Pathways)										
	6.2E-3	1.0E-6	6.2E-3	N/A	■	5.7E+1	1.0E+0	5.8E+1	N/A	■

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.1

Site Name: DP793

Site Location: 4035 Park Blvd , Oakland, California

Completed By: George Converse

Date Completed: 9/23/1999

SURFACE SOIL SSTL VALUES (< 3.3 FT BGS)

Target Risk (Class A & B) 1.0E-6

Target Risk (Class C) 1.0E-5

Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?

☐ PEL exposure limit?

Calculation Option: 2

Groundwater DAF Option: Elec. Acceptor Super (One-directional vert. dispersion)

SSTL Results For Complete Exposure Pathways ("x" If Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	X	Soil Leaching to Groundwater				Ingestion, Inhalation and Dermal Contact	X	Construction Worker	Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)		Residential: 65 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)		Residential: (on-site)		Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
71-43-3	Benzene CA	5.0E-3		1.0E-1	3.4E-1	NA		NA		3.3E+1	1.0E-1	☐	<1
100-41-4	Ethylbenzene CA	5.0E-3		1.1E+3	3.0E+3	NA		NA		>Res	1.1E+3	☐	<1
110-54-3	Hexane, n-	5.0E-3		>Res	>Res	NA		NA		>Res	>Res	☐	<1
1634-04-4	Methyl t-Butyl Ether CA	5.0E-3		1.9E+0	6.3E+0	NA		NA		1.9E+3	1.9E+0	☐	<1
108-88-3	Toluene CA	5.0E-3		1.7E+3	4.7E+3	NA		NA		5.2E+3	1.7E+3	☐	<1
1330-20-7	Xylene CA	1.0E-2		6.7E+3	>Res	NA		NA		>Res	6.7E+3	☐	<1

>Res indicates risk-based target concentration greater than constituent residual saturation value

Software: GSI RBCA Spreadsheet

Version: 1.0.1

Serial: G-443-CSX-444

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.2

Site Name: DP793
Site Location: 4035 Park Blvd., Oakland, California

Completed By: George Converse
Date Completed: 9/23/1999

SUBSURFACE SOIL SSTL VALUES (> 3.3 FT BGS)

Target Risk (Class A & B) 1.0E-6
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option 2
Groundwater DAF Option Elec. Acceptor Super. (One-directional vert. dispersion)

SSTL Results For Complete Exposure Pathways ("x" If Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	X Soil Leaching to Groundwater			X Soil Volatilization to Indoor Air		X Soil Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential 65 feet	Commercial (on-site)	Regulatory(MCL) (on-site)	Residential (on-site)	Commercial (on-site)	Residential 65 feet	Commercial (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
71-43-3	Benzene CA	4.5E+0	1.0E-1	3.4E-1	NA	NA	9.8E-2	3.9E+0	6.5E+0	9.8E-2	■	4.6E+01
100-41-4	Ethylbenzene CA	1.8E+1	1.1E+3	3.0E+3	NA	NA	2.1E+3	>Res	>Res	1.1E+3	☐	<1
110-54-3	Hexane, n-	2.0E+3	>Res	>Res	NA	NA	5.0E+1	>Res	>Res	5.0E+1	■	4.0E+01
1634-04-4	Methyl t-Butyl Ether CA	5.0E-3	1.9E+0	6.3E+0	NA	NA	1.9E+1	7.7E+2	1.3E+3	1.9E+0	☐	<1
108-88-3	Toluene CA	3.5E+1	1.7E+3	4.7E+3	NA	NA	6.5E+2	>Res	>Res	6.5E+2	☐	<1
1330-20-7	Xylene CA	1.3E+2	6.7E+3	>Res	NA	NA	1.8E+3	>Res	>Res	1.8E+3	☐	<1

>Res indicates risk-based target concentration greater than constituent residual saturation value

Software: GSI RBCA Spreadsheet Serial: G-443-CSX-444
Version: 1.0.1

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.3

Site Name: DP793

Site Location: 4035 Park Blvd., Oakland, California

Completed By: George Converse

Date Completed: 9/23/1999

GROUNDWATER SSTL VALUES

Target Risk (Class A & B) 1.0E-6

Target Risk (Class C) 1.0E-5

Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?

☐ PEL exposure limit?

Calculation Option: 2

Groundwater DAF Option: Elec. Acceptor Super (One-directional vert. dispersion)

SSTL Results For Complete Exposure Pathways ("x" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	X Groundwater Ingestion			X Groundwater Volatilization to Indoor Air		X Groundwater Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/L)	Residential: 65 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential: (on-site)	Commercial: (on-site)	(mg/L	"■" If yes	Only if "yes" left
71-43-3	Benzene CA	5.3E+0	8.5E-4	2.9E-3	NA	NA	7.4E-2	NA	3.5E+1	8.5E-4	■	6.2E+03
100-41-4	Ethylbenzene CA	3.0E+0	3.7E+0	1.0E+1	NA	NA	>Sol	NA	>Sol	3.7E+0	☐	<1
110-54-3	Hexane, n-	8.9E+1	2.2E+0	6.1E+0	NA	NA	5.1E+0	NA	>Sol	2.2E+0	■	4.1E+01
1634-04-4	Methyl t-Butyl Ether CA	5.4E-1	4.9E-2	1.7E-1	NA	NA	7.7E+0	NA	1.1E+3	4.9E-2	■	1.1E+01
108-88-3	Toluene CA	1.5E+1	4.0E+0	1.1E+1	NA	NA	1.5E+2	NA	>Sol	4.0E+0	■	4.0E+00
1330-20-7	Xylene CA	1.5E+1	9.1E+0	2.6E+1	NA	NA	>Sol	NA	>Sol	9.1E+0	■	2.0E+00

>Sol indicates risk-based target concentration greater than constituent solubility

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-443-CSX-444

APPENDIX I

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: DP793 - BACKYARDS Job Identification: DP793 -2
Site Location: 4035 Park Blvd., Oakland, Califo Date Completed: 9/23/99
Completed By: George Converse

Software: GSI RBCA Spreadsheet
Version: 1.0 1

NOTE: values which differ from Tier 1 default values are shown in bold italics and underlined.

Exposure Parameter	Definition (Units)	Residential Adult	Residential (1-6yrs)	Residential (1-16 yrs)	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
ATc	Averaging time for carcinogens (yr)	70				
ATn	Averaging time for non-carcinogens (yr)	30	6	16	25	1
BW	Body Weight (kg)	70	15	35	70	
ED	Exposure Duration (yr)	30	6	16	25	1
t	Averaging time for vapor flux (yr)	30			25	1
EF	Exposure Frequency (days/yr)	350			250	180
EF.Derm	Exposure Frequency for dermal exposure	350			250	
IRgw	Ingestion Rate of Water (L/day)	2			1	
IRs	Ingestion Rate of Soil (mg/day)	100	200		50	100
IRadj	Adjusted soil ing. rate (mg-yr/kg-d)	1.1E+02			9.4E+01	
IRa.in	Inhalation rate indoor (m^3/day)	15			20	
IRa.out	Inhalation rate outdoor (m^3/day)	20			20	10
SA	Skin surface area (dermal) (cm^2)	5.8E+03		2.0E+03	5.8E+03	5.8E+03
SAadj	Adjusted dermal area (cm^2-yr/kg)	2.1E+03			1.7E+03	
M	Soil to Skin adherence factor	1				
AAFs	Age adjustment on soil ingestion	FALSE			FALSE	
AAFd	Age adjustment on skin surface area	FALSE			FALSE	
tox	Use EPA tox data for air (or PEL based)?	TRUE				
gwMCL?	Use MCL as exposure limit in groundwater?	FALSE				

Matrix of Exposed Persons to Complete Exposure Pathways		Residential	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
Outdoor Air Pathways:			FALSE	FALSE
SS.v	Volatiles and Particulates from Surface Soils	FALSE	TRUE	
S.v	Volatilization from Subsurface Soils	TRUE	TRUE	
GW.v	Volatilization from Groundwater	FALSE		
Indoor Air Pathways:			TRUE	
S.b	Vapors from Subsurface Soils	FALSE	TRUE	
GW.b	Vapors from Groundwater	FALSE		
Soil Pathways:			FALSE	TRUE
SS.d	Direct Ingestion and Dermal Contact	FALSE		
Groundwater Pathways:			TRUE	
GW.i	Groundwater Ingestion	TRUE	TRUE	
S.l	Leaching to Groundwater from all Soils	TRUE		

Matrix of Receptor Distance and Location On- or Off-Site		Residential Distance	Residential On-Site	Commercial/Industrial Distance	Commercial/Industrial On-Site
GW	Groundwater receptor (cm)	5.6E+03	FALSE		TRUE
S	Inhalation receptor (cm)	2.0E+03	FALSE		TRUE

Matrix of Target Risks		Individual	Cumulative
TRab	Target Risk (class A&B carcinogens)	1.0E-06	
TRc	Target Risk (class C carcinogens)	1.0E-05	
THQ	Target Hazard Quotient	1.0E+00	
Opt	Calculation Option (1, 2, or 3)	2	
Tier	RBCA Tier	2	

Surface Parameters	Definition (Units)	Residential	Constrctn
A	Contaminated soil area (cm^2)	***2.3E+06***	***2.3E+06***
W	Length of affect. soil parallel to wind (cm)	***1.2E+03***	***1.2E+03***
W.gw	Length of affect. soil parallel to groundwater (cm	***2.1E+03***	
Uair	Ambient air velocity in mixing zone (cm/s)	2.3E+02	
delta	Air mixing zone height (cm)	2.0E+02	
Lss	Thickness of affected surface soils (cm)	1.0E+02	
Pe	Particulate areal emission rate (g/cm^2/s)	6.9E-14	

Groundwater	Definition (Units)	Value
delta.gw	Groundwater mixing zone depth (cm)	***4.9E+02***
I	Groundwater infiltration rate (cm/yr)	***6.1E+01***
Ugw	Groundwater Darcy velocity (cm/yr)	***2.1E+03***
Ugw.tr	Groundwater seepage velocity (cm/yr)	***6.8E+03***
Ks	Saturated hydraulic conductivity(cm/s)	1.0E-03
grad	Groundwater gradient (cm/cm)	6.5E-02
Sw	Width of groundwater source zone (cm)	2.1E+03
Sd	Depth of groundwater source zone (cm)	4.9E+02
phi.eff	Effective porosity in water-bearing unit	3.0E-01
foc.sat	Fraction organic carbon in water-bearing unit	***4.6E-02***
BIO?	Is bioattenuation considered?	TRUE
BC	Biodegradation Capacity (mg/L)	7.3E+00

Soil	Definition (Units)	Value		
hc	Capillary zone thickness (cm)	***3.0E+01***		
hv	Vadose zone thickness (cm)	***2.7E+02***		
rho	Soil density (g/cm^3)	1.7		
foc	Fraction of organic carbon in vadose zone	***0.24***		
phi	Soil porosity in vadose zone	0.38		
Lgw	Depth to groundwater (cm)	***3.0E+02***		
Ls	Depth to top of affected subsurface soil (cm)	***2.1E+02***		
Lsubs	Thickness of affected subsurface soils (cm)	***7.6E+02***		
pH	Soil/groundwater pH	6.5		
		capillary	vadose	foundation
phi.w	Volumetric water content	0.342	0.12	0.12
phi.a	Volumetric air content	0.038	0.26	0.26

Building	Definition (Units)	Residential	Commercial
Lb	Building volume/area ratio (cm)	2.0E+02	3.0E+02
ER	Building air exchange rate (s^-1)	1.4E-04	2.3E-04
Lcrk	Foundation crack thickness (cm)	1.5E+01	
eta	Foundation crack fraction	0.01	

Transport Parameters	Definition (Units)	Residential	Commercial
Groundwater			
ax	Longitudinal dispersivity (cm)	3.2E+02	
ay	Transverse dispersivity (cm)	3.2E+01	
az	Vertical dispersivity (cm)	3.2E+00	
Vapor			
dcy	Transverse dispersion coefficient (cm)	2.3E+02	
dcz	Vertical dispersion coefficient (cm)	1.6E+02	

RBCA CHEMICAL DATABASE

Physical Property Data

CAS Number	Constituent	type	Molecular Weight (g/mole) MW	ref	Diffusion Coefficients in air (cm2/s) Dair	ref	Diffusion Coefficients in water (cm2/s) Dwat	ref	log (Koc) or log(Kd) (@ 20 - 25 C) log(l/kg)	ref	Henry's Law Constant (@ 20 - 25 C) (atm-m3) mol	(unitless)	ref	Vapor Pressure (@ 20 - 25 C) (mm Hg)	ref	Solubility (@ 20 - 25 C) (mg/L)	ref	acid pKa	base pKb	ref
71-43-3	Benzene CA	O	78.1		9.30E-02		1.10E-05		1.58		5.29E-03	2.20E-01		9.52E+01		1.75E+03				
100-41-4	Ethylbenzene CA	O	106.2		7.60E-02		8.50E-06		1.98		7.69E-03	3.20E-01		1.00E+01		1.52E+02				
110-54-3	Hexane, n-	O	86.2	5	2.00E-01	4	7.77E-06	4	2.68	4	1.22E-01	5.07E+00	4	1.50E+02	4	1.30E+01	5			
1634-04-4	Methyl t-Butyl Ether CA	O	88.146		7.92E-02		9.41E-05		1.08		5.77E-04	2.40E-02		2.49E+02		4.80E+04				
108-88-3	Toluene CA	O	92.4		8.50E-02		9.40E-06		2.13		6.25E-03	2.60E-01		3.00E+01		5.15E+02				
1330-20-7	Xylene CA	O	106.2		7.20E-02		8.50E-06		2.38		6.97E-03	2.90E-01		7.00E+00		1.98E+02				

Site Name: DP793 - BACKYARDS Site Location: 4035 Park Blvd., Oaklan Completed By: George Converse Date Completed: 9/23/1999

Software version: 1.0.1

RBCA CHEMICAL DATABASE

Toxicity Data

CAS Number	Constituent	Reference Dose (mg/kg/day) Oral RfD_oral	ref	Inhalation RfD_inhal	ref	Slope Factors 1/(mg/kg/day) Oral SF_oral	ref	Inhalation SF_inhal	ref	EPA Weight of Evidence	Is Constituent Carcinogenic ?
71-43-3	Benzene CA	2.00E-02		2.00E-02	30	1.00E-01		1.00E-01		A	TRUE
100-41-4	Ethylbenzene CA	1.00E-01		2.86E-01	30						FALSE
110-54-3	Hexane, n-	6.00E-02	A	5.71E-02	R	-		-			FALSE
1634-04-4	Methyl t-Butyl Ether CA	5.00E-03				1.73E-03		1.73E-03	31	?	RUE OEHHA draf
108-88-3	Toluene CA	1.10E-01		5.70E-02	30					D	FALSE
1330-20-7	Xylene CA	2.50E-01		8.57E-02	30					D	FALSE

Site Name: DP793 - BACKYARDS Site Location: 4035 Park Blvd., Oakl Completed By: George Converse Date Completed: 9/23/1999

Software version: 1.0.1

RBCA CHEMICAL DATABASE

Miscellaneous Chemical Data

CAS Number	Constituent	Maximum Contaminant Level MCL (mg/L)	reference	Permissible Exposure Limit PEL/TLV (mg/m3)	ref	Relative Absorption Factors Oral	Dermal	Detection Limits Groundwater (mg/L)	ref	Soil (mg/kg)	ref	Half Life (First-Order Decay) (days) Saturated	Unsaturated	ref
71-43-3	Benzene CA	1.00E-03		3.20E+00		1	0.5	0.0005		0.005		720	720	
100-41-4	Ethylbenzene CA	7.00E-02		4.34E+02		1	0.5	0.0005		0.005		228	228	
110-54-3	Hexane, n-					1	0.5							
1634-04-4	Methyl t-Butyl Ether CA			1.44E+02		1	0.5	0.005		0.05				
108-88-3	Toluene CA	1.50E-01		1.47E+02		1	0.5	0.0005		0.005		28	28	
1330-20-7	Xylene CA	1.75E+00		4.34E+02		1	0.5	0.002		0.005		360	360	

Site Name: DP793 - BACKYARDS Site Location: 4035 Park Blvd., Oakland, California Completed By: George Converse Date Completed: 9/23/1999

Software version: 1.0.1

REPRESENTATIVE COC CONCENTRATIONS IN SOURCE MEDIA

(Complete the following table)

CONSTITUENT	Representative COC Concentration in Groundwater value (mg/L)	note	in Surface Soil value (mg/kg)	note	in Subsurface Soil value (mg/kg)	note
Benzene CA	1.6E-1	max	5.0E-3		1.1E+1	I SW
Ethylbenzene CA	1.9E-1	max	5.0E-3		2.1E+1	I SW
Hexane, n-	5.1E+0	max	5.0E-3		8.7E+2	I SW
Methyl t-Butyl Ether CA	2.3E-2	max	5.0E-3		5.0E-3	
Toluene CA	3.4E-1	max	5.0E-3		6.2E+1	I SW
Xylene CA	1.0E+0	max	1.0E-2		1.2E+2	I SW

Site Name: DP793 - BACKYARDS
Site Location: 4035 Park Blvd., Oakland, California

Completed By: George Converse
Date Completed: 9/23/1999

RBCA SITE ASSESSMENT | **Input Screen 6.3**

CONSTITUENT MOLE FRACTIONS

(Complete the following table)

CONSTITUENT	Mole Fraction of Constituent in Source Material
Benzene CA	
Ethylbenzene CA	
Hexane, n-	
Methyl t-Butyl Ether CA	
Toluene CA	
Xylene CA	

Site Name: DP793 - BACKYARDS Completed By: George Converse
Site Location: 4035 Park Blvd., Oakland Date Completed: 9/23/1999

RBCA SITE ASSESSMENT | **Input Screen 9.4**

GROUNDWATER DAF VALUES

(Enter DAF values in the grey area of the following table)

CONSTITUENT	Dilution Attenuation Factor (DAF) in Groundwater: Residential Receptor	Comm./Ind. Receptor
Benzene CA	1.2E+0	1.0E+0
Ethylbenzene CA	1.2E+0	1.0E+0
Hexane, n-	1.2E+0	1.0E+0
Methyl t-Butyl Ether CA	1.2E+0	1.0E+0
Toluene CA	1.2E+0	1.0E+0
Xylene CA	1.2E+0	1.0E+0

Site Name: DP793 - BACKYARDS
Site Location: 4035 Park Blvd., Oakland, California

Completed By: George Converse
Date Completed: 9/23/1999

RBCA SITE ASSESSMENT | **Input Screen 9.1**

CONSTITUENT HALF-LIFE VALUES

(Complete the following table)

CONSTITUENT	Half-Life of Constituent (day)
Benzene CA	
Ethylbenzene CA	
Hexane, n-	
Methyl t-Butyl Ether CA	
Toluene CA	
Xylene CA	

Site Name: DP793 - BACKYARDS
Site Location: 4035 Park Blvd., Oakland,

Completed By: George Converse
Date Completed: 9/23/1999

RBCA SITE ASSESSMENT

EXPOSURE LIMITS IN GROUNDWATER AND AIR

CONSTITUENT	Exposure Limits Applied to Receptors	
	Groundwater (MCL) (mg/L)	Air (Comm. only) (PEL/TLV) (mg/m^3)
Benzene CA		
Ethylbenzene CA		
Hexane, n-		
Methyl t-Butyl Ether CA		
Toluene CA		
Xylene CA		

Site Name: DP793 - BACKYARDS
Site Location: 4035 Park Blvd., Oakland, California

Completed By: George Converse
Date Completed: 9/23/1999

Site Name: DP793 - BACKYARDS | Site Location: 4035 Park Blvd., Oakland, Californi | Completed By: George Convers | Date Completed: 9/23/1999 |

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS: VAPOR AND DUST INHALATION

Constituents of Concern	Exposure Concentration 1) Source Medium: Surface Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor		3) Exposure Medium: Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		4) Exposure Multiplier: (IRxEFxED)/(BWxAT) (m^3/kg-day)		5) Average Daily Intake Rate: (mg/kg-day) (3) X (4)	
Benzene CA	5.0E-3								
Ethylbenzene CA	5.0E-3								
Hexane, n-	5.0E-3								
Methyl t-Butyl Ether CA	5.0E-3								
Toluene CA	5.0E-3								
Xylene CA	1.0E-2								

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequencey (days/yr); ET = Exposure time (hrs/day); IR = Inhalation rate (m^3/day); POE = Point of exposure; SA = Skin exposure area (cm^2/day)

Site Name: DP793 - BACKYARDS | Site Location: 4035 Park Blvd., Oakland, Californi | Completed By: George Convers | Date Completed: 9/23/1999 | 2 OF 9

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SUBSURFACE SOILS: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium: Subsurface Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor: On-Site Commercial	2) NAF Value (m^3/kg) Receptor: Off-Site Residential	3) Exposure Medium: Outdoor Air: POE Conc. (mg/m^3) (1) / (2): On-Site Commercial	3) Exposure Medium: Outdoor Air: POE Conc. (mg/m^3) (1) / (2): Off-Site Residential	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m^3/kg-day): On-Site Commercial	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m^3/kg-day): Off-Site Residential	5) Average Daily Intake Rate (mg/kg-day) (3) X (4): On-Site Commercial	5) Average Daily Intake Rate (mg/kg-day) (3) X (4): Off-Site Residential
Benzene CA	1.1E+1	4.6E+4	4.6E+4	2.4E-4	2.4E-4	7.0E-2	1.2E-1	1.7E-5	2.8E-5
Ethylbenzene CA	2.1E+1	9.6E+4	9.6E+4	2.2E-4	2.2E-4	2.0E-1	2.7E-1	4.3E-5	6.0E-5
Hexane, n-	8.7E+2	2.2E+4	2.7E+4	3.9E-2	3.2E-2	2.0E-1	2.7E-1	7.6E-3	8.8E-3
Methyl t-Butyl Ether CA	5.0E-3	1.6E+5	1.6E+5	3.2E-8	3.2E-8	7.0E-2	1.2E-1	2.2E-9	3.8E-9
Toluene CA	6.2E+1	1.5E+5	1.5E+5	4.2E-4	4.2E-4	2.0E-1	2.7E-1	8.2E-5	1.1E-4
Xylene CA	1.2E+2	2.8E+5	2.8E+5	4.3E-4	4.3E-4	2.0E-1	2.7E-1	8.4E-5	1.2E-4

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequencey (days/yr); ET = Exposure time (hrs/day); IR = Inhalation rate (m^3/day); POE = Point of exposure; SA = Skin exposue area (cm^2/day)

Site Name: DP793 - BACKYARDS | Site Location: 4035 Park Blvd., Oakland, Ca | Completed By: George Converse | Date Completed: 9/23/1999 |

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: VAPOR INHALATION

Constituents of Concern	Exposure Concentration: 1) Source Medium — Groundwater Conc. (mg/L)	2) NAF Value (m^3/L) Receptor — On-Site Commercial		3) Exposure Medium — Outdoor Air: POE Conc. (mg/m^3) (1) / (2) — On-Site Commercial		4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m^3/kg-day) — On-Site Commercial		5) Average Daily Intake Rate (mg/kg-day) (3) X (4) — On-Site Commercial		TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from surface, subsurface & groundwater routes.) — On-Site Commercial	Off-Site Residential
Benzene CA	1.6E-1	2.4E+5		6.6E-7		7.0E-2		4.6E-8		1.7E-5	2.8E-5
Ethylbenzene CA	1.9E-1	2.4E+5		7.9E-7		2.0E-1		1.5E-7		4.3E-5	6.0E-5
Hexane, n-	5.1E+0	8.6E+3		5.9E-4		2.0E-1		1.2E-4		7.7E-3	8.8E-3
Methyl t-Butyl Ether CA	2.3E-2	1.3E+5		1.8E-7		7.0E-2		1.2E-8		1.5E-8	3.8E-9
Toluene CA	3.4E-1	2.5E+5		1.4E-6		2.0E-1		2.7E-7		8.2E-5	1.1E-4
Xylene CA	1.0E+0	2.6E+5		3.8E-6		2.0E-1		7.4E-7		8.5E-5	1.2E-4

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m^3/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: DP793 - BACKYARDS | Site Location: 4035 Park Blvd., Oakland, Californi | Completed By: George Convers | Date Completed: 9/23/1999 | 4 OF 9

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS (CHECKED IF PATHWAY IS ACTIVE)

SUBSURFACE SOILS:
VAPOR INTRUSION TO BUILDINGS

Constituents of Concern	Exposure Concentration 1) Source Medium: Subsurface Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor: On-Site Commercial	3) Exposure Medium: Indoor Air: POE Conc. (mg/m^3) (1) / (2) On-Site Commercial	4) Exposure Multiplier: (IRxEFxED)/(BWxAT) (m^3/kg-day) On-Site Commercial	5) Average Daily Intake Rate: (mg/kg-day) (3) X (4) On-Site Commercial
Benzene CA	1.1E+1	6.8E+2	1.6E-2	7.0E-2	1.1E-3
Ethylbenzene CA	2.1E+1	1.4E+3	1.5E-2	2.0E-1	2.9E-3
Hexane, n-	8.7E+2	1.7E+2	5.0E+0	2.0E-1	9.9E-1
Methyl t-Butyl Ether CA	5.0E-3	2.4E+3	2.1E-6	7.0E-2	1.5E-7
Toluene CA	6.2E+1	2.2E+3	2.8E-2	2.0E-1	5.4E-3
Xylene CA	1.2E+2	4.2E+3	2.9E-2	2.0E-1	5.6E-3

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequency (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m^3/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: DP793 - BACKYARDS | Site Location: 4035 Park Blvd., Oakland, Ca | Completed By: George Converse | Date Completed: 9/23/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER:

VAPOR INTRUSION TO BUILDINGS

Exposure Concentration

Constituents of Concern	1) Source Medium: Groundwater Conc. (mg/L)	2) NAF Value (m^3/L) Receptor: On-Site Commercial	3) Exposure Medium: Indoor Air: POE Conc. (mg/m^3) (1) / (2): On-Site Commercial	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m^3/kg-day): On-Site Commercial	5) Average Daily Intake Rate (mg/kg-day) (3) X (4): On-Site Commercial	TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from subsurface & groundwater routes.): On-Site Commercial
Benzene CA	1.6E-1	5.2E+2	3.1E-4	7.0E-2	2.2E-5	1.1E-3
Ethylbenzene CA	1.9E-1	5.0E+2	3.8E-4	2.0E-1	7.4E-5	2.9E-3
Hexane, n-	5.1E+0	1.7E+1	2.9E-1	2.0E-1	5.7E-2	1.0E+0
Methyl t-Butyl Ether CA	2.3E-2	9.4E+2	2.5E-5	7.0E-2	1.7E-6	1.9E-6
Toluene CA	3.4E-1	5.2E+2	6.5E-4	2.0E-1	1.3E-4	5.6E-3
Xylene CA	1.0E+0	5.6E+2	1.8E-3	2.0E-1	3.5E-4	6.0E-3

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m^3/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: DP793 - BACKYARD Site Location: 4035 Park Blvd., Oakland, California Completed By: George Co Date Completed: 9/23/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS OR SEDIMENTS:
DERMAL CONTACT

Constituents of Concern	Exposure Concentration 1) Source Medium: Surface Soil Conc. (mg/kg)	2) Exposure Multiplier (SAxAFxABSxCFxEFxED)/(BWxAT) (kg/kg-day): On-Site Residential	2) Exposure Multiplier: On-Site Commercial	3) Average Daily Intake Rate (mg/kg-day) (1) x (2): On-Site Residential	3) Average Daily Intake Rate: On-Site Commercial
Benzene CA	5.0E-3				
Ethylbenzene CA	5.0E-3				
Hexane, n-	5.0E-3				
Methyl t-Butyl Ether CA	5.0E-3				
Toluene CA	5.0E-3				
Xylene CA	1.0E-2				

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequency (days/; ET = Exposure time (hrs/day); IR = Intake rate (mg/day); POE = Point of exposure; SA = Skin exposure area (cm^2/day)

Site Name: DP793 - BACKYARDS Site Location: 4035 Park Blvd., Oakland, C Completed By: George Convers Date Completed: 9/23/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS OR SEDIMENTS:

INGESTION

Constituents of Concern	Exposure Concentration: 1) Source Medium — Surface Soil Conc. (mg/kg)	2) Exposure Multiplier (IRxCFxEFxED)/(BWxAT) (kg/kg-day) — On-Site Residential	2) Exposure Multiplier — On-Site Commercial	3) Average Daily Intake Rate (mg/kg-day) (1) x (2) — On-Site Residential	3) Average Daily Intake Rate — On-Site Commercial	TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from dermal & ingestion routes.) — On-Site Residential	TOTAL PATHWAY INTAKE — On-Site Commercial
Benzene CA	5.0E-3						
Ethylbenzene CA	5.0E-3						
Hexane, n-	5.0E-3						
Methyl t-Butyl Ether CA	5.0E-3						
Toluene CA	5.0E-3						
Xylene CA	1.0E-2						

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequency (days/yr); ET = Exposure time (hrs/day); IR = Intake rate (mg/day); POE = Point of exposure; SA = Skin exposure area (cm^2/day)

Site Name: DP793 - BACKYARDS Site Location: 4035 Park Blvd., Oakland, California Completed By: George Convers Date Completed: 9/23/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS (CHECKED IF PATHWAY IS ACTIVE)

SOIL: LEACHING TO GROUNDWATER/ GROUNDWATER INGESTION

Exposure Concentration

Constituents of Concern	1) Source Medium: Soil Concentration (mg/kg)	2) NAF Value (L/kg) Receptor: On-Site Commercial	2) NAF Value (L/kg) Receptor: Off-Site Residential	3) Exposure Medium: Groundwater: POE Conc. (mg/L) (1)/(2) On-Site Commercial	3) Exposure Medium: Groundwater: POE Conc. (mg/L) (1)/(2) Off-Site Residential	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg-day) On-Site Commercial	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg-day) Off-Site Residential	5) Average Daily Intake Rate (mg/kg-day) (3) x (4) On-Site Commercial	5) Average Daily Intake Rate (mg/kg-day) (3) x (4) Off-Site Residential
Benzene CA	1.1E+1	8.0E+1	9.7E+1	1.4E-1	1.1E-1	3.5E-3	1.2E-2	4.8E-4	1.3E-3
Ethylbenzene CA	2.1E+1	2.0E+2	2.4E+2	1.0E-1	8.6E-2	9.8E-3	2.7E-2	1.0E-3	2.4E-3
Hexane, n-	8.7E+2	1.0E+3	1.2E+3	8.7E-1	7.1E-1	9.8E-3	2.7E-2	8.5E-3	1.9E-2
Methyl t-Butyl Ether CA	5.0E-3	2.6E+1	3.1E+1	1.9E-4	1.6E-4	3.5E-3	1.2E-2	6.8E-7	1.9E-6
Toluene CA	6.2E+1	2.8E+2	3.4E+2	2.2E-1	1.8E-1	9.8E-3	2.7E-2	2.1E-3	4.9E-3
Xylene CA	1.2E+2	5.0E+2	6.1E+2	2.4E-1	2.0E-1	9.8E-3	2.7E-2	2.3E-3	5.4E-3

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body Weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Intake rate (L/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: DP793 - BACKYARDS Site Location: 4035 Park Blvd., Oakland, California Completed By: George Converse Date Completed: 9/23/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: INGESTION

Constituents of Concern	Exposure Concentration: 1) Source Medium — Groundwater Conc. (mg/L)	2) NAF Value (dim) — Receptor: On-Site Commercial	2) NAF Value (dim) — Receptor: Off-Site Residential	3) Exposure Medium — Groundwater: POE Conc. (mg/L) (1)/(2): On-Site Commercial	3) Exposure Medium — Groundwater: POE Conc. (mg/L) (1)/(2): Off-Site Residential	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg-day): On-Site Commercial	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg-day): Off-Site Residential	5) Average Daily Intake Rate (mg/kg-day) (3) x (4): On-Site Commercial	5) Average Daily Intake Rate (mg/kg-day) (3) x (4): Off-Site Residential
Benzene CA	1.6E-1	1.0E+0	1.2E+0	1.6E-1	1.3E-1	3.5E-3	1.2E-2	5.6E-4	1.5E-3
Ethylbenzene CA	1.9E-1	1.0E+0	1.2E+0	1.9E-1	1.6E-1	9.8E-3	2.7E-2	1.9E-3	4.3E-3
Hexane, n-	5.1E+0	1.0E+0	1.2E+0	5.1E+0	4.2E+0	9.8E-3	2.7E-2	5.0E-2	1.1E-1
Methyl t-Butyl Ether CA	2.3E-2	1.0E+0	1.2E+0	2.3E-2	1.9E-2	3.5E-3	1.2E-2	8.0E-5	2.2E-4
Toluene CA	3.4E-1	1.0E+0	1.2E+0	3.4E-1	2.8E-1	9.8E-3	2.7E-2	3.3E-3	7.7E-3
Xylene CA	1.0E+0	1.0E+0	1.2E+0	1.0E+0	8.2E-1	9.8E-3	2.7E-2	9.8E-3	2.3E-2

MAX. PATHWAY INTAKE (mg/kg-day)

(Maximum intake of active pathways soil leaching & groundwater routes.)

On-Site Commercial	Off-Site Residential
5.6E-4	1.5E-3
1.9E-3	4.3E-3
5.0E-2	1.1E-1
8.0E-5	2.2E-4
3.3E-3	7.7E-3
9.8E-3	2.3E-2

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequencey (days/yr); ET = Exposure time (hrs/day); IR = Intake rate (L/day); POE = Point of exposure; SA = Skin exposure area (cm^2/day)

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-443-CSX-444

Site Name: DP793 - BACKYARDS | Site Location: 4035 Park Blvd., Oakland, California | Completed By: George Converse | Date Completed: 9/23/1999

TIER 2 PATHWAY RISK CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAYS ARE ACTIVE)

Constituents of Concern	(1) EPA Carcinogenic Classification	CARCINOGENIC RISK: (2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site Commercial	(2) Total Carcinogenic Intake Rate (mg/kg/day) Off-Site Residential	(3) Inhalation Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) On-Site Commercial	(4) Individual COC Risk (2) x (3) Off-Site Residential	TOXIC EFFECTS: (5) Total Toxicant Intake Rate (mg/kg/day) On-Site Commercial	(5) Total Toxicant Intake Rate (mg/kg/day) Off-Site Residential	(6) Inhalation Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) On-Site Commercial	(7) Individual COC Hazard Quotient (5) / (6) Off-Site Residential
Benzene CA	A	1.7E-5	2.8E-5	1.0E-1	1.7E-6	2.8E-6	4.7E-5	6.6E-5	2.0E-2	2.4E-3	3.3E-3
Ethylbenzene CA							4.3E-5	6.0E-5	2.9E-1	1.5E-4	2.1E-4
Hexane, n-							7.7E-3	8.8E-3	5.7E-2	1.3E-1	1.5E-1
Methyl t-Butyl Ether CA	?	1.5E-8	3.8E-9	1.7E-3	2.5E-11	6.5E-12					
Toluene CA	D						8.2E-5	1.1E-4	5.7E-2	1.4E-3	2.0E-3
Xylene CA	D						8.5E-5	1.2E-4	8.6E-2	9.9E-4	1.4E-3

Total Pathway Carcinogenic Risk = 1.7E-6 | 2.8E-6

Total Pathway Hazard Index = 1.4E-1 | 1.6E-1

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-443-CSX-444

Site Name: DP793 - BACKYARDS | Site Location: 4035 Park Blvd., Oakland, California | Completed By: George Converse | Date Completed: 9/23/1999 | 2 OF 4

TIER 2 PATHWAY RISK CALCULATION

INDOOR AIR EXPOSURE PATHWAYS (CHECKED IF PATHWAYS ARE ACTIVE)

Constituents of Concern	(1) EPA Carcinogenic Classification	CARCINOGENIC RISK: (2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site	Commercial	(3) Inhalation Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) On-Site	Commercial	TOXIC EFFECTS: (5) Total Toxicant Intake Rate (mg/kg/day) On-Site	Commercial	(6) Inhalation Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) On-Site	Commercial
Benzene CA	A		1.1E-3	1.0E-1		1.1E-4		3.2E-3	2.0E-2		1.6E-1
Ethylbenzene CA								2.9E-3	2.9E-1		1.0E-2
Hexane, n-								1.0E+0	5.7E-2		1.8E+1
Methyl t-Butyl Ether CA	?		1.9E-6	1.7E-3		3.2E-9					
Toluene CA	D							5.6E-3	5.7E-2		9.8E-2
Xylene CA	D							6.0E-3	8.6E-2		7.0E-2

Total Pathway Carcinogenic Risk = 0.0E+0 | 1.1E-4

Total Pathway Hazard Index = 0.0E+0 | 1.9E+1

Site Name: DP793 - BACKYARDS | Site Location: 4035 Park Blvd., Oakland, California | Completed By: George Converse | Date Completed: 9/23/1999 | 3 OF 4

TIER 2 PATHWAY RISK CALCULATION

SOIL EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAYS ARE ACTIVE)

Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site Residential	(2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site Commercial	(3) Oral Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) On-Site Residential	(4) Individual COC Risk (2) x (3) On-Site Commercial	(5) Total Toxicant Intake Rate (mg/kg/day) On-Site Residential	(5) Total Toxicant Intake Rate (mg/kg/day) On-Site Commercial	(6) Oral Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) On-Site Residential	(7) Individual COC Hazard Quotient (5) / (6) On-Site Commercial
		CARCINOGENIC RISK							TOXIC EFFECTS		
Benzene CA	A			1.0E-1					2.0E-2		
Ethylbenzene CA									1.0E-1		
Hexane, n-									6.0E-2		
Methyl t-Butyl Ether CA	?			1.7E-3					5.0E-3		
Toluene CA	D								1.1E-1		
Xylene CA	D								2.5E-1		
Total Pathway Carcinogenic Risk =					0.0E+0	0.0E+0			*Total Pathway Hazard Index =*	0.0E+0	0.0E+0

RBCA SITE ASSESSMENT | **Tier 2 Worksheet 8.2**

Site Name: DP793 - BACKYARDS | Site Location: 4035 Park Blvd., Oakland, California | Completed By: George Converse | Date Completed: 9/23/1999

TIER 2 PATHWAY RISK CALCULATION

GROUNDWATER EXPOSURE PATHWAYS (CHECKED IF PATHWAYS ARE ACTIVE)

	CARCINOGENIC RISK					TOXIC EFFECTS				
	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site Commercial	(2) Total Carcinogenic Intake Rate (mg/kg/day) Off-Site Residential	(3) Oral Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) On-Site Commercial	(4) Individual COC Risk (2) x (3) Off-Site Residential	(5) Total Toxicant Intake Rate (mg/kg/day) On-Site Commercial	(5) Total Toxicant Intake Rate (mg/kg/day) Off-Site Residential	(6) Oral Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) On-Site Commercial	(7) Individual COC Hazard Quotient (5) / (6) Off-Site Residential
Constituents of Concern											
Benzene CA	A	5.6E-4	1.5E-3	1.0E-1	5.6E-5	1.5E-4	1.6E-3	3.6E-3	2.0E-2	7.8E-2	1.8E-1
Ethylbenzene CA							1.9E-3	4.3E-3	1.0E-1	1.9E-2	4.3E-2
Hexane, n-							5.0E-2	1.1E-1	6.0E-2	8.3E-1	1.9E+0
Methyl t-Butyl Ether CA	?	8.0E-5	2.2E-4	1.7E-3	1.4E-7	3.8E-7	2.3E-4	5.2E-4	5.0E-3	4.5E-2	1.0E-1
Toluene CA	D						3.3E-3	7.7E-3	1.1E-1	3.0E-2	7.0E-2
Xylene CA	D						9.8E-3	2.3E-2	2.5E-1	3.9E-2	9.0E-2
Total Pathway Carcinogenic Risk =					5.6E-5	1.5E-4	***Total Pathway Hazard Index =***			1.0E+0	2.4E+0

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-443-CSX-444

RBCA SITE ASSESSMENT | **Tier 2 Worksheet 8.3**

Site Name: DP793 - BACKYARDS
Site Location: 4035 Park Blvd., Oakland, California

Completed By: George Converse
Date Completed: 9/23/1999

TIER 2 BASELINE RISK SUMMARY TABLE

	BASELINE CARCINOGENIC RISK					BASELINE TOXIC EFFECTS				
	Individual COC Risk		Cumulative COC Risk		Risk Limit(s) Exceeded?	Hazard Quotient		Hazard Index		Toxicity Limit(s) Exceeded?
EXPOSURE PATHWAY	Maximum Value	Target Risk	Total Value	Target Risk		Maximum Value	Applicable Limit	Total Value	Applicable Limit	
OUTDOOR AIR EXPOSURE PATHWAYS										
Complete:	2.8E-6	1.0E-6	2.8E-6	N/A	■	1.5E-1	1.0E+0	1.6E-1	N/A	□
INDOOR AIR EXPOSURE PATHWAYS										
Complete:	1.1E-4	1.0E-6	1.1E-4	N/A	■	1.8E+1	1.0E+0	1.9E+1	N/A	■
SOIL EXPOSURE PATHWAYS										
Complete:	NC	1.0E-6	NC	N/A	■	NC	1.0E+0	NC	N/A	■
GROUNDWATER EXPOSURE PATHWAYS										
Complete:	1.5E-4	1.0E-6	1.5E-4	N/A	■	1.9E+0	1.0E+0	2.4E+0	N/A	■
CRITICAL EXPOSURE PATHWAY - (Select Maximum Values From Complete Pathways)										
	1.5E-4	1.0E-6	1.5E-4	N/A	■	1.8E+1	1.0E+0	1.9E+1	N/A	■

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-443-CSX-444

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.1

Site Name: DP793 - BACKYARDS

Site Location: 4035 Park Blvd., Oakland, California

Completed By: George Converse

Date Completed: 9/23/1999

Target Risk (Class A & B) 1.0E-6

Target Risk (Class C) 1.0E-5

Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?

☐ PEL exposure limit?

Calculation Option: 2

Groundwater DAF Option: Elec. Acceptor Super. (One-directional vert. dispersion)

SURFACE SOIL SSTL VALUES (< 3.3 FT BGS)

SSTL Results For Complete Exposure Pathways ("x" If Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	X Soil Leaching to Groundwater			Ingestion, Inhalation and Dermal Contact		X Construction Worker	Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential: 185 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
71-43-3	Benzene CA	5.0E-3	1.4E+0	2.3E-1	NA	NA	NA	3.3E+1	2.3E-1	☐	<1
100-41-4	Ethylbenzene CA	5.0E-3	8.0E+2	2.0E+3	NA	NA	NA	>Res	8.0E+2	☐	<1
110-54-3	Hexane, n-	5.0E-3	>Res	>Res	NA	NA	NA	>Res	>Res	☐	<1
1634-04-4	Methyl t-Butyl Ether CA	5.0E-3	1.4E+0	4.3E+0	NA	NA	NA	1.9E+3	1.4E+0	☐	<1
108-88-3	Toluene CA	5.0E-3	1.2E+3	3.2E+3	NA	NA	NA	5.2E+3	1.2E+3	☐	<1
1330-20-7	Xylene CA	1.0E-2	5.1E+3	>Res	NA	NA	NA	>Res	5.1E+3	☐	<1

>Res Indicates risk-based target concentration greater than constituent residual saturation value

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-443-CSX-444

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.2

Site Name: DP793 - BACKYARDS
Site Location: 4035 Park Blvd., Oakland, California

Completed By: George Converse
Date Completed: 9/23/1999

SUBSURFACE SOIL SSTL VALUES (> 3.3 FT BGS)

Target Risk (Class A & B) 1.0E-6
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2
Groundwater DAF Option: Elec. Acceptor Super. (One-directional vert. dispersion)

SSTL Results For Complete Exposure Pathways ("x" If Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	X Soil Leaching to Groundwater			X Soil Volatilization to Indoor Air		X Soil Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential: 185 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential: 65 feet	Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
71-43-3	Benzene CA	1.1E+1	1.4E+0	2.3E-1	NA	NA	9.8E-2	3.9E+0	6.5E+0	9.8E-2	■	1.1E+02
100-41-4	Ethylbenzene CA	2.1E+1	8.0E+2	2.0E+3	NA	NA	2.1E+3	>Res	>Res	8.0E+2	☐	<1
110-54-3	Hexane, n-	8.7E+2	>Res	>Res	NA	NA	5.0E+1	>Res	>Res	5.0E+1	■	1.7E+01
1634-04-4	Methyl t-Butyl Ether CA	5.0E-3	1.4E+0	4.3E+0	NA	NA	1.9E+1	7.7E+2	1.3E+3	1.4E+0	☐	<1
108-88-3	Toluene CA	6.2E+1	1.2E+3	3.2E+3	NA	NA	6.5E+2	>Res	>Res	6.5E+2	☐	<1
1330-20-7	Xylene CA	1.2E+2	5.1E+3	>Res	NA	NA	1.8E+3	>Res	>Res	1.8E+3	☐	<1

>Res indicates risk-based target concentration greater than constituent residual saturation value

Software: GSI RBCA Spreadsheet
Version: 1.0.1
Serial: G-443-CSX-444

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.3

Site Name: DP793 - BACKYARDS
Site Location: 4035 Park Blvd., Oakland, California

Completed By: George Converse
Date Completed: 9/23/1999

GROUNDWATER SSTL VALUES

Target Risk (Class A & B) 1.0E-6
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2
Groundwater DAF Option: Elec. Acceptor Super. (One-directional vert. dispersion)

SSTL Results For Complete Exposure Pathways ("x" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	X Groundwater Ingestion			X Groundwater Volatilization to Indoor Air		X Groundwater Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/L)	Residential: 185 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential (on-site)	Commercial: (on-site)	(mg/L	"■" if yes	Only if "yes" left
71-43-3	Benzene CA	1.6E-1	1.7E-2	2.9E-3	NA	NA	7.4E-2	NA	3.5E+1	2.9E-3	■	5.6E+01
100-41-4	Ethylbenzene CA	1.9E-1	4.0E+0	1.0E+1	NA	NA	>Sol	NA	>Sol	4.0E+0	☐	<1
110-54-3	Hexane, n-	5.1E+0	2.9E+0	6.1E+0	NA	NA	5.1E+0	NA	>Sol	2.9E+0	■	2.0E+00
1634-04-4	Methyl t-Butyl Ether CA	2.3E-2	5.6E-2	1.7E-1	NA	NA	7.7E+0	NA	1.1E+3	5.6E-2	☐	<1
108-88-3	Toluene CA	3.4E-1	4.4E+0	1.1E+1	NA	NA	1.5E+2	NA	>Sol	4.4E+0	☐	<1
1330-20-7	Xylene CA	1.0E+0	1.0E+1	2.6E+1	NA	NA	>Sol	NA	>Sol	1.0E+1	☐	<1

>Sol indicates risk-based target concentration greater than constituent solubility

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-443-CSX-444

APPENDIX J

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: DP793 | Job Identification: DP793 -3 | Software: GSI RBCA Spreadsheet
Site Location: WEST BRIGHTON AVE SEWER | Date Completed: 9/23/99 | Version: 1.0.1
Completed By: George Converse

TE: values which differ from Tier 1 default values are shown in bold italics and underlined.

osure ameter	Definition (Units)	Residential Adult	Residential (1-6yrs)	Residential (1-16 yrs)	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
	Averaging time for carcinogens (yr)	70				
	Averaging time for non-carcinogens (yr)	30	6	16	25	1
	Body Weight (kg)	70	15	35	70	
	Exposure Duration (yr)	30	6	16	25	1
	Averaging time for vapor flux (yr)	30			25	1
	Exposure Frequency (days/yr)	350			250	180
Derm	Exposure Frequency for dermal exposure	350			250	
w	Ingestion Rate of Water (L/day)	2			1	
	Ingestion Rate of Soil (mg/day)	100	200		50	100
dj	Adjusted soil ing. rate (mg-yr/kg-d)	1.1E+02			9.4E+01	
in	Inhalation rate indoor (m^3/day)	15			20	
out	Inhalation rate outdoor (m^3/day)	20			20	10
	Skin surface area (dermal) (cm^2)	5.8E+03		2.0E+03	5.8E+03	5.8E+03
adj	Adjusted dermal area (cm^2-yr/kg)	2.1E+03			1.7E+03	
	Soil to Skin adherence factor	1				
Fs	Age adjustment on soil ingestion	FALSE			FALSE	
Fd	Age adjustment on skin surface area	FALSE			FALSE	
	Use EPA tox data for air (or PEL based)?	TRUE				
MCL?	Use MCL as exposure limit in groundwater?	FALSE				

trix of Exposed Persons to mplete Exposure Pathways		Residential	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
tdoor Air Pathways:				
S.v	Volatiles and Particulates from Surface Soils	FALSE	FALSE	FALSE
v	Volatilization from Subsurface Soils	TRUE	TRUE	
W.v	Volatilization from Groundwater	FALSE	TRUE	
door Air Pathways:				
b	Vapors from Subsurface Soils	FALSE	TRUE	
W.b	Vapors from Groundwater	FALSE	TRUE	
oil Pathways:				
S.d	Direct Ingestion and Dermal Contact	FALSE	FALSE	TRUE
roundwater Pathways:				
W.i	Groundwater Ingestion	TRUE	TRUE	
.l	Leaching to Groundwater from all Soils	TRUE	TRUE	

istrix of Receptor Distance nd Location On- or Off-Site		Residential Distance	Residential On-Site	Commercial/Industrial Distance	Commercial/Industrial On-Site
GW	Groundwater receptor (cm)	6.9E+03	FALSE		TRUE
s	Inhalation receptor (cm)	2.0E+03	FALSE		TRUE

Matrix of Target Risks		Individual	Cumulative
TRab	Target Risk (class A&B carcinogens)	1.0E-06	
TRc	Target Risk (class C carcinogens)	1.0E-05	
THQ	Target Hazard Quotient	1.0E+00	
Opt	Calculation Option (1, 2, or 3)	2	
Tier	RBCA Tier	2	

Surface Parameters	Definition (Units)	Residential	Constrctn
A	Contaminated soil area (cm^2)	***9.3E+05***	***9.3E+05***
W	Length of affect. soil parallel to wind (cm)	***1.5E+03***	***1.5E+03***
W.gw	Length of affect. soil parallel to groundwater (cm	***1.5E+03***	
Uair	Ambient air velocity in mixing zone (cm/s)	2.3E+02	
delta	Air mixing zone height (cm)	2.0E+02	
Lss	Thickness of affected surface soils (cm)	1.0E+02	
Ps	Particulate areal emission rate (g/cm^2/s)	6.9E-14	

Groundwater	Definition (Units)	Value
delta.gw	Groundwater mixing zone depth (cm)	***4.9E+02***
I	Groundwater infiltration rate (cm/yr)	***6.1E+01***
Ugw	Groundwater Darcy velocity (cm/yr)	***4.0E+03***
Ugw.tr	Groundwater seepage velocity (cm/yr)	***1.3E+04***
Ks	Saturated hydraulic conductivity(cm/s)	1.0E-03
grad	Groundwater gradient (cm/cm)	1.3E-01
Sw	Width of groundwater source zone (cm)	6.1E+02
Sd	Depth of groundwater source zone (cm)	2.4E+02
phi.eff	Effective porosity in water-bearing unit	3.0E-01
foc.sat	Fraction organic carbon in water-bearing unit	***4.9E-03***
BIO?	Is biattenuation considered?	TRUE
BC	Biodegradation Capacity (mg/L)	7.3E+00

Soil	Definition (Units)	Value		
hc	Capillary zone thickness (cm)	***4.6E+01***		
hv	Vadose zone thickness (cm)	***1.8E+02***		
rho	Soil density (g/cm^3)	1.7		
foc	Fraction of organic carbon in vadose zone	***0.24***		
phi	Soil porosity in vadose zone	0.38		
Lgw	Depth to groundwater (cm)	***2.3E+02***		
Ls	Depth to top of affected subsurface soil (cm)	***2.1E+02***		
Lsubs	Thickness of affected subsurface soils (cm)	***1.5E+02***		
pH	Soil/groundwater pH	6.5		
		capillary	vadose	foundation
phi.w	Volumetric water content	0.342	0.12	0.12
phi.a	Volumetric air content	0.038	0.26	0.26

Building	Definition (Units)	Residential	Commercial
Lb	Building volume/area ratio (cm)	2.0E+02	3.0E+02
ER	Building air exchange rate (s^-1)	1.4E-04	2.3E-04
Lcrk	Foundation crack thickness (cm)	1.5E+01	
eta	Foundation crack fraction	0.01	

Transport Parameters	Definition (Units)	Residential	Commercial
Groundwater			
ax	Longitudinal dispersivity (cm)	3.6E+02	
ay	Transverse dispersivity (cm)	3.6E+01	
az	Vertical dispersivity (cm)	3.6E+00	
Vapor			
dcy	Transverse dispersion coefficient (cm)	2.3E+02	
dcz	Vertical dispersion coefficient (cm)	1.6E+02	

RBCA CHEMICAL DATABASE

Physical Property Data

CAS Number	Constituent	type	Molecular Weight (g/mole) MW	ref	Diffusion Coefficients in air (cm2/s) Dair	ref	Diffusion Coefficients in water (cm2/s) Dwat	ref	log (Koc) or log(Kd) (@ 20 - 25 C) log(l/kg)	ref	Henry's Law Constant (@ 20 - 25 C) (atm-m3/mol)	(unitless)	ref	Vapor Pressure (@ 20 - 25 C) (mm Hg)	ref	Solubility (@ 20 - 25 C) (mg/L)	ref	acid pKa	base pKb	ref
71-43-3	Benzene CA	O	78.1		9.30E-02		1.10E-05		1.58		5.29E-03	2.20E-01		9.52E+01		1.75E+03				
100-41-4	Ethylbenzene CA	O	106.2		7.60E-02		8.50E-06		1.98		7.69E-03	3.20E-01		1.00E+01		1.52E+02				
110-54-3	Hexane, n-	O	86.2	5	2.00E-01	4	7.77E-06	4	2.68	4	1.22E-01	5.07E+00	4	1.50E+02	4	1.30E+01	5			
1634-04-4	Methyl t-Butyl Ether CA	O	88.146		7.92E-02		9.41E-05		1.08		5.77E-04	2.40E-02		2.49E+02		4.80E+04				
108-88-3	Toluene CA	O	92.4		8.50E-02		9.40E-06		2.13		6.25E-03	2.60E-01		3.00E+01		5.15E+02				
1330-20-7	Xylene CA	O	106.2		7.20E-02		8.50E-06		2.38		6.97E-03	2.90E-01		7.00E+00		1.98E+02				

Site Name: DP793 Site Location: WEST BRIGHTON AVE Completed By: George Converse Date Completed: 9/23/1999

Software version: 1.0.1

RBCA CHEMICAL DATABASE

Toxicity Data

CAS Number	Constituent	Reference Dose (mg/kg/day) Oral RfD_oral	ref	Inhalation RfD_inhal	ref	Slope Factors 1/(mg/kg/day) Oral SF_oral	ref	Inhalation SF_inhal	ref	EPA Weight of Evidence	Is Constituent Carcinogenic ?
71-43-3	Benzene CA	2.00E-02		2.00E-02	30	1.00E-01		1.00E-01		A	TRUE
100-41-4	Ethylbenzene CA	1.00E-01		2.86E-01	30						FALSE
110-54-3	Hexane, n-	6.00E-02	A	5.71E-02	R	-		-			FALSE
1634-04-4	Methyl t-Butyl Ether CA	5.00E-03				1.73E-03		1.73E-03	31	?	RUE OEHHA draf
108-88-3	Toluene CA	1.10E-01		5.70E-02	30					D	FALSE
1330-20-7	Xylene CA	2.50E-01		8.57E-02	30					D	FALSE

Site Name: DP793 Site Location: WEST BRIGHTON A Completed By: George Converse Date Completed: 9/23/1999

Software version: 1.0.1

RBCA CHEMICAL DATABASE

Miscellaneous Chemical Data

CAS Number	Constituent	Maximum Contaminant Level MCL (mg/L)	reference	Permissible Exposure Limit PEL/TLV (mg/m3)	ref	Relative Absorption Factors Oral	Dermal	Detection Limits Groundwater (mg/L)	ref	Soil (mg/kg)	ref	Half Life (First-Order Decay) (days) Saturated	Unsaturated	ref
71-43-3	Benzene CA	1.00E-03		3.20E+00		1	0.5	0.0005		0.005		720	720	
100-41-4	Ethylbenzene CA	7.00E-02		4.34E+02		1	0.5	0.0005		0.005		228	228	
110-54-3	Hexane, n-					1	0.5							
1634-04-4	Methyl t-Butyl Ether CA			1.44E+02		1	0.5	0.005		0.05				
108-88-3	Toluene CA	1.50E-01		1.47E+02		1	0.5	0.0005		0.005		28	28	
1330-20-7	Xylene CA	1.75E+00		4.34E+02		1	0.5	0.002		0.005		360	360	

Site Name: DP793 Site Location: WEST BRIGHTON AVE SEWER., Oakland, Cal Completed By: George Converse Date Completed: 9/23/1999

Software version: 1.0.1

RBCA SITE ASSESSMENT | Input Screen 7

REPRESENTATIVE COC CONCENTRATIONS IN SOURCE MEDIA

(Complete the following table)

CONSTITUENT	Representative COC Concentration in Groundwater		in Surface Soil		in Subsurface Soil	
	value (mg/L)	note	value (mg/kg)	note	value (mg/kg)	note
Benzene CA	3.5E+0	max	5.0E-3		4.1E-1	I SW
Ethylbenzene CA	3.6E-1	max	5.0E-3		8.7E-1	I SW
Hexane, n-	1.7E+1	max	5.0E-3		6.7E+1	I SW
Methyl t-Butyl Ether CA	4.2E-2	max	5.0E-3		5.0E-3	
Toluene CA	1.2E+0	max	5.0E-3		2.0E+0	I SW
Xylene CA	1.6E+0	max	1.0E-2		4.9E+0	I SW

Site Name: DP793
Site Location: WEST BRIGHTON AVE SEWER., Oakland, California

Completed By: George Converse
Date Completed: 9/23/1999

RBCA SITE ASSESSMENT | **Input Screen 6.3**

CONSTITUENT MOLE FRACTIONS

(Complete the following table)

CONSTITUENT	Mole Fraction of Constituent in Source Material
Benzene CA	
Ethylbenzene CA	
Hexane, n-	
Methyl t-Butyl Ether CA	
Toluene CA	
Xylene CA	

Site Name: DP793
Site Location: WEST BRIGHTON AVE

Completed By: George Converse
Date Completed: 9/23/1999

RBCA SITE ASSESSMENT | **Input Screen 9.4**

GROUNDWATER DAF VALUES

(Enter DAF values in the grey area of the following table)

CONSTITUENT	Dilution Attenuation Factor (DAF) in Groundwater	
	Residential Receptor	Comm./Ind. Receptor
Benzene CA	8.8E+1	1.0E+0
Ethylbenzene CA	8.8E+1	1.0E+0
Hexane, n-	8.8E+1	1.0E+0
Methyl t-Butyl Ether CA	8.8E+1	1.0E+0
Toluene CA	8.8E+1	1.0E+0
Xylene CA	8.8E+1	1.0E+0

Site Name: DP793
Completed By: George Converse
Site Location: WEST BRIGHTON AVE SEWER., Oakla
Date Completed: 9/23/1999

RBCA SITE ASSESSMENT | Input Screen 9.1

CONSTITUENT HALF-LIFE VALUES

(Complete the following table)

CONSTITUENT	Half-Life of Constituent (day)
Benzene CA	
Ethylbenzene CA	
Hexane, n-	
Methyl t-Butyl Ether CA	
Toluene CA	
Xylene CA	

Site Name: DP793
Site Location: WEST BRIGHTON AVE S

Completed By: George Converse
Date Completed: 9/23/1999

RBCA SITE ASSESSMENT

EXPOSURE LIMITS IN GROUNDWATER AND AIR

CONSTITUENT	Exposure Limits Applied to Receptors	
	Groundwater (MCL) (mg/L)	Air (Comm. only) (PEL/TLV) (mg/m^3)
Benzene CA		
Ethylbenzene CA		
Hexane, n-		
Methyl t-Butyl Ether CA		
Toluene CA		
Xylene CA		

Site Name: DP793
Site Location: WEST BRIGHTON AVE SEWER., Oakland, C

Completed By: George Converse
Date Completed: 9/23/1999

Site Name: DP793 Site Location: WEST BRIGHTON AVE SEWER., Completed By: George Convers Date Completed: 9/23/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS: VAPOR AND DUST INHALATION

Constituents of Concern	Exposure Concentration 1) Source Medium: Surface Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor		3) Exposure Medium: Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		4) Exposure Multiplier: (IRxEFxED)/(BWxAT) (m^3/kg-day)		5) Average Daily Intake Rate: (mg/kg-day) (3) X (4)	
Benzene CA	5.0E-3								
Ethylbenzene CA	5.0E-3								
Hexane, n-	5.0E-3								
Methyl t-Butyl Ether CA	5.0E-3								
Toluene CA	5.0E-3								
Xylene CA	1.0E-2								

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequencey (days/yr); ET = Exposure time (hrs/day); IR = Inhalation rate (m^3/day); POE = Point of exposure; SA = Skin exposure area (cm^2/day)

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SUBSURFACE SOILS: VAPOR INHALATION

Constituents of Concern	Exposure Concentration 1) Source Medium: Subsurface Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor: On-Site Commercial	2) NAF Value (m^3/kg) Receptor: Off-Site Residential	3) Exposure Medium: Outdoor Air: POE Conc. (mg/m^3) (1) / (2): On-Site Commercial	3) Exposure Medium: Outdoor Air: POE Conc. (mg/m^3) (1) / (2): Off-Site Residential	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m^3/kg-day): On-Site Commercial	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m^3/kg-day): Off-Site Residential	5) Average Daily Intake Rate (mg/kg-day) (3) X (4): On-Site Commercial	5) Average Daily Intake Rate (mg/kg-day) (3) X (4): Off-Site Residential
Benzene CA	4.1E-1	9.0E+4	1.9E+5	4.6E-6	2.1E-6	7.0E-2	1.2E-1	3.2E-7	2.5E-7
Ethylbenzene CA	8.7E-1	9.0E+4	1.9E+5	9.7E-6	4.6E-6	2.0E-1	2.7E-1	1.9E-6	1.2E-6
Hexane, n-	6.7E+1	9.0E+4	1.9E+5	7.5E-4	3.5E-4	2.0E-1	2.7E-1	1.5E-4	9.6E-5
Methyl t-Butyl Ether CA	5.0E-3	1.3E+5	2.2E+5	4.0E-8	2.3E-8	7.0E-2	1.2E-1	2.8E-9	2.6E-9
Toluene CA	2.0E+0	1.2E+5	2.1E+5	1.7E-5	9.5E-6	2.0E-1	2.7E-1	3.3E-6	2.6E-6
Xylene CA	4.9E+0	2.2E+5	4.0E+5	2.2E-5	1.2E-5	2.0E-1	2.7E-1	4.3E-6	3.4E-6

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m^3/day)
POE = Point of exposure
SA = Skin exposue area (cm^2/day)

Site Name: DP793 | Site Location: WEST BRIGHTON AVE SE | Completed By: George Converse | Date Completed: 9/23/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: VAPOR INHALATION

Constituents of Concern	Exposure Concentration: 1) Source Medium — Groundwater Conc. (mg/L)	2) NAF Value (m^3/L) Receptor — On-Site Commercial		3) Exposure Medium — Outdoor Air: POE Conc. (mg/m^3) (1) / (2) — On-Site Commercial		4) Exposure Multiplier ((IRxEFxED)/(BWxAT) (m^3/kg-day) — On-Site Commercial		5) Average Daily Intake Rate (mg/kg-day) (3) X (4) — On-Site Commercial		TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from surface, subsurface & groundwater routes.) — On-Site Commercial	Off-Site Residential
Benzene CA	3.5E+0	2.9E+5		1.2E-5		7.0E-2		8.6E-7		1.2E-6	2.5E-7
Ethylbenzene CA	3.6E-1	2.8E+5		1.3E-6		2.0E-1		2.5E-7		2.1E-6	1.2E-6
Hexane, n-	1.7E+1	1.0E+4		1.7E-3		2.0E-1		3.2E-4		4.7E-4	9.6E-5
Methyl t-Butyl Ether CA	4.2E-2	1.1E+5		3.9E-7		7.0E-2		2.7E-8		3.0E-8	2.6E-9
Toluene CA	1.2E+0	2.9E+5		4.1E-6		2.0E-1		8.1E-7		4.1E-6	2.6E-6
Xylene CA	1.6E+0	3.1E+5		5.1E-6		2.0E-1		1.0E-6		5.3E-6	3.4E-6

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m^3/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: DP793 | Site Location: WEST BRIGHTON AVE SEWER., | Completed By: George Convers | Date Completed: 9/23/1999 | 4 OF 9

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SUBSURFACE SOILS:
VAPOR INTRUSION TO BUILDINGS

Constituents of Concern	Exposure Concentration 1) Source Medium: Subsurface Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor: On-Site Commercial	3) Exposure Medium: Indoor Air: POE Conc. (mg/m^3) (1) / (2) On-Site Commercial	4) Exposure Multiplier (IRxEFxEDy(BWxAT) (m^3/kg-day) On-Site Commercial	5) Average Daily Intake Rate (mg/kg-day) (3) X (4) On-Site Commercial
Benzene CA	4.1E-1	6.8E+2	6.0E-4	7.0E-2	4.2E-5
Ethylbenzene CA	8.7E-1	1.4E+3	6.1E-4	2.0E-1	1.2E-4
Hexane, n-	6.7E+1	2.1E+2	3.2E-1	2.0E-1	6.2E-2
Methyl t-Butyl Ether CA	5.0E-3	2.4E+3	2.1E-6	7.0E-2	1.5E-7
Toluene CA	2.0E+0	2.2E+3	9.0E-4	2.0E-1	1.8E-4
Xylene CA	4.9E+0	4.2E+3	1.2E-3	2.0E-1	2.3E-4

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequency (days/yr); ET = Exposure time (hrs/day); IR = Inhalation rate (m^3/day); POE = Point of exposure; SA = Skin exposure area (cm^2/day)

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-443-CSX-444

Site Name: DP793 Site Location: WEST BRIGHTON AVE SE Completed By: George Converse Date Completed: 9/23/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER:
VAPOR INTRUSION TO BUILDINGS

Constituents of Concern	Exposure Concentration 1) Source Medium Groundwater Conc. (mg/L)	2) NAF Value (m^3/l) Receptor On-Site	Commercial	3) Exposure Medium Indoor Air: POE Conc. (mg/m^3) (1) / (2) On-Site	Commercial	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m^3/kg-day) On-Site	Commercial	5) Average Daily Intake Rate (mg/kg-day) (3) X (4) On-Site	Commercial	TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from subsurface & groundwater routes.) On-Site	Commercial
Benzene CA	3.5E+0		7.3E+2		4.8E-3		7.0E-2		3.3E-4		3.8E-4
Ethylbenzene CA	3.6E-1		7.2E+2		5.0E-4		2.0E-1		9.8E-5		2.2E-4
Hexane, n-	1.7E+1		2.5E+1		6.7E-1		2.0E-1		1.3E-1		1.9E-1
Methyl t-Butyl Ether CA	4.2E-2		9.5E+2		4.4E-5		7.0E-2		3.1E-6		3.2E-6
Toluene CA	1.2E+0		7.4E+2		1.6E-3		2.0E-1		3.2E-4		4.9E-4
Xylene CA	1.6E+0		8.0E+2		2.0E-3		2.0E-1		3.9E-4		6.2E-4

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequency (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m^3/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: DP793 Site Location: WEST BRIGHTON AVE SEWER., Oakla Completed By: George Co Date Completed: 9/23/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS OR SEDIMENTS; DERMAL CONTACT

Constituents of Concern	Exposure Concentration 1) Source Medium: Surface Soil Conc. (mg/kg)	2) Exposure Multiplier (SAxAFxABSxCFxEFxED)/(BWxAT) (kg/kg-day): On-Site Residential	2) Exposure Multiplier: On-Site Commercial	3) Average Daily Intake Rate (mg/kg-day) (1) x (2): On-Site Residential	3) Average Daily Intake Rate: On-Site Commercial
Benzene CA	5.0E-3				
Ethylbenzene CA	5.0E-3				
Hexane, n-	5.0E-3				
Methyl t-Butyl Ether CA	5.0E-3				
Toluene CA	5.0E-3				
Xylene CA	1.0E-2				

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequency (days/; ET = Exposure time (hrs/day); IR = Intake rate (mg/day); POE = Point of exposure; SA = Skin exposure area (cm^2/day)

Site Name: DP793 Site Location: WEST BRIGHTON AVE SE Completed By: George Convers Date Completed: 9/23/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS OR SEDIMENTS:

INGESTION

Constituents of Concern	Exposure Concentration 1) Source Medium: Surface Soil Conc. (mg/kg)	2) Exposure Multiplier (IRxCFxEFxED)/(BWxAT) (kg/kg-day): On-Site Residential	2) Exposure Multiplier: On-Site Commercial	3) Average Daily Intake Rate (mg/kg-day) (1) x (2): On-Site Residential	3) Average Daily Intake Rate: On-Site Commercial	TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from dermal & ingestion routes.): On-Site Residential	TOTAL PATHWAY INTAKE: On-Site Commercial
Benzene CA	5.0E-3						
Ethylbenzene CA	5.0E-3						
Hexane, n-	5.0E-3						
Methyl t-Butyl Ether CA	5.0E-3						
Toluene CA	5.0E-3						
Xylene CA	1.0E-2						

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequencey (days/yr); ET = Exposure time (hrs/day); IR = Intake rate (mg/day); POE = Point of exposure; SA = Skin exposure area (cm^2/day)

Site Name: DP793 Site Location: WEST BRIGHTON AVE SEWER., Oa Completed By: George Convers Date Completed: 9/23/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS (CHECKED IF PATHWAY IS ACTIVE)

SOIL: LEACHING TO GROUNDWATER/ GROUNDWATER INGESTION

Exposure Concentration

Constituents of Concern	1) Source Medium: Soil Concentration (mg/kg)	2) NAF Value (L/kg) Receptor: On-Site Commercial	2) NAF Value (L/kg) Receptor: Off-Site Residential	3) Exposure Medium: Groundwater: POE Conc. (mg/L) (1)/(2): On-Site Commercial	3) Exposure Medium: Groundwater: POE Conc. (mg/L) (1)/(2): Off-Site Residential	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg-day): On-Site Commercial	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg-day): Off-Site Residential	5) Average Daily Intake Rate (mg/kg-day) (3) x (4): On-Site Commercial	5) Average Daily Intake Rate (mg/kg-day) (3) x (4): Off-Site Residential
Benzene CA	4.1E-1	2.0E+2	1.8E+4	2.0E-3	2.3E-5	3.5E-3	1.2E-2	7.0E-6	2.7E-7
Ethylbenzene CA	8.7E-1	5.1E+2	4.5E+4	1.7E-3	1.9E-5	9.8E-3	2.7E-2	1.7E-5	5.3E-7
Hexane, n-	6.7E+1	2.6E+3	2.3E+5	2.6E-2	3.0E-4	9.8E-3	2.7E-2	2.6E-4	8.1E-6
Methyl t-Butyl Ether CA	5.0E-3	6.5E+1	5.8E+3	7.6E-5	8.7E-7	3.5E-3	1.2E-2	2.7E-7	1.0E-8
Toluene CA	2.0E+0	7.2E+2	6.3E+4	2.8E-3	3.2E-5	9.8E-3	2.7E-2	2.7E-5	8.7E-7
Xylene CA	4.9E+0	1.3E+3	1.1E+5	3.8E-3	4.4E-5	9.8E-3	2.7E-2	3.8E-5	1.2E-6

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body Weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequency (days/yr); ET = Exposure time (hrs/day); IR = Intake rate (L/day); POE = Point of exposure; SA = Skin exposure area (cm^2/day)

Site Name: DP793 Site Location: WEST BRIGHTON AVE SEWER., Oakland, Calif Completed By: George Converse Date Completed: 9/23/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: INGESTION

Constituents of Concern	Exposure Concentration: 1) Source Medium — Groundwater Conc. (mg/L)	2) NAF Value (dim) — Receptor: On-Site Commercial	2) NAF Value (dim) — Receptor: Off-Site Residential	3) Exposure Medium — Groundwater: POE Conc. (mg/L) (1)/(2): On-Site Commercial	3) Exposure Medium — Groundwater: POE Conc. (mg/L) (1)/(2): Off-Site Residential	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg-day): On-Site Commercial	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg-day): Off-Site Residential	5) Average Daily Intake Rate (mg/kg-day) (3) x (4): On-Site Commercial	5) Average Daily Intake Rate (mg/kg-day) (3) x (4): Off-Site Residential	MAX. PATHWAY INTAKE (mg/kg-day) (Maximum intake of active pathways soil leaching & groundwater routes.): On-Site Commercial	MAX. PATHWAY INTAKE (mg/kg-day) (Maximum intake of active pathways soil leaching & groundwater routes.): Off-Site Residential
Benzene CA	3.5E+0	1.0E+0	8.8E+1	3.5E+0	4.0E-2	3.5E-3	1.2E-2	1.2E-2	4.7E-4	1.2E-2	4.7E-4
Ethylbenzene CA	3.6E-1	1.0E+0	8.8E+1	3.6E-1	4.1E-3	9.8E-3	2.7E-2	3.5E-3	1.1E-4	3.5E-3	1.1E-4
Hexane, n-	1.7E+1	1.0E+0	8.8E+1	1.7E+1	1.9E-1	9.8E-3	2.7E-2	1.7E-1	5.3E-3	1.7E-1	5.3E-3
Methyl t-Butyl Ether CA	4.2E-2	1.0E+0	8.8E+1	4.2E-2	4.8E-4	3.5E-3	1.2E-2	1.5E-4	5.6E-6	1.5E-4	5.6E-6
Toluene CA	1.2E+0	1.0E+0	8.8E+1	1.2E+0	1.4E-2	9.8E-3	2.7E-2	1.2E-2	3.7E-4	1.2E-2	3.7E-4
Xylene CA	1.6E+0	1.0E+0	8.8E+1	1.6E+0	1.8E-2	9.8E-3	2.7E-2	1.6E-2	5.0E-4	1.6E-2	5.0E-4

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Intake rate (L/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-443-CSX-444

Site Name: DP793 Site Location: WEST BRIGHTON AVE SEWER., Oakland, Completed By: George Converse Date Completed: 9/23/1999

TIER 2 PATHWAY RISK CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAYS ARE ACTIVE)

Constituents of Concern	(1) EPA Carcinogenic Classification	CARCINOGENIC RISK: (2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site Commercial	(2) Total Carcinogenic Intake Rate (mg/kg/day) Off-Site Residential	(3) Inhalation Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) On-Site Commercial	(4) Individual COC Risk (2) x (3) Off-Site Residential	TOXIC EFFECTS: (5) Total Toxicant Intake Rate (mg/kg/day) On-Site Commercial	(5) Total Toxicant Intake Rate (mg/kg/day) Off-Site Residential	(6) Inhalation Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) On-Site Commercial	(7) Individual COC Hazard Quotient (5) / (6) Off-Site Residential
Benzene CA	A	1.2E-6	2.5E-7	1.0E-1	1.2E-7	2.5E-8	3.3E-6	5.9E-7	2.0E-2	1.6E-4	2.9E-5
Ethylbenzene CA							2.1E-6	1.2E-6	2.9E-1	7.5E-6	4.4E-6
Hexane, n-							4.7E-4	9.6E-5	5.7E-2	8.2E-3	1.7E-3
Methyl t-Butyl Ether CA	?	3.0E-8	2.6E-9	1.7E-3	5.1E-11	4.6E-12					
Toluene CA	D						4.1E-6	2.6E-6	5.7E-2	7.2E-5	4.6E-5
Xylene CA	D						5.3E-6	3.4E-6	8.6E-2	6.2E-5	4.0E-5

Total Pathway Carcinogenic Risk = 1.2E-7 | 2.5E-8

Total Pathway Hazard Index = 8.5E-3 | 1.8E-3

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-443-CSX-444

Site Name: DP793 | Site Location: WEST BRIGHTON AVE SEWER., Oakland, | Completed By: George Converse | Date Completed: 9/23/1999 | 2 OF 4

TIER 2 PATHWAY RISK CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAYS ARE ACTIVE)

Constituents of Concern	(1) EPA Carcinogenic Classification	CARCINOGENIC RISK: (2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site	Commercial	(3) Inhalation Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) On-Site	Commercial	TOXIC EFFECTS: (5) Total Toxicant Intake Rate (mg/kg/day) On-Site	Commercial	(6) Inhalation Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) On-Site	Commercial
Benzene CA	A		3.8E-4	1.0E-1		3.8E-5		1.1E-3	2.0E-2		5.3E-2
Ethylbenzene CA								2.2E-4	2.9E-1		7.6E-4
Hexane, n-								1.9E-1	5.7E-2		3.4E+0
Methyl t-Butyl Ether CA	?		3.2E-6	1.7E-3		5.6E-9					
Toluene CA	D							4.9E-4	5.7E-2		8.6E-3
Xylene CA	D							6.2E-4	8.6E-2		7.3E-3

Total Pathway Carcinogenic Risk = 0.0E+0 | 3.8E-5

Total Pathway Hazard Index = 0.0E+0 | 3.5E+0

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-443-CSX-444

Site Name: DP793 | Site Location: WEST BRIGHTON AVE SEWER., Oakland, | Completed By: George Converse | Date Completed: 9/23/1999

TIER 2 PATHWAY RISK CALCULATION

SOIL EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAYS ARE ACTIVE)

	CARCINOGENIC RISK							TOXIC EFFECTS		
Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site Residential	(2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site Commercial	(3) Oral Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) On-Site Residential	(4) Individual COC Risk (2) x (3) On-Site Commercial	(5) Total Toxicant Intake Rate (mg/kg/day) On-Site Residential	(5) Total Toxicant Intake Rate (mg/kg/day) On-Site Commercial	(6) Oral Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) On-Site Residential	(7) Individual COC Hazard Quotient (5) / (6) On-Site Commercial
Benzene CA	A			1.0E-1					2.0E-2		
Ethylbenzene CA									1.0E-1		
Hexane, n-									6.0E-2		
Methyl t-Butyl Ether CA	?			1.7E-3					5.0E-3		
Toluene CA	D								1.1E-1		
Xylene CA	D								2.5E-1		
Total Pathway Carcinogenic Risk =					0.0E+0	0.0E+0			*Total Pathway Hazard Index =*	0.0E+0	0.0E+0

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-443-CSX-444

Site Name: DP793 | Site Location: WEST BRIGHTON AVE SEWER., Oakland, | Completed By: George Converse | Date Completed: 9/23/1999 | 4 OF 4

TIER 2 PATHWAY RISK CALCULATION

GROUNDWATER EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAYS ARE ACTIVE)

Constituents of Concern	(1) EPA Carcinogenic Classification	CARCINOGENIC RISK: (2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site Commercial	(2) Total Carcinogenic Intake Rate (mg/kg/day) Off-Site Residential	(3) Oral Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) On-Site Commercial	(4) Individual COC Risk (2) x (3) Off-Site Residential	TOXIC EFFECTS: (5) Total Toxicant Intake Rate (mg/kg/day) On-Site Commercial	(5) Total Toxicant Intake Rate (mg/kg/day) Off-Site Residential	(6) Oral Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) On-Site Commercial	(7) Individual COC Hazard Quotient (5) / (6) Off-Site Residential
Benzene CA	A	1.2E-2	4.7E-4	1.0E-1	1.2E-3	4.7E-5	3.4E-2	1.1E-3	2.0E-2	1.7E+0	5.4E-2
Ethylbenzene CA							3.5E-3	1.1E-4	1.0E-1	3.5E-2	1.1E-3
Hexane, n-							1.7E-1	5.3E-3	6.0E-2	2.8E+0	8.8E-2
Methyl t-Butyl Ether CA	?	1.5E-4	5.6E-6	1.7E-3	2.5E-7	9.7E-9	4.1E-4	1.3E-5	5.0E-3	8.2E-2	2.6E-3
Toluene CA	D						1.2E-2	3.7E-4	1.1E-1	1.1E-1	3.4E-3
Xylene CA	D						1.6E-2	5.0E-4	2.5E-1	6.3E-2	2.0E-3
Total Pathway Carcinogenic Risk =					1.2E-3	4.7E-5	***Total Pathway Hazard Index =***			4.8E+0	1.5E-1

RBCA SITE ASSESSMENT | **Tier 2 Worksheet 8.3**

Site Name: DP793
Site Location: WEST BRIGHTON AVE SEWER., Oakland,
Completed By: George Converse
Date Completed: 9/23/1999

TIER 2 BASELINE RISK SUMMARY TABLE

EXPOSURE PATHWAY	BASELINE CARCINOGENIC RISK: Individual COC Risk – Maximum Value	Individual COC Risk – Target Risk	Cumulative COC Risk – Total Value	Cumulative COC Risk – Target Risk	Risk Limit(s) Exceeded?	BASELINE TOXIC EFFECTS: Hazard Quotient – Maximum Value	Hazard Quotient – Applicable Limit	Hazard Index – Total Value	Hazard Index – Applicable Limit	Toxicity Limit(s) Exceeded?
OUTDOOR AIR EXPOSURE PATHWAYS										
Complete:	1.2E-7	1.0E-6	1.2E-7	N/A	☐	8.2E-3	1.0E+0	8.5E-3	N/A	☐
INDOOR AIR EXPOSURE PATHWAYS										
Complete:	3.8E-5	1.0E-6	3.8E-5	N/A	■	3.4E+0	1.0E+0	3.5E+0	N/A	■
SOIL EXPOSURE PATHWAYS										
Complete:	NC	1.0E-6	NC	N/A	■	NC	1.0E+0	NC	N/A	■
GROUNDWATER EXPOSURE PATHWAYS										
Complete:	1.2E-3	1.0E-6	1.2E-3	N/A	■	2.8E+0	1.0E+0	4.8E+0	N/A	■
CRITICAL EXPOSURE PATHWAY (Select Maximum Values From Complete Pathways)										
	1.2E-3	1.0E-6	1.2E-3	N/A	■	3.4E+0	1.0E+0	4.8E+0	N/A	■

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.1

Site Name: DP793

Site Location: WEST BRIGHTON AVE SEWER., Oakland, California

Completed By: George Converse

Date Completed: 9/23/1999

SURFACE SOIL SSTL VALUES (< 3.3 FT BGS)

Target Risk (Class A & B) 1.0E-6

Target Risk (Class C) 1.0E-5

Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?

☐ PEL exposure limit?

Calculation Option: 2

Groundwater DAF Option: Elec. Acceptor Super (One-directional vert. dispersion)

SSTL Results For Complete Exposure Pathways ("x" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	X Soil Leaching to Groundwater			Ingestion, Inhalation and Dermal Contact		X Construction Worker	Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential: 226 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
71-43-3	Benzene CA	5.0E-3	6.8E+2	5.8E-1	NA	NA	NA	3.3E+1	5.8E-1	☐	<1
100-41-4	Ethylbenzene CA	5.0E-3	>Res	>Res	NA	NA	NA	>Res	>Res	☐	<1
110-54-3	Hexane, n-	5.0E-3	>Res	>Res	NA	NA	NA	>Res	>Res	☐	<1
1634-04-4	Methyl t-Butyl Ether CA	5.0E-3	1.6E+1	1.1E+1	NA	NA	NA	1.9E+3	1.1E+1	☐	<1
108-88-3	Toluene CA	5.0E-3	1.3E+4	8.1E+3	NA	NA	NA	5.2E+3	5.2E+3	☐	<1
1330-20-7	Xylene CA	1.0E-2	>Res	>Res	NA	NA	NA	>Res	>Res	☐	<1

>Res indicates risk-based target concentration greater than constituent residual saturation value

Software: GSI RBCA Spreadsheet

Version: 1.0.1

Serial: G-443-CSX-444

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.2

Site Name: DP793
Site Location: WEST BRIGHTON AVE SEWER., Oakland, California

Completed By: George Converse
Date Completed: 9/23/1999

SUBSURFACE SOIL SSTL VALUES (> 3.3 FT BGS)

Target Risk (Class A & B) 1.0E-6
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2
Groundwater DAF Option: Elec. Acceptor Super. (One-directional vert. dispersion)

SSTL Results For Complete Exposure Pathways ("x" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	X Soil Leaching to Groundwater			X Soil Volatilization to Indoor Air		X Soil Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential: 226 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential: 65 feet	Commercial: (on-site)	(mg/kg)	"■" if yes	Only if "yes" left
71-43-3	Benzene CA	4.1E-1	6.8E+2	5.8E-1	NA	NA	9.8E-2	1.6E+1	1.3E+1	9.8E-2	■	4.0E+00
100-41-4	Ethylbenzene CA	8.7E-1	>Res	>Res	NA	NA	2.1E+3	>Res	>Res	2.1E+3	☐	<1
110-54-3	Hexane, n-	6.7E+1	>Res	>Res	NA	NA	6.1E+1	>Res	>Res	6.1E+1	■	1.0E+00
1634-04-4	Methyl t-Butyl Ether CA	5.0E-3	1.6E+1	1.1E+1	NA	NA	1.9E+1	1.1E+3	1.0E+3	1.1E+1	☐	<1
108-88-3	Toluene CA	2.0E+0	1.3E+4	8.1E+3	NA	NA	6.5E+2	>Res	>Res	6.5E+2	☐	<1
1330-20-7	Xylene CA	4.9E+0	>Res	>Res	NA	NA	1.8E+3	>Res	>Res	1.8E+3	☐	<1

>Res indicates risk-based target concentration greater than constituent residual saturation value

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-443-CSX-444

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.3

Site Name: DP793

Site Location: WEST BRIGHTON AVE SEWER., Oakland, California

Completed By: George Converse

Date Completed: 9/23/1999

GROUNDWATER SSTL VALUES

Target Risk (Class A & B) 1.0E-6

Target Risk (Class C) 1.0E-5

Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?

☐ PEL exposure limit?

Calculation Option: 2

Groundwater DAF Option: Elec. Acceptor Super. (One-directional vert. dispersion)

SSTL Results For Complete Exposure Pathways ("x" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	X Groundwater Ingestion			X Groundwater Volatilization to Indoor Air		X Groundwater Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/L)	Residential: 226 feet	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential: (on-site)	Commercial: (on-site)	(mg/L	"■" if yes	Only if "yes" left
71-43-3	Benzene CA	3.5E+0	3.3E+0	2.9E-3	NA	NA	1.0E-1	NA	4.1E+1	2.9E-3	■	1.2E+03
100-41-4	Ethylbenzene CA	3.6E-1	1.5E+1	1.0E+1	NA	NA	>Sol	NA	>Sol	1.0E+1	☐	<1
110-54-3	Hexane, n-	1.7E+1	>Sol	6.1E+0	NA	NA	7.4E+0	NA	>Sol	6.1E+0	■	3.0E+00
1634-04-4	Methyl t-Butyl Ether CA	4.2E-2	2.4E-1	1.7E-1	NA	NA	7.9E+0	NA	9.0E+2	1.7E-1	☐	<1
108-88-3	Toluene CA	1.2E+0	1.8E+1	1.1E+1	NA	NA	2.2E+2	NA	>Sol	1.1E+1	☐	<1
1330-20-7	Xylene CA	1.6E+0	3.9E+1	2.6E+1	NA	NA	>Sol	NA	>Sol	2.6E+1	☐	<1

>Sol indicates risk-based target concentration greater than constituent solubility

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-443-CSX-444

APPENDIX K

WESTERN GEO-ENGINEERS
1360 EAST BEAMER
WOODLAND, CALIFORNIA 95695
(916) 668-5300, FAX (916) 662-0273

WELL SAMPLING DATA SHEET

SITE DP 793	DATE 8-9-99	TIME 1248
WELL T1	SAMPLED BY. Broadway	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	6.47'	
FLUID ELEVATION		
BAILER TYPE		
PUMP	WEGE Pump Truck w/Equipment	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
1405	200 gals			

FINAL VOLUME PURGED	200 gals
TIME SAMPLED	NO SAMPLE
SAMPLE ID.	
SAMPLE CONTAINERS	
ANALYSIS TO BE RUN	
LABORATORY	
NOTES:	Had trouble getting set up on the well and setting up equipment for transfering water

WESTERN GEO-ENGINEERS
1386 EAST BEAMER
WOODLAND, CALIFORNIA 95695
(916) 668-5300, FAX (916) 662-0273

WELL SAMPLING DATA SHEET

SITE DP 793	DATE 8-10-99	TIME 0900
WELL T1	SAMPLED BY. BROADWAY	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	5.02	
FLUID ELEVATION		
BAILER TYPE		
PUMP		

WELL PURGING RECORD

TIME	VOLUME REMOVED	~~TEMP~~. DTW	pH	COND.
952	230 gals	5.4'		
1041	250	5.78'		
1140	250	6.13'		
1223	250	7.17'		
1333	250	8.36'		
1418	250	9.1'		
1503	250	10.63'		

FINAL VOLUME PURGED	1730 gals
TIME SAMPLED	NO SAMPLE
SAMPLE ID.	
SAMPLE CONTAINERS	
ANALYSIS TO BE RUN	
LABORATORY	
NOTES:	

WESTERN GEO-ENGINEERS
1360 EAST BEAMER
WOODLAND, CALIFORNIA 95695
(916) 668-5300, FAX (916) 662-0273

WELL SAMPLING DATA SHEET

SITE DP793	DATE 8-11-99	TIME 0800
WELL T1	SAMPLED BY. BROADWAY	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	7.89'	
FLUID ELEVATION		
BAILER TYPE		
PUMP	WEGE Pump Truck w/Equipment	

WELL PURGING RECORD

TIME	VOLUME REMOVED	~~TEMP~~. DTW	pH	COND.
839	250 gals	8.82'		
952	310	9.92'		
1042	~~150~~ 160	13.68'		
1210	160	13.68'		

T2 → See NOTES

FINAL VOLUME PURGED	960 gals
TIME SAMPLED	NO SAMPLE
SAMPLE ID.	
SAMPLE CONTAINERS	
ANALYSIS TO BE RUN	
LABORATORY	
NOTES:	After removing water from T1 - I then removed the remainder from T2

WESTERN GEO-ENGINEERS
1306 EAST BEAMER
WOODLAND, CALIFORNIA 95695
(916) 668-5300, FAX (916) 662-0273

WELL SAMPLING DATA SHEET

SITE OP 793	DATE 8-12-99	TIME 1130
WELL T1	SAMPLED BY. BROADWAY	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	8.12'	
FLUID ELEVATION		
BAILER TYPE		
PUMP	WEGE Pump TRUCK w/ Equipment	

WELL PURGING RECORD				
TIME	VOLUME REMOVED	TEMP.	pH	COND.
1233	250 gals			
1438	250			
1555	300			

FINAL VOLUME PURGED	800 gals
TIME SAMPLED	NO SAMPLE
SAMPLE ID.	
SAMPLE CONTAINERS	
ANALYSIS TO BE RUN	
LABORATORY	
NOTES:	

WESTERN GEO-ENGINEERS
1300 EAST BEAMER
WOODLAND, CALIFORNIA 95695
(916) 668-5300, FAX (916) 662-0273

WELL SAMPLING DATA SHEET

SITE DP793	DATE 8-13-99	TIME 1145
WELL T2	SAMPLED BY. BROADWAY	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	8.87'	
FLUID ELEVATION		
BAILER TYPE		
PUMP	WEGE Pump Truck w/Equipment	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
1300	250 gals			
1416	250			
1640	100			

FINAL VOLUME PURGED	600 gals
TIME SAMPLED	NO SAMPLE
SAMPLE ID.	
SAMPLE CONTAINERS	
ANALYSIS TO BE RUN	
LABORATORY	
NOTES:	

WESTERN GEO-ENGINEERS
138 EAST BEAMER
WOODLAND, CALIFORNIA 95695
(916) 668-5300, FAX (916) 662-0273

WELL SAMPLING DATA SHEET

SITE DP 793	DATE 8-13-99	TIME 1030
WELL RS 10	SAMPLED BY. BROADWAY	

WELL ELEVATION	
PRODUCT THICKNESS	
DEPTH TO WATER	2.92'
FLUID ELEVATION	
BAILER TYPE	Disposable
PUMP	TRANSFER PUMP

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
1045	2 gals			
1420	3			

FINAL VOLUME PURGED	5 gals
TIME SAMPLED	NO SAMPLE
SAMPLE ID.	
SAMPLE CONTAINERS	
ANALYSIS TO BE RUN	
LABORATORY	
NOTES:	Developing well using Surge block

2b1

WESTERN GEO-ENGINEERS
1386 WEST BEAMER
WOODLAND, CALIFORNIA 95695
(916) 668-5300, FAX (916) 662-0273

WELL SAMPLING DATA SHEET

SITE DP 793	DATE 8-13-99	TIME 9:15
WELL RS-8	SAMPLED BY. Broadway	

WELL ELEVATION	
PRODUCT THICKNESS	
DEPTH TO WATER	7.1'
FLUID ELEVATION	
BAILER TYPE	Disposable
PUMP	Transfer Pump

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
930	5 gals			
1450	2			

FINAL VOLUME PURGED	7 gals
TIME SAMPLED	~~No Sample~~
SAMPLE ID.	
SAMPLE CONTAINERS	
ANALYSIS TO BE RUN	
LABORATORY	
NOTES:	Developing well using surge block

WESTERN GEO-ENGINEERS
1386 T BEAMER
WOODLAND, CALIFORNIA 95695
(916) 668-5300, FAX (916) 662-0273

WELL SAMPLING DATA SHEET

SITE DP 793	DATE 8-13-99	TIME 8:05
WELL RS-9	SAMPLED BY. Broadway	

WELL ELEVATION	
PRODUCT THICKNESS	
DEPTH TO WATER	8.17
FLUID ELEVATION	
BAILER TYPE	Disposable
PUMP	Transfer Pump

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.

FINAL VOLUME PURGED	10 gals
TIME SAMPLED	NO SAMPLE
SAMPLE ID.	
SAMPLE CONTAINERS	
ANALYSIS TO BE RUN	
LABORATORY	
NOTES:	Developing well using surge block

Depth To Water 9-2-99

R2 - 13.23'

RS2 - 12'

R1 - 14.18'

R3 - 10.87

RS4 - 28.26

RS7 - 4.14 (No Change after pumping T1)

David Pittman Well Purge

Post Office Box 90, Goodyears Bar, CA 95944-0090
530/289-3133

DATE SEPT 02 99 INVOICE 0039
Postmarked 9/13/99 Rec. 9/14/99

SITE NAME DP 793 OAKLAND CUSTOMER WESTERN GEO ENG

ADDRESS
CITY/STATE
PHONE

WELL	#	DESCRIPTION OF WORK PERFORMED
MW	1	2 GALLONS PURGED
RS	6	20
RS	5	46
RS	9	3

Paid Check 9/14/99

	HOURS	MINUTES
ARRIVAL TIME	8	00
DEPARTURE TIME	10	30
TOTAL TIME AT SITE	2	30

@ $45.00 PER HOUR TOTAL LABOR $ 112.50

TRAVEL TIME FROM SAC TO OAK TO SAC
4 HOURS @ $45.00 PER HOUR TOTAL TRAVEL $ 180.00

180 MILES @ $.40 PER MILE TOTAL MILEAGE $ 72.00

INVOICE TOTAL = $ 364.50

WEGE WESTERN GEO-ENGINEERS
1386 EAST BEAMER
WOODLAND, CALIFORNIA 95695
(916) 668-5300, FAX (916) 662-0273

WELL SAMPLING DATA SHEET

SITE DF793	DATE 9-16-99	TIME 0860
WELL T1	SAMPLED BY.	

WELL ELEVATION
PRODUCT THICKNESS
DEPTH TO WATER 2.27'
FLUID ELEVATION
BAILER TYPE
PUMP WEGE TANK TRUCK

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
1010	Started purging			
1030	DTW 3'			
1230	DTW 4'2"			
1430	DTW 6'5"			
1530	DTW 7'6"			
1630	DTW 10'9"			
1644	DTW 14'1"			

FINAL VOLUME PURGED 13 021 gallons
TIME SAMPLED (8'x35' x h)ft³ x 7.48 gal/ft³
SAMPLE ID.
SAMPLE CONTAINERS
ANALYSIS TO BE RUN
LABORATORY
NOTES: TANK DTW 6.82' 11:15 - 6.42
TANK DTW @1700 = 4.37"
No washer in TANK coupling - invented one
Slight leak at pump exhaust - sat pump over well
1520 Ali came by and took some pictures

WESTERN GEO-ENGINEERS
1386 E. BEAMER
WOODLAND, CALIFORNIA 95695
(916) 668-5300, FAX (916) 662-0273

WELL SAMPLING DATA SHEET

SITE DP793	DATE 9-25-99	TIME 0830
WELL T1	SAMPLED BY.	

WELL ELEVATION	
PRODUCT THICKNESS	
DEPTH TO WATER	4.26
FLUID ELEVATION	TOC 4.36 → 2.77'
BAILER TYPE	
PUMP	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
0705	4.26'			
0950	5.10'			
1050	6.24'			
1155	8.32' T2			
1250	11.46 (10.68)			
1304	14.12			
1305	T2 10.66'			
1330	13.68 (T1 12.76)			

FINAL VOLUME PURGED	
TIME SAMPLED	
SAMPLE ID.	No Change in DTW after Purge
SAMPLE CONTAINERS	
ANALYSIS TO BE RUN	
LABORATORY	

RS 5 - 14.82
R-1 - 10.38
R-2 - 13.50
RS6 - 16.32
RS2 - 13.21
MW1 - 12.26
R3 - 11.06

NOTES:

9 AM	0950	
RS15 = 4.44	T1 5.10'	RS10 = 4.44
RS9 = 8.06'	T2 5.25'	RS9 = 8.06'
RS7 = 4.32'		RS7 = 4.32'
RS8 = 8.09'		RS8 = 8.09'
T2 - T3 - T4 = CAR		T3 - T4 = CAR

2b.

WESTERN GEO-ENGINEERS
1386 [illegible]T BEAMER
WOODLAND, CALIFORNIA 95695
(916) 668-5300, FAX (916) 662-0273

WELL SAMPLING DATA SHEET

SITE 00793	DATE 9-30-99	TIME 0800
WELL T-1	SAMPLED BY. Broadway	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	4.69' → 13.64'	
FLUID ELEVATION	TANK 2.79 → 1.44'	
BAILER TYPE		
PUMP		

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
0910	Started Pumping			
1000	5.24' ✓			
1100	6.28			
1200	7.40			
1300	8.90			
1330	13.64			
1345	Pumping T2			
1445	Primed Pump 3 Times won't pick up water column			

FINAL VOLUME PURGED
TIME SAMPLED 1354 – 1359 – 1405
SAMPLE ID. T1 – T2 – TANK
SAMPLE CONTAINERS 40cc VOAs
ANALYSIS TO BE RUN TPH-g / BTEX MTBE
LABORATORY NSE
NOTES: 0900 T3 - CAR
RS-7 = 4.34' No Change
T-4 = 7.04' → 9.2"
RS-8 = 7.98
RS-9 = 8.20
RS-10 = 4.81
T2 = 5.17 → 19.22'

DTW
RS-5 – 18.91
R-1 – 14.52
R-2 – 13.49
RS-6 – 16.59
RS-2 – 14.11
MW-1 – 12.11
R3 – 11.06

2b1

WESTERN GEO-ENGINEERS
WOODLAND, CALIFORNIA 95695
(916) 668-5300, FAX (916) 662-0273

WELL SAMPLING DATA SHEET

SITE DP-93	DATE 10-7-99	TIME 0905
WELL T1	SAMPLED BY.	Broadway

WELL ELEVATION
PRODUCT THICKNESS
DEPTH TO WATER DTW: 4.78 DTB: 1.37'
FLUID ELEVATION TANK
BAILER TYPE Disposable Bailer
PUMP David BITTMAN

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
				x1000
	1st bailer	T-4		
0915	4.78 gal	7.13		
0940	5.25	7.54		

FINAL VOLUME PURGED 300 gal
TIME SAMPLED
SAMPLE ID.
SAMPLE CONTAINERS VOAs
ANALYSIS TO BE RUN TPHg/BTEX/MTBE
LABORATORY NSE
NOTES: 1st bailer
Pumped 300 gallons from T1
Sampled Tank RAN 200 gallons thru carbon filter then sampled outlet
(DRUM LEAK AROUND RIM)

fres =
VAC =

North State Environmental Analytical Laboratory

90 South Spruce Avenue, Suite W, South San Francisco, CA 94080
Phone: (650) 266-4563 Fax: (650) 266-4560

Chain of Custody / Request for Analysis

Lab Job No.:______ Page___of___

Client: Desert Petroleum	Report to: George Converse	Phone: 530 668 5300	Turnaround Time
Mailing Address: Western Geo Engineer 1374 E. Beamer St Woodland CA 95776	Billing to: Same	Fax: 530 662 0273	Date: 10-7-99
		PO# / Billing Reference:	Sampler: Broadway
Project / Site Address: DP 793 Park Blvd			

Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	TPHg BTEX MTBE	624	Priority 17 metal	Cyanide				Comments / Hazards
Carbon Inlet Pre Filter	H_2O	4 VOAS 3 NaOH 1 HNO3	HCL	10-7-99	|	|	|	|				
Carbon Outlet Post Filter	H_2O	"	|	|								
												Water Sample in field into cooler 4°C

Relinquished by: Stephen J Broadway	Date: 10-7-99	Time: 1110	Received by: [signature] NSE LABS
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by:

Lab Comments

APPENDIX L

WESTERN
GEO-ENGINEERS
CALIF. CONTRACTOR #513857
REGISTERED GEOLOGISTS

1386 EAST BEAMER STREET
WOODLAND CA 95776-6003
(530) 668-5300
FAX (530) 662-0273
Wege@mother.com

8/17/99

FROM: Lisa

DATE: ~~8/13/99~~

TO: Paul Sherman
BJ Landfill

FAX #: (415) 875-1154

TOTAL PAGES
INCLUDING THIS PAGE
22

Chain of Custody for both stockpile composite
TPHg levels from original tank pull samples
Stockpile sample results from original tank pull samples
Figure showing where samples obtained
from spoil pile 1 and spoil pile 2

North State Environmental Analytical Laboratory

90 South Spruce Avenue, Suite W, South San Francisco, CA 94080
Phone: (650) 266-4563 Fax: (650) 266-4560

Chain of Custody / Request for Analysis
Lab Job No.:________ Page 2 of 2

Client: WEGE	Report to: George [illegible], WEGE	Phone: 530-668-5300	Turnaround Time: Standard
Mailing Address: 1386 East Beamer, Woodland CA 95776	Billing to: Western Geo-Engineering	Fax: 530-662-0273	Date: 8.6.99
		PO# / Billing Reference:	Sampler:

Project / Site Address: Desert Petroleum 793, 4035 Park Blvd Oakland CA

Analysis Requested: TPH-G BTEX MTBE

Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	TPH-G BTEX MTBE							Comments / Hazards
Trench-J-10'	Soil	Sleeve		8/6/99 1350	X							
Soil Pile 1-A-1'				8/6/99	X		G	MTBE	B	T		composite 4 to 1 at lab
Soil Pile-B-1'					X		7.9		.006	.061		
Soil Pile-C-1'					X				Eb	X		
Soil Pile-D-1'	Soil	Sleeve		8/6/99	X				.064	.052		

Relinquished by: [signature]	Date: 8/6/99	Time: 1440	Received by: [signature] NSE LAB
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by:

Lab Comments

North State Environmental Analytical Laboratory
90 South Spruce Avenue, Suite W, South San Francisco, CA 94080
Phone: (650) 266-4563 Fax: (650) 266-4560

Chain of Custody / Request for Analysis
Lab Job No.:________ Page___of___

Client: Western Geo-Eng.	Report to: Gary Conover	Phone: 530 668-5300	Turnaround Time: 24 hour
Mailing Address: 1386 E Beamer St Woodland CA ~~95660~~ 95776	Billing to: WEGE	Fax:	Date: 8-13-99
		PO# / Billing Reference:	Sampler: Conover

Project / Site Address: OP 793 - Trench

Analysis Requested

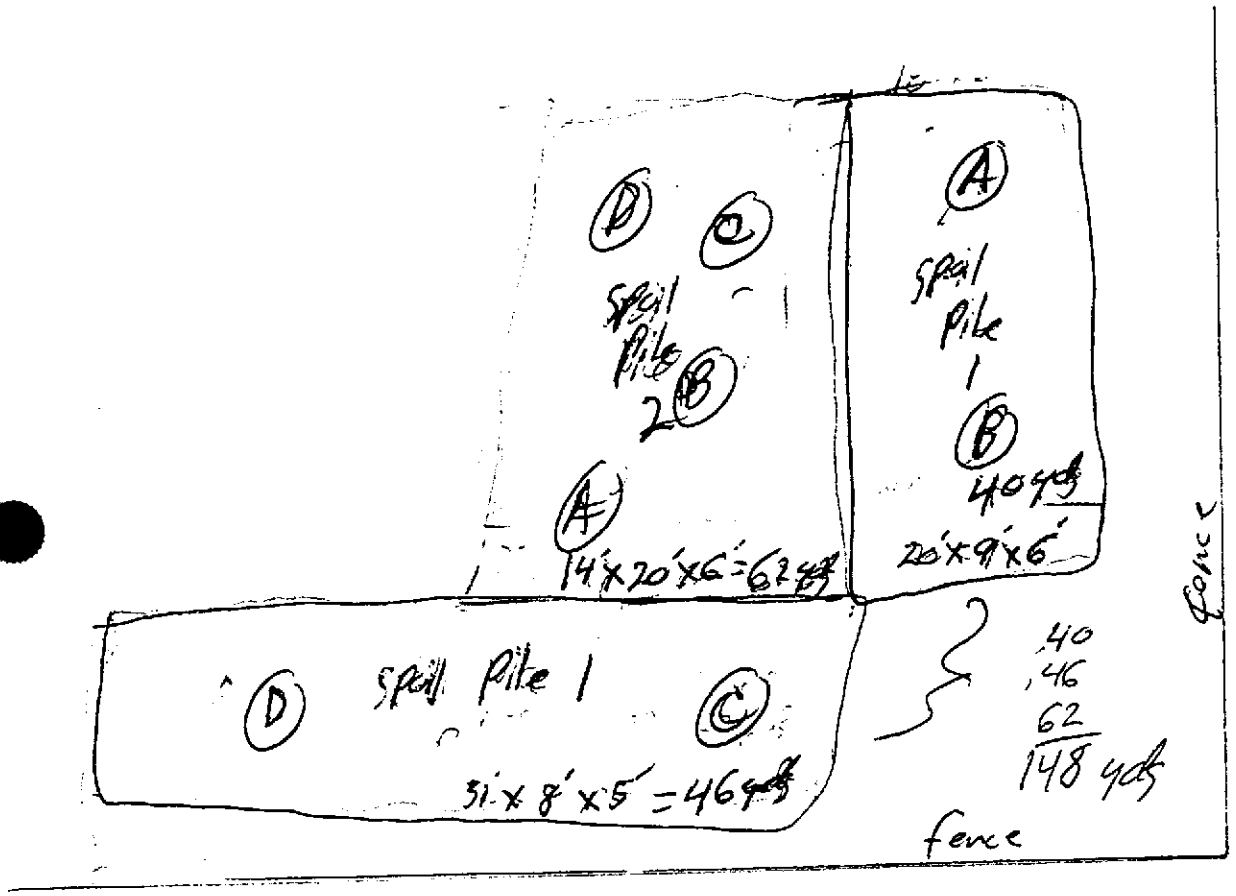
Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	TPH BTEX MTBE							Comments / Hazards
Spoil Pile 2-A	Soil	1 Sleeve	No	8-13-99 / Noon								
Spoil Pile 2-B	Soil	1	No	8-13-99 / Noon	V	Composite 4 into 1						
Spoil Pile 2-C	Soil	1	No	8-13-99 / Noon								
Spoil Pile 2-D	Soil	1	No	8-13-99 / Noon								

Relinquished by: Gary Conover	Date: 8/13/99	Time: 12:30	Received by: [illegible signature]	Lab Comments
Relinquished by:	Date:	Time:	Received by:	
Relinquished by:	Date:	Time:	Received by:	

8-12-99 8:15 Am DTW 8.12'

12:33 2509b DTW 8.90'

2509b DTW 9.42'



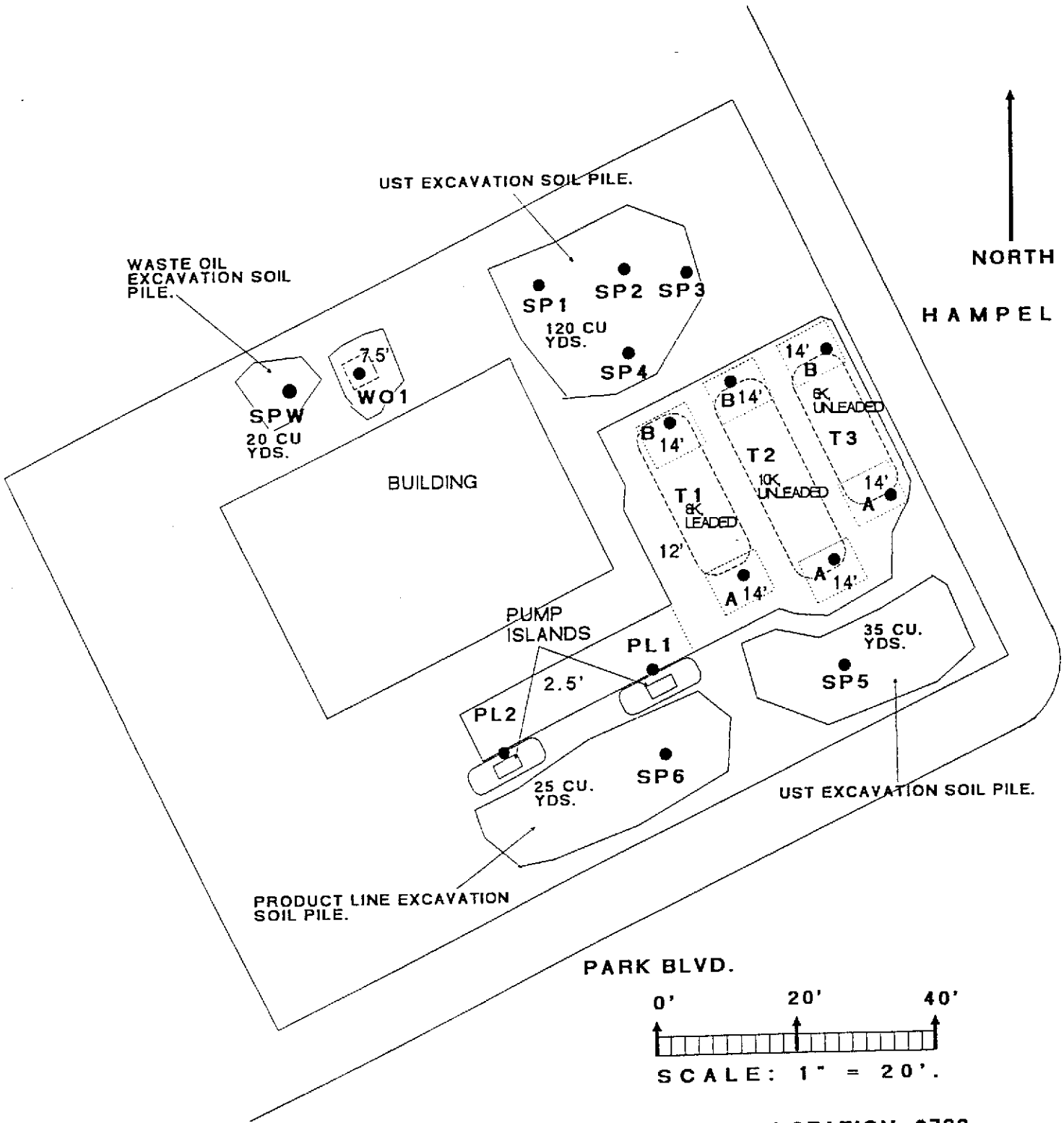
SP1 96 yds

SP2 = 62 yds

North

4035 Park Blvd

Oakland, CA



DESERT PETROLEUM STATION #793
4035 PARK BLVD..
OAKLAND, CALIFORNIA 94602

EXPLANATION:

2.5' 7.5' 12' 14'	EXCAVATION AND/OR SAMPLE DEPTH BELOW SURFACE.
T1	REMOVED TANK DESIGNATION.
A 14'	SAMPLE POINT AND ID #.

FIGURE 1

UST AND PRODUCT LINE REMOVAL SAMPLING LOCATIONS

JUNE 23, 1994

MATRIX
CHAIN OF CUSTODY NO. 4525

MATRIX ENVIRONMENTAL LABORATORIES (916) 635-3962 FAX: (916) 635-9331

C.O.C. LOG-IN

PROJECT I.D. Desert - Oakland

PAGE 1 OF 1

CLIENT CHAIN OF CUSTODY #

LAB I.D. #	SAMPLE I.D.	DATE SAMPLED	TIME SAMPLED	MATRIX	NO. of CONTAINERS	BTEX	TPH (TPH-G)	TPH-D	624/8240	625/8270	418/O&G	5520/503 O&G	METALS CAM 5	TLC Pb	SAMPLE CONDITION	ICED
942014	T1 A	6/23/94	1125	Soil	1	✓	✓							✓		
942015	T1 B		1137		1	✓	✓							✓		
942016	T2 A		1120		1	✓	✓									
942017	T2 B		1115		1	✓	✓									
942018	T3 A		1620		1	✓	✓				Void					
942019	T3 B		1615		1	✓	✓									
942020	WO-1		1630		1	✓	✓	✓	✓	✓	X	✓	✓			
942021	PL-1		1651		1	✓	✓									
942022	PL-2		1700		1	✓	✓									
942023	SP-W		1710		1	✓	✓	✓				✓				
942024	SP1		1711		1	✓	✓									
942025	SP2		1712		1	✓	✓									
942026	SP3		1713		1	✓	✓									
942027	SP4		1714		1	✓	✓									
942028	SP5		1715		1	✓	✓									
942029	SP6		1716		1	✓	✓									

ANALYSIS

COMMENTS:

Normal Turnaround

8240/8270 modified w/ DL as 8010 for 8240

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
George Conner	6/24/94 0830	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	6/24/94 Date/Time 0830	Received for Laboratory by: (Signature)

Special Instructions

Report To: George Conner

Bill To: Western Geo-Engineers
1386 E. Bianoi St
Woodland, CA 95776

MATRIX
ENVIRONMENTAL LABORATORIES INC.

7/8/94

Western GEO
1386 Beamer Street
Woodland, Ca 95776

ATTN: George Converse

Re: Project: **Desert - Oakland**
Lab Reference Number: **4525**
Date Samples Received: **6/24/94**
No. Samples Received: **16**

The samples were received by Matrix Environmental Laboratories intact and in good condition. Samples conformed to required sampling protocols for the requested analyses and were accompanied by required documentation.

Please call if we can be of further assistance.

Sincerely,

Charles R. Todd, fa
Laboratory Director

3017 KILGORE ROAD #100 • RANCHO CORDOVA, CA 95742 PHONE (916) 635-9992 • FAX (916) 635-9331

MATRIX ENVIRONMENTAL LABORATORIES

ANALYSIS: BTEX, EPA 8020

CLIENT: **Western GEO**
CONTACT: **G. Converse**
COC No: **4525**
Project No: **Desert - Oakland**
Sample ID: **S P - W**
Lab ID: **942023**

Date Sampled: **6/23/94**
Date Received: **6/24/94**
Date Extracted: **6/27/94**
Date of Analysis: **6/27/94**
Matrix: **SOIL**

COMPOUND	mg/kg (ppm)	REPORTING LIMIT (ppm)
BENZENE	0.009	0.005
TOLUENE	0.008	0.005
ETHYLBENZENE	ND	0.005
TOTAL XYLENES	0.020	0.015
SURROGATE RECOVERY	103%	ACCEPTABLE RANGE 70% TO 130%

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

MATRIX ENVIRONMENTAL LABORATORIES

ANALYSIS: BTEX, EPA 8020

CLIENT: **Western GEO**
CONTACT: **G. Converse**
COC No: **4525**
Project No: **Desert - Oakland**
Sample ID: **S P 1**
Lab ID: **942024**

Date Sampled: **6/23/94**
Date Received: **6/24/94**
Date Extracted: **6/27/94**
Date of Analysis: **6/28/94**
Matrix: **SOIL**

COMPOUND	mg/kg (ppm)	REPORTING LIMIT (ppm)
BENZENE	ND	0.05
TOLUENE	0.46	0.05
ETHYLBENZENE	0.46	0.05
TOTAL XYLENES	4.9	0.15
SURROGATE RECOVERY	108%	ACCEPTABLE RANGE 70% TO 130%

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

This sample was diluted to a 1: 10 ratio and the reporting limits adjusted accordingly.

MATRIX ENVIRONMENTAL LABORATORIES

ANALYSIS: BTEX, EPA 8020

CLIENT: **Western GEO**
CONTACT: **G. Converse**
COC No: **4525**
Project No: **Desert - Oakland**
Sample ID: **S P 2**
Lab ID: **942025**

Date Sampled: **6/23/94**
Date Received: **6/24/94**
Date Extracted: **6/27/94**
Date of Analysis: **6/28/94**
Matrix: **SOIL**

COMPOUND	mg/kg (ppm)	REPORTING LIMIT (ppm)
BENZENE	ND	0.05
TOLUENE	0.22	0.05
ETHYLBENZENE	0.34	0.05
TOTAL XYLENES	3.5	0.15
SURROGATE RECOVERY	105%	ACCEPTABLE RANGE 70% TO 130%

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

This sample was diluted to a 1: 10 ratio and the reporting limits adjusted accordingly.

MATRIX ENVIRONMENTAL LABORATORIES

ANALYSIS: BTEX, EPA 8020

CLIENT: **Western GEO**
CONTACT: **G. Converse**
COC No: **4525**
Project No: **Desert - Oakland**
Sample ID: **S P 3**
Lab ID: **942026**

Date Sampled: **6/23/94**
Date Received: **6/24/94**
Date Extracted: **6/27/94**
Date of Analysis: **6/28/94**
Matrix: **SOIL**

COMPOUND	mg/kg (ppm)	REPORTING LIMIT (ppm)
BENZENE	ND	0.05
TOLUENE	0.08	0.05
ETHYLBENZENE	0.47	0.05
TOTAL XYLENES	2.6	0.15
SURROGATE RECOVERY	103%	ACCEPTABLE RANGE 70% TO 130%

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

This sample was diluted to a 1: 10 ratio and the reporting limits adjusted accordingly.

MATRIX ENVIRONMENTAL LABORATORIES

ANALYSIS: BTEX, EPA 8020

CLIENT: **Western GEO**
CONTACT: **G. Converse**
COC No: **4525**
Project No: **Desert - Oakland**
Sample ID: **S P 4**
Lab ID: **942027**

Date Sampled: **6/23/94**
Date Received: **6/24/94**
Date Extracted: **6/27/94**
Date of Analysis: **6/28/94**
Matrix: **SOIL**

COMPOUND	mg/kg (ppm)	REPORTING LIMIT (ppm)
BENZENE	ND	0.05
TOLUENE	0.13	0.05
ETHYLBENZENE	0.13	0.05
TOTAL XYLENES	1.8	0.15
SURROGATE RECOVERY	106%	ACCEPTABLE RANGE 70% TO 130%

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

This sample was diluted to a 1: 10 ratio and the reporting limits adjusted accordingly.

MATRIX ENVIRONMENTAL LABORATORIES

ANALYSIS: BTEX, EPA 8020

CLIENT: **Western GEO**
CONTACT: **G. Converse**
COC No: **4525**
Project No: **Desert - Oakland**
Sample ID: **S P 5**
Lab ID: **942028**

Date Sampled: **6/23/94**
Date Received: **6/24/94**
Date Extracted: **6/27/94**
Date of Analysis: **6/27/94**
Matrix: **SOIL**

COMPOUND	mg/kg (ppm)	REPORTING LIMIT (ppm)
BENZENE	0.011	0.005
TOLUENE	0.009	0.005
ETHYLBENZENE	0.14	0.005
TOTAL XYLENES	1.3	0.015
SURROGATE RECOVERY	100%	ACCEPTABLE RANGE 70% TO 130%

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

MATRIX ENVIRONMENTAL LABORATORIES

ANALYSIS: BTEX, EPA 8020

CLIENT: **Western GEO**
CONTACT: **G. Converse**
COC No: **4525**
Project No: **Desert - Oakland**
Sample ID: **S P 6**
Lab ID: **942029**

Date Sampled: **6/23/94**
Date Received: **6/24/94**
Date Extracted: **6/27/94**
Date of Analysis: **6/27/94**
Matrix: **SOIL**

COMPOUND	mg/kg (ppm)	REPORTING LIMIT (ppm)
BENZENE	0.006	0.005
TOLUENE	0.013	0.005
ETHYLBENZENE	0.048	0.005
TOTAL XYLENES	0.51	0.015
SURROGATE RECOVERY	102%	ACCEPTABLE RANGE 70% TO 130%

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

MATRIX ENVIRONMENTAL LABORATORIES

ANALYSIS: BTEX SPIKE SUMMARY

CLIENT: **Western GEO**
CONTACT: **G. Converse**
COC No: **4525**
Project No: **Desert - Oakland**
Sample ID: **N/A**
Lab ID: **LCS/LCSD**

Date Sampled: **N/A**
Date Received: **N/A**
Date Extracted: **6/27/94**
Date of Analysis: **6/27/94**
Matrix: **SOIL**

COMPOUND	CONC SPIKED mg/kg (ppm)	CONC MEASURED		PERCENT RECOVERY		
		LCS	LCSD	LCS	LCSD	RPD
BENZENE	0.588	0.604	0.645	103%	110%	7%
TOLUENE	0.896	0.859	0.915	96%	102%	6%
ETHYLBENZENE	0.690	0.609	0.647	88%	94%	6%
TOTAL XYLENES	1.76	1.54	1.63	87%	92%	6%

LCS= LABORATORY CONTROL SPIKE
LCSD= LABORATORY CONTROL SPIKE DUPLICATE
RPD= RELATIVE PERCENT DIFFERENCE
CONC= CONCENTRATION

MATRIX ENVIRONMENTAL LABORATORIES

3017 KILGORE ROAD #100 RANCHO CORDOVA, CA 95742 PHONE (916) 635-3962 FAX (916) 635-9331

ANALYSIS: TPH-GASOLINE SPIKE SUMMARY

CLIENT: **Western GEO**
CONTACT: **G. Converse**
COC No: **4525**
Project No: **Desert - Oakland**
Sample ID: **N/A**
Lab ID: **LCS/LCSD**

Date Sampled: **N/A**
Date Received: **N/A**
Date Extracted: **6/27/94**
Date of Analysis: **6/27/94**
Matrix: **SOIL**

COMPOUND	CONC SPIKED mg/kg (ppm)	CONC MEASURED		PERCENT RECOVERY		RPD
		LCS	LCSD	LCS	LCSD	
GASOLINE	4.55	4.64	4.93	102%	108%	6%

LCS= LABORATORY CONTROL SPIKE
LCSD= LABORATORY CONTROL SPIKE DUPLICATE
RPD= RELATIVE PERCENT DIFFERENCE
CONC= CONCENTRATION

MATRIX ENVIRONMENTAL LABORATORIES

3017 KILGORE ROAD #100 RANCHO CORDOVA, CA 95742 PHONE (916) 635-3962 FAX (916) 635-9331

ANALYSIS: TPH-GASOLINE by EPA 5030 PURGE-AND-TRAP

CLIENT: **Western GEO**
CONTACT: **G. Converse**
COC No: **4525**
Project No: **Desert - Oakland**
Matrix: **SOIL**

Date Sampled: **6/23/94**
Date Received: **6/24/94**
Date Extracted: **6/27/94**
Date of Analysis: **6/27-28/1994**

Sample ID	Lab ID		GASOLINE mg/kg (ppm)	REPORTING LIMIT mg/kg (ppm)	SURROGATE RECOVERY
T 1 A	942014		2.0	1.0	117%
T 1 B	942015		ND	1.0	115%
T 2 A	942016		ND	1.0	113%
T 2 B	942017		ND	1.0	112%
T 3 A	942018		ND	1.0	109%
T 3 B	942019		ND	1.0	104%
W O - 1	942020		3.0	1.0	103%
P L - 1	942021		ND	1.0	98%
P L - 2	942022		ND	1.0	97%
S P - W	942023		ND	1.0	96%
S P 1	942024	* *	110	10	114%
S P 2	942025	* *	200	10	120%
S P 3	942026	* *	170	10	112%
S P 4	942027	* *	68	10	109%
S P 5	942028	* *	110	10	106%
S P 6	942029		19	1.0	105%
N/A	Method Blank		ND	1.0	107%

* * These samples were analyzed at 1: 10 dilution and the reporting limits adjusted accordingly.

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

MATRIX ENVIRONMENTAL LABORATORIES

3017 KILGORE ROAD #100 RANCHO CORDOVA, CA 95742 PHONE (916) 635-3962 FAX (916) 635-9331

ANALYSIS: TPH MATRIX SPIKE SUMMARY

Client: **Western GEO**
Contact: **G. Converse**
COC No: **4525**
Project No: **Desert - Oakland**
Matrix: **SOIL**

Date Sampled: **N/A**
Date Received: **N/A**
Date Extracted: **7/1/94**
Date of Analysis: **7/1/94**

COMPOUND	CONC SPIKED (mg/L)	CONC MEASURED		PERCENT RECOVERY		RPD
		LCS	LCSD	LCS	LCSD	
DIESEL	100	98	103	98%	103%	5%

LCS= LABORATORY CONTROL SPIKE
LCSD= LABORATORY CONTROL SPIKE DUPLICATE
RPD= RELATIVE PERCENT DIFFERENCE
CONC= CONCENTRATION

MATRIX ENVIRONMENTAL LABORATORIES

3017 KILGORE ROAD #100 RANCHO CORDOVA, CA 95742 PHONE (916) 635-3962 FAX (916) 635-9331

ANALYSIS: TPH-D, EPA 8015 mod.

Client: Western GEO
Contact: G. Converse
COC No: 4525
Project No: Desert - Oakland
Matrix: SOIL

Date Sampled: 6/23/94
Date Received: 6/24/94
Date Extracted: 7/1/94
Date of Analysis: 7/1/94

Lab ID	Sample ID	Diesel mg/Kg (ppm)	REPORTING LIMIT mg/Kg (ppm)
Method Blank	N/A	ND	1.
942020	WO-1	ND	1.
942023	SP-W	ND	1.

NOTE: (ND) =NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

MATRIX ENVIRONMENTAL LABORATORIES

ANALYSIS: EPA 418.1, OIL & GREASE by IR SPECTROPHOTOMETER

CLIENT: **Western GEO**
CONTACT: **G. Converse**
COC No: **4525**
Project No: **Desert - Oakland**
Sample ID: **SP-W**
Lab ID: **942023**

Date Sampled: **6/23/94**
Date Received: **6/24/94**
Date Extracted: **7/1/94**
Date of Analysis: **7/5/94**
Matrix: **SOIL**

COMPOUND	(mg/Kg) (ppm)	REPORTING LIMIT (ppm)
OIL & GREASE	1,100	50

NOTE: (ND) NOT DETECTED AT OR ABOVE REPORTING LIMITS.

MATRIX ENVIRONMENTAL LABORATORIES

ANALYSIS: EPA 418.1; OIL & GREASE SPIKE SUMMARY

CLIENT: **Western GEO**
CONTACT: **G. Converse**
COC No: **4525**
Project No: **Desert - Oakland**
Sample ID: **N/A**
Lab ID: **LCS/LCSD**

Date Sampled: **N/A**
Date Received: **N/A**
Date Extracted: **7/1/94**
Date of Analysis: **7/5/94**
Matrix: **SOIL**

COMPOUND	CONC SPIKED	CONC MEASURED		PERCENT RECOVERY		
		LCS	LCSD	LCS	LCSD	RPD
OIL & GREASE	500	400	493	80%	99%	21%

LCS= LABORATORY CONTROL SPIKE
LCSD= LABORATORY CONTROL SPIKE DUPLICATE
RPD= RELATIVE PERCENT DIFFERENCE
CONC= CONCENTRATION

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CA ELAP# 1753

C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 99-1248
Client: Western Geo-Engineers
Project: DP 793 - Trench

Date Reported: 08/16/99

Gasoline,BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 99-1248-01 Client ID: SPOIL PILE 2(A-D)				08/13/99	SOIL COMP. 08/13/99
Gasoline	8015M	ND			
Benzene	8020	0.006	mg/Kg		
Ethylbenzene	8020	ND			
MTBE	8020	*ND			
Toluene	8020	ND			
Xylenes	8020	0.023	mg/Kg		

*Confirmed by GC/MS method 8260.

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CA ELAP# 1753

C E R T I F I C A T E O F A N A L Y S I S

Quality Control/Quality Assurance

Lab Number: 99-1248
Client: Western Geo-Engineers
Project: DP 793 - Trench

Date Reported: 08/16/99

Gasoline, BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Reporting Limit	Unit	Blank	Avg MS/MSD Recovery	RPD
Gasoline	8015M	0.5	mg/Kg	ND	96	2
Benzene	8020	.005	mg/Kg	ND	96	5
Ethylbenzene	8020	.005	mg/Kg	ND	95	5
Toluene	8020	.005	mg/Kg	ND	95	5
Xylenes	8020	.010	mg/Kg	ND	99	4
MTBE	8020	.005	mg/Kg	ND	80	1

ELAP Certificate NO: 1753
Reviewed and Approved

John A. Murphy, Laboratory Director

1M124

North State Environmental Analytical Laboratory
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Phone: (650) 266-4563 Fax: (650) 266-4560

Chain of Custody / Request for Analysis
Lab Job No.:________ Page___of___

Client: Western Geo-Eng.	Report to: George Converse	Phone: 530 668-5300	Turnaround Time: 24 hour
Mailing Address: 1386 E Beamer St Woodland CA ~~95660~~ 95776	Billing to: WGE	Fax:	Date: 8-13-99
		PO# / Billing Reference:	Sampler: Converse

Project / Site Address: DP 793 - Trench

Analysis Requested: TPHg BTEX MTBE

Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	TPHg BTEX MTBE							Comments / Hazards
Spoil Pile 2-A	Soil	1 Sleeve	No	8-13-99 / noon								
Spoil Pile 2-B	}	1 }	}	} / }	✓	Composite 4 into 1						
Spoil Pile 2-C	}	1 }	}	} / }								
Spoil Pile 2-D	}	1 }	}	} / }								

Relinquished by: G. Converse	Date: 8/13/99	Time: 12:30	Received by: [signature]	Lab Comments
Relinquished by: [signature]	Date: 8/13/99	Time: 1333	Received by: [signature] NSE	
Relinquished by:	Date:	Time:	Received by:	

North State Environmental Laboratory
CA ELAP # 1353
90 South Spruce Avenue, Suite V • South San Francisco, CA 94080 • (650) 266-4563 • FAX (650) 266-4560

C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 99-1216
Client: Western Geo-Engineers
Project: Desert Petoleum 793 / 4035 Park Blvd.
Oakland, CA
Date Reported: 08/13/99

Gasoline, BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 99-1216-16 Client ID: SOIL PILE-A,B,C,D-1				08/06/99	SOIL COMP. 08/12/99
Gasoline	8015M	7.9	mg/Kg		
Benzene	8020	0.006	mg/Kg		
Ethylbenzene	8020	0.064	mg/Kg		
MTBE	8020	ND			
Toluene	8020	0.051	mg/Kg		
Xylenes	8020	0.52	mg/Kg		

*Confirmed by GC/MS method 8260

-WEGE-
WESTERN
GEO-ENGINEERS
CALIF. CONTRACTOR #513857
REGISTERED GEOLOGISTS

1386 EAST BEAMER STREET
WOODLAND CA 95776-6003
(530) 668-5300,
FAX (530) 662-0273
Wege@mother.com

8/17/99

DATE: ~~8/13/99~~

FROM: Lisa

TO: Paul Sherman
BJ Landfill

FAX #: (415) 875-1154

TOTAL PAGES
INCLUDING THIS PAGE
22 ~~2~~

Chain of Custody for both stockpile composits
TPHg levels from original tank pull samples
Stockpile sample results from original tank pull samples
Figure showing where samples obtained
from spoil pile 1 and spoil pile 2

North State Environmental
Chemical Waste Disposal · Trucking · Consulting

FAX

Date 8/16

Number of pages including cover sheet-

TO: Attn: Geoff Converse

FROM: Ed

North State Environmental Lab
90 S. Spruce Avenue, Suite W
South San Francisco, CA 94080

Phone 650.266.4563
Fax Phone 650.266.4560

Phone

Fax Phone 530 662 0273

REMARKS: ☐ Urgent ☐ For your review ☐ Reply ASAP ☐ Please Comment

-WEGE-

WESTERN
GEO-ENGINEERS
CALIF. CONTRACTOR #513857
REGISTERED GEOLOGISTS

1386 EAST BEAMER STREET
WOODLAND CA 95776-6003
(530) 668-5300,
FAX (530) 662-0273
Wege@mother.com

FROM: George

DATE: 8/17/99

TO: Paul Sharman
BJ Landfill

FAX #: (415) 875-1154

TOTAL PAGES
INCLUDING THIS PAGE

4

COMMENTS: This one represents 62 yards of 158 yards total..

North State Environmental
Chemical Waste Disposal · Trucking · Consulting

FAX

Date 8/13

Number of pages including cover sheet- 2

TO: Western Geo

Phone

Fax Phone 530 662 0223

FROM: Ed

North State Environmental Lab
90 S. Spruce Avenue, Suite W
South San Francisco, CA 94080

Phone 650.266.4563
Fax Phone 650.266.4560

REMARKS: ☐ *Urgent* ☐ *For your review* ☐ *Reply ASAP* ☐ *Please Comment*

AUG-13-99 02:12

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CA ELAP# 1253

C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 99-1216
Client: Western Geo-Engineers
Project: Desert Petoleum 793 / 4035 Park Blvd.
Oakland, CA
Date Reported: 08/13/99

Gasoline,BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 99-1216-01 Client ID: RS8-10'				08/02/99	SOIL
					08/12/99
Gasoline	8015M	160	mg/Kg		
Benzene	8020	0.49	mg/Kg		
Ethylbenzene	8020	2.6	mg/Kg		
MTBE	8020	ND			
Toluene	8020	0.79	mg/Kg		
Xylenes	8020	6.2	mg/Kg		
Sample: 99-1216-02 Client ID: RS9-6'				08/03/99	SOIL
					08/12/99
Gasoline	8015M	ND			
Benzene	8020	ND			
Ethylbenzene	8020	ND			
MTBE	8020	ND			
Toluene	8020	ND			
Xylenes	8020	ND			
Sample: 99-1216-03 Client ID: RS9-10'				08/03/99	SOIL
					08/12/99
Gasoline	8015M	67	mg/Kg		
Benzene	8020	0.41	mg/Kg		
Ethylbenzene	8020	0.87	mg/Kg		
MTBE	8020	ND			
Toluene	8020	2.0	mg/Kg		
Xylenes	8020	4.9	mg/Kg		

*Confirmed by GC/MS method 8260

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CA ELAP # 1755

C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 99-1216
Client: Western Geo-Engineers
Project: Desert Petoleum 793 / 4035 Park Blvd.
Oakland, CA
Date Reported: 08/13/99

Gasoline,BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 99-1216-04 Client ID: RS10-6'				08/05/99	SOIL
					08/12/99
Gasoline	8015M	ND			
Benzene	8020	0.005	mg/Kg		
Ethylbenzene	8020	ND			
MTBE	8020	ND			
Toluene	8020	ND			
Xylenes	8020	ND			
Sample: 99-1216-05 Client ID: RS10-9.5'				08/05/99	SOIL
					08/12/99
Gasoline	8015M	870	mg/Kg		
Benzene	8020	11	mg/Kg		
Ethylbenzene	8020	21	mg/Kg		
MTBE	8020	ND			
Toluene	8020	62	mg/Kg		
Xylenes	8020	120	mg/Kg		
Sample: 99-1216-06 Client ID: TRENCH-A-15'				08/04/99	SOIL
					08/12/99
Gasoline	8015M	ND			
Benzene	8020	0.072	mg/Kg		
Ethylbenzene	8020	0.008	mg/Kg		
MTBE	8020	ND			
Toluene	8020	0.011	mg/Kg		
Xylenes	8020	0.015	mg/Kg		

*Confirmed by GC/MS method 8260

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CA ELAP # 1753

C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 99-1216
Client: Western Geo-Engineers
Project: Desert Petoleum 793 / 4035 Park Blvd.
Oakland, CA
Date Reported: 08/13/99

Gasoline, BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 99-1216-07 Client ID: TRENCH-B-10'				08/04/99	SOIL
					08/12/99
Gasoline	8015M	140	mg/Kg		
Benzene	8020	2.0	mg/Kg		
Ethylbenzene	8020	2.4	mg/Kg		
MTBE	8020	ND			
Toluene	8020	4.0	mg/Kg		
Xylenes	8020	10	mg/Kg		
Sample: 99-1216-08 Client ID: TRENCH-C-14'				08/04/99	SOIL
					08/12/99
Gasoline	8015M	ND			
Benzene	8020	0.009	mg/Kg		
Ethylbenzene	8020	0.005	mg/Kg		
MTBE	8020	ND			
Toluene	8020	0.017	mg/Kg		
Xylenes	8020	0.031	mg/Kg		
Sample: 99-1216-09 Client ID: TRENCH-D-10.5'				08/05/99	SOIL
					08/12/99
Gasoline	8015M	ND			
Benzene	8020	ND			
Ethylbenzene	8020	ND			
MTBE	8020	ND			
Toluene	8020	0.006	mg/Kg		
Xylenes	8020	0.017	mg/Kg		

*Confirmed by GC/MS method 8260

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CA ELAP # 1753

C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 99-1216
Client: Western Geo-Engineers
Project: Desert Petoleum 793 / 4035 Park Blvd.
Oakland, CA
Date Reported: 08/13/99

Gasoline, BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 99-1216-10 Client ID: TRENCH-E-5'				08/05/99	SOIL
Gasoline	8015M	4000	mg/Kg		08/12/99
Benzene	8020	17	mg/Kg		
Ethylbenzene	8020	110	mg/Kg		
MTBE	8020	*ND<0.5	mg/Kg		
Toluene	8020	260	mg/Kg		
Xylenes	8020	580	mg/Kg		
Sample: 99-1216-11 Client ID: TRENCH-F-10.5'				08/05/99	SOIL
Gasoline	8015M	ND			08/12/99
Benzene	8020	0.064	mg/Kg		
Ethylbenzene	8020	0.010	mg/Kg		
MTBE	8020	ND			
Toluene	8020	0.015	mg/Kg		
Xylenes	8020	0.046	mg/Kg		
Sample: 99-1216-12 Client ID: TRENCH-G-7'				08/06/99	SOIL
Gasoline	8015M	1100	mg/Kg		08/12/99
Benzene	8020	1.4	mg/Kg		
Ethylbenzene	8020	34	mg/Kg		
MTBE	8020	4.5	mg/Kg		
Toluene	8020	70	mg/Kg		
Xylenes	8020	180	mg/Kg		

*Confirmed by GC/MS method 8260

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CA ELAP# 1753

C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 99-1216
Client: Western Geo-Engineers
Project: Desert Petoleum 793 / 4035 Park Blvd.
Oakland, CA
Date Reported: 08/13/99

Gasoline,BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 99-1216-13 Client ID: TRENCH-H-10.5'				08/06/99	SOIL
					08/12/99
Gasoline	8015M	ND			
Benzene	8020	ND			
Ethylbenzene	8020	ND			
MTBE	8020	ND			
Toluene	8020	ND			
Xylenes	8020	0.018	mg/Kg		
Sample: 99-1216-14 Client ID: TRENCH-J-S'				08/06/99	SOIL
					08/12/99
Gasoline	8015M	ND			
Benzene	8020	ND			
Ethylbenzene	8020	ND			
MTBE	8020	ND			
Toluene	8020	ND			
Xylenes	8020	ND			
Sample: 99-1216-15 Client ID: TRENCH-J-10'				08/06/99	SOIL
					08/12/99
Gasoline	8015M	ND			
Benzene	8020	0.021	mg/Kg		
Ethylbenzene	8020	0.011	mg/Kg		
MTBE	8020	ND			
Toluene	8020	0.079	mg/Kg		
Xylenes	8020	0.057	mg/Kg		

*Confirmed by GC/MS method 8260

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CA ELAP # 1753

C E R T I F I C A T E O F A N A L Y S I S

Quality Control/Quality Assurance

Lab Number: 99-1216
Client: Western Geo-Engineers
Project: Desert Petoleum 793 / 4035 Park Blvd.
Oakland, CA
Date Reported: 08/13/99

Gasoline,BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Reporting Limit	Unit	Blank	Avg MS/MSD Recovery	RPD
Gasoline	8015M	0.5	mg/Kg	ND	101	3
Benzene	8020	.005	mg/Kg	ND	85	2
Ethylbenzene	8020	.005	mg/Kg	ND	102	0
Toluene	8020	.005	mg/Kg	ND	100	1
Xylenes	8020	.010	mg/Kg	ND	107	1
MTBE	8020	.005	mg/Kg	ND	77	2

ELAP Certificate NO:1753
Reviewed and Approved

John A.Murphy,Laboratory Director

North State Environmental Analytical Laboratory

90 South Spruce Avenue, Suite W, South San Francisco, CA 94080
Phone: (650) 266-4563 Fax: (650) 266-4560

Chain of Custody / Request for Analysis
Lab Job No.:_____Page___of___

Client: Western Geo-Eng.	Report to: Gary Conner	Phone: 530 668-5320	Turnaround Time: 24 hour
Mailing Address: 1386 E Beamer St. Woodland CA ~~95660~~ 95776	Billing to: WGE	Fax:	
		PO# / Billing Reference:	Date: 8-13-99
			Sampler: Conner

Project / Site Address: DP 743 - Trench

Analysis Requested

Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	TPH/BTEX MTBE						Comments / Hazards
Soil Pile 2-A	Soil	1 sleeve	No	8-13-99 / noon							
Soil Pile 2-B		1			V	Composite	4 jars	1			
Soil Pile 2-C		1									
Soil Pile 2-D		1									

Relinquished by: Gary Conner	Date: 8/13/99	Time: 12:30	Received by:	Lab Comments
Relinquished by:	Date:	Time:	Received by:	
Relinquished by:	Date:	Time:	Received by:	

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CA ELAP# 1753
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C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 99-1248
Client: Western Geo-Engineers
Project: DP 793 - Trench

Date Reported: 08/16/99

Gasoline,BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 99-1248-01 Client ID: SPOIL PILE 2(A-D)				08/13/99	SOIL COMP.
					08/13/99
Gasoline	8015M	ND			
Benzene	8020	0.006	mg/Kg		
Ethylbenzene	8020	ND			
MTBE	8020	*ND			
Toluene	8020	ND			
Xylenes	8020	0.023	mg/Kg		

*Confirmed by GC/MS method 8260.

North State Environmental Laboratory
CA ELAP # 1753
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C E R T I F I C A T E O F A N A L Y S I S

Quality Control/Quality Assurance

Lab Number: 99-1248
Client: Western Geo-Engineers
Project: DP 793 - Trench

Date Reported: 08/16/99

Gasoline, BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Reporting Limit	Unit	Blank	Avg MS/MSD Recovery	RPD
Gasoline	8015M	0.5	mg/Kg	ND	96	2
Benzene	8020	.005	mg/Kg	ND	96	5
Ethylbenzene	8020	.005	mg/Kg	ND	95	5
Toluene	8020	.005	mg/Kg	ND	95	5
Xylenes	8020	.010	mg/Kg	ND	99	4
MTBE	8020	.005	mg/Kg	ND	80	1

ELAP Certificate NO:1753
Reviewed and Approved

John A. Murphy, Laboratory Director

99-1248

North State Environmental Analytical Laboratory

90 South Spruce Avenue, Suite W, South San Francisco, CA 94080
Phone: (650) 266-4563 Fax: (650) 266-4560

Chain of Custody / Request for Analysis
Lab Job No.:_____ Page___of___

Client: Western Geo-Eng.	Report to: Gary Conner	Phone: 530 668-5300	Turnaround Time: 24 hour
Mailing Address: 1386 E Beamer St Woodland CA 95776	Billing to: WGE	Fax:	Date: 8-13-99
		PO# / Billing Reference:	Sampler: Conner

Project / Site Address: DP 793 - Trench

Analysis Requested: TPH BTEX MTBE

Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	Comments / Hazards
Spoil Pile 2-A	Soil	1 Sleeve	No	8-13-99 / incon	V & Composite 4 into 1
Spoil Pile 2-B	"	1 "	"	"	
Spoil Pile 2-C	"	1 "	"	"	
Spoil Pile 2-D	"	1 "	"	"	

Relinquished by: Gary Conner	Date: 8/13/99	Time: 12:30	Received by:	Lab Comments
Relinquished by:	Date: 8/13/99	Time: 1333	Received by: Erin NSE	
Relinquished by:	Date:	Time:	Received by:	

APPENDIX M

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

Received
11-10-98

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

November 6, 1998

STID 1248

John Rutherford
Desert Petroleum Inc.
PO Box 1601
Oxnard, CA 93032

RE: Desert Petroleum site #793, 4035 Park Blvd., Oakland, CA 94602

Dear Mr. Rutherford,

This office has received and reviewed the following documents:

- an update of the investigation, dated September 30, 1998, by Western Geo-Engineers
- a letter from Derrik Williams, dated October 13, 1998
- a Third Quarter Monitoring Report dated October 23, 1998, by Western Geo-Engineers
- a revised site map from Western Geo-Engineers, dated October 29, 1998

The following are comments concerning these reports:

1. I discussed called Derrick Williams and had a discussion concerning the workplan. His comments are considered.
2. The quarterly report shows that the plume seems to be shrinking, although there is not any noticeable degradation in contamination the plume shows stability or degradation in benzene. A concern has been that the plume is not defined downgradient and that is the main reason for this workplan. The location of the proposed wells has been clarified. At Brighton Ave. the plume going up the hill will be intercepted by construction of a trench which leads back to a proposed recovery well.
3. Some of the ideal locations for monitoring are not available because the property owners decline to grant access. Secondary locations are then selected to allow for real description of the status of the plume.
4. The soil and groundwater study which was done found only extremely low levels of benzene in soil and groundwater in TP18, which was across Brighton Ave. near the sewer trench. It appears that the extent of contamination has been defined.
5. There will be weekly removal of any accumulated contaminants from the installed trench on Brighton Ave.
6. A natural attenuation study is being done to determine what additional nutrients may be needed to augment the tsp which was to be injected in the infiltration wells placed at 4035 Park Blvd. This has not yet been documented.

7. The current workplan, as amended, is acceptable. You are directed to begin fieldwork within 30 days of the receipt of this letter. Please contact this office at least 3 days prior to conducting the fieldwork.

If you have any questions or comments, please contact me directly at 510-567-6782.

Sincerely,

Thomas Peacock, Manager
Environmental Protection Division

cc: Tony Razi, 3609 East 14th St., Oakland, CA 94601
Alireza Shirazian, 409 Picadilly Pl., unit 6, San Bruno, CA 94066
George Converse, WEGE, 1386 E. Beamer St., Woodland CA 95776
Michael Gabriel, Glenview Neighborhood Association, 4200 Park Blvd., Box 111, Oakland, CA 94602
Golpad & Karimabadi, c/o Matt Haley, 1633 San Pablo Ave., Oakland, CA 94612
Attn: Shawn Stark, Councilmember Dick Spees' office, City of Oakland, One City Hall Plaza, 2nd Floor, Oakland, CA 94612
Attn: Nicole Brown, Councilmember John Russo's office, City of Oakland, One City Hall Plaza, 2nd Floor, Oakland CA 94612
Leroy Griffin, Oakland Fire Dept., OES, Haz Mat Mgmt Program, 1605 Martin Luther King Jr Dr., Oakland, CA 94612
Ralph Wheeler, City of Oakland, City Attorney's Office, One City Hall Plaza, Oakland, CA 94612
Steve Marquez, SWRCB, Cleanup Fund
Derrik Williams, 4032 Brighton Ave., Oakland, CA 94602
Lara Bise, Supervisor Keith Carson's Office (QIC 20101)
Charles Bryant, Secretary, City Planning Commission, 250 Frank H. Ogawa Plaza, 2nd Floor, Oakland, CA 94612

Thomas Peacock/file

je.1248-I

D793 - Excavation Permit

USA 538-874

EXCAVATION

Job Site 4026 BRIGHTON AV Parcel# 024 -0533-011-00 Appl# X9900319

Descr two monitoring wells Permit Issued 04/22/99

Work Type EXCAVATION-PRIVATE P C

USA # Util Co. Job # Acctg#:
Util Fund #:

	Applcnt	Phone#	Lic#	—License Classes—
Owner LEVITT RICHARD A & KAREN J				
Contractor WESTERN GEO-ENGINEERS	X	(916)668-5300	513957	C57
Arch/Engr				
Agent				

Applic Addr 420 W SOUTHWOOD DR, WOODLAND,CA, 95695

$246.00 TOTAL FEES PAID AT ISSUANCE

$41.00 Applic	$205.00 Permit
$.00 Process	$.00 Rec Mgmt
$.00 Gen Plan	$.00 Invstg
$.00 Other	

D793

CITY OF OAKLAND
Community & Economic Development Agency
250 Frank H. Ogawa Pl, Oakland CA, 94612
Phone: (510)238-3587 FAX: (510)238-2263

PAYMENT RECEIPT

ApplicationN: X9900319 PaymentN: 001

APPLICATION FEE	$41.00
EXCAVATION PERMIT	$205.00
Subtotal:	$246.00
Sales Tax:	$.00
****** TOTAL PAID:	$246.00
Check Payment:	$246.00

Payor: WESTERN GEO-ENGINEERCKS
Date: 04/22/99 Time: 13:33:36
By: ANL Register R03 ReceiptN 014565
****
ORIGINAL RECEIPT REQUIRED FOR REFUND
****

Date: 04/22/99 Net Paid: 246.00
By: ANL Register R03 Receipt# 014565

CITY OF OAKLAND
Office of Planning and Building

EXCAVATION PERMIT

TO EXCAVATE IN STREETS OR OTHER SPECIFIED WORK

CIVIL ENGINEERING

PERMIT NUMBER	SITE ADDRESS/LOCATION
X9900319	4026 BRIGHTON AV
APPROX. START DATE: 8-2-99 / APPROX. END DATE:	24-HOUR EMERGENCY PHONE NUMBER (Permit not valid without 24-Hour number): 1800 995 9343
CONTRACTOR'S LICENSE # AND CLASS: 513857	CITY BUSINESS TAX #

ATTENTION:

1) State law requires that the contractor/owner call *Underground Service Alert (USA)* two working days before excavating. This permit is not valid unless applicant has secured an inquiry identification number issued by USA. The USA telephone number is 1 (800) 642-2444. UNDERGROUND SERVICE ALERT (USA) #: _____

2) **48 hours prior to starting work, YOU MUST CALL (510) 238-3651 TO SCHEDULE AN INSPECTION.**

OWNER/BUILDER

I hereby affirm that I am exempt from the Contractor's License Law for the following reason (Sec. 7031.5 Business and Professions Code: Any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he is licensed pursuant to the provisions of the Contractor's License law Chapter 9 (commencing with Sec. 7000) of Division 3 of the Business and Professions Code, or that he is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than $500):

☐ I, as an owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business Professions Code: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or through his own employees, provided that such improvements are not intended or offered for sale. If however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he did not build or improve for the purpose of sale).

☐ I, as owner of the property, am exempt from the sale requirements of the above due to: (1) I am improving my principal place of residence or appurtenances thereto, (2) the work will be performed prior to sale, (3) I have resided in the residence for the 12 months prior to completion of the work, and (4) I have not claimed exemption on this subdivision on more than two structures more than once during any three-year period. (Sec. 7044 Business and Professions Code).

☐ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project, (Sec. 7044, Business and Professions Code: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractor's License law).

☐ I am exempt under Sec. _____. B&PC for this reason _____

WORKER'S COMPENSATION

☐ I hereby affirm that I have a certificate of consent to self-insure, or a certificate of Worker's Compensation Insurance, or a certified copy thereof (Sec. 3700, Labor Code).

Policy # _____ Company Name _____

☐ I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Worker's Compensation Laws of California (not required for work valued at one hundred dollars ($100) or less).

NOTICE TO APPLICANT: If, after making this Certificate of Exemption, you should become subject to the Worker's Compensation provisions of the Labor Code, you must forthwith comply with such provisions or this permit shall be deemed revoked. This permit is issued pursuant to all provisions of Title 12 Chapter 12.12 of the Oakland Municipal Code. It is granted upon the express condition that the permittee shall be responsible for all claims and liabilities arising out of work performed under the permit or arising out of permittee's failure to perform the obligations with respect to street maintenance. The permittee shall, and by acceptance of the permit agrees to defend, indemnify, save and hold harmless the City, its officers and employees, from and against any and all suits, claims, or actions brought by any person for or on account of any bodily injuries, disease or illness or damage to persons and/or property sustained or arising in the construction of the work performed under the permit or in consequence of permittee's failure to perform the obligations with respect to street maintenance. This permit is void 90 days from the date of issuance unless an extension is granted by the Director of the Office of Planning and Building.

I hereby affirm that I am licensed under provisions of Chapter 9 of Division 3 of the Business and Professions Code and my license is in full force and effect (if contractor), that I have read this permit and agree to its requirements, and that the above information is true and correct under penalty of law.

X _____ 4/22/99

Signature of Permittee ☐ Agent for ☒ Contractor ☐ Owner — Date

DATE STREET LAST RESURFACED: 1990	SPECIAL PAVING DETAIL REQUIRED? ☐ YES ☒ NO	HOLIDAY RESTRICTION? (NOV 1 - JAN 1) ☐ YES ☒ NO	LIMITED OPERATION AREA? (7AM-9AM & 4PM-6PM) ☐ YES ☒ NO
ISSUED BY: W. Lin		DATE ISSUED: 4/22/99	

D793
Encroachment Permit

CITY OF OAKLAND

DEVELOPMENT SERVICES DEPARTMENT • 1330 BROADWAY • OAKLAND, CALIFORNIA 94612

TDD 839-6451

USA 538-874

December 11, 1998

Desert Petroleum, Inc.
Convenience Management Group
P.O. Box 1601
Oxnard, CA 93032-1601

RE: MINOR ENCROACHMENT PERMIT FOR MONITORING WELL ALONG BRIGHTON AVENUE, OAKLAND

Dear Mr. Rutherford:

Enclosed are the Minor Encroachment Permit and Agreement and the Conditions for Granting a Minor Encroachment Permit allowing you to place two monitoring wells and a groundwater recovery trench within the public right-of-way of Brighton Avenue.

Before the permit will become effective, however, it must be signed by the person(s) having the legal authority to do so, properly notarized with notary acknowledgment slip(s) attached, and returned to this office to the attention of Marcel Uzegbu for recordation.

You must also obtain a street excavation permit from the Engineering Information Counter, 2nd Floor, 250 Frank Ogawa Plaza, prior to the start of the proposed work in the City right-of-way. For questions concerning the street excavation permit, call the Engineering Information Counter at (510) 238-4777 between 8 a.m. and 4 p.m., Monday through Friday.

If you have any other questions regarding this minor encroachment permit, please call Marcel Uzegbu at (510) 238-2177.

Very truly yours,

CALVIN N. WONG
Chief of Building Services

By Philip A. Grubstick
PHILIP A. GRUBSTICK
Plan Check/Engineering Services Manager

Enclosures

Recording requested by:
City of Oakland

When Recorded Mail to:
City of Oakland
Community & Econ. Develop. Agency
Building Services, Eng. info.
250 Frank Ogawa, 2nd Floor
Oakland, CA 94612

TAX ROLL PARCEL NUMBER
(ASSESSOR'S REFERENCE NUMBER)

024	0533	007	
MAP	BLOCK	PARCEL	SUB

Address: 4035 Park Boulevard

-----Space Above For Recorder's Use Only-------

MINOR ENCROACHMENT PERMIT AND AGREEMENT

Desert Petroleum, Inc, owners of that certain property described in the Grant Deed recorded March 1, 1996, Series No. 96-0051296, in the Office of the Recorder, Alameda County, California and commonly known as 4035 Park Boulevard, is hereby granted a Conditional Revocable Permit to encroach into the public right-of-way of Brighton Avenue with two monitoring wells, and a groundwater recovery trench. The location of said encroachment shall be as delineated in Exhibit 'A' attached hereto and made a part hereof.

The permittees agree to comply with and be bound by the conditions for granting an Encroachment Permit attached hereto and made a part hereof.

This agreement shall be binding upon the undersigned, the present owners of the property described above, and their successors in interest thereof.

In witness whereof, I have set my signature this day of , 1998.

DESERT PETROLEUM, INC

JOHN RUTHERFORD
Environmental Manager

-- -- -- -- -- -- -- -- -- --Below For Official Use Only-- --

CITY OF OAKLAND

Dated_____

By: _____
CALVIN N. WONG
Chief of Building Services

For:
WILLIAM CLAGGETT
Director of Community &
Economic Development Agency

To: Desert Petroleum, Inc.

Address: P.O. Box 1601, Oxnard, CA 93032-1601

RE: Minor Encroachment Permit for Monitoring Wells along Brighton Avenue

CONDITIONS FOR GRANTING A MINOR ENCROACHMENT PERMIT

1. That this permit shall be revocable at the pleasure of the Chief of Building Services.

2. That the permittee, by the acceptance, either expressed or implied, of the minor encroachment permit hereby disclaims any right, title, or interest in or to any portion of the public sidewalk or street area, and agrees that said temporary use of said area does not constitute an abandonment on the part of the City of Oakland of any of its rights for street purposes and otherwise.

3. The permittee shall maintain in force and effect at all times that said encroachment occupies said public sidewalk or street area, good and sufficient public liability insurance in the amount of $300,000 for each occurrence, and property damage insurance in the amount of $50,000 for each occurrence, both including contractual liability insuring the City of Oakland against any and all claims arising out of the existence of said encroachment in said public sidewalk or street area, and that a certificate of such insurance and subsequent notices of the renewal thereof, shall be filed with the Chief of Building Services of the City of Oakland, and that such certificate shall state that said insurance coverage shall not be canceled or be permitted to lapse without thirty (30) days written notice to said Chief of Building Services. The Permittee also agrees that the City may review the type and amount of insurance required of the Permittee every five (5) years and may require the permittee to increase the amount of and/or change the type of insurance coverage required.

4. That the permittee, by the acceptance, either expressed or implied, of this revocable permit shall be solely and fully responsible for the repair or replacement of any portion or all of said improvements in the event that said improvements shall have failed or have been damaged to the extent of creating a menace or of becoming a hazard to the safety of the general public; and that the permittee shall be liable for the expenses connected therewith.

5. That the permittee is aware that the proposed work is out of the ordinary and does not comply with City standard installations. Permittee is also aware that the City has to conduct work in the public right-of-way, which may include, but may not be limited to, excavation, trenching, and relocation of its facilities, all of which may damage encroachments. Permittee is further aware that the City takes no responsibility for repair or replacement of encroachments, which are damaged by the City or its contractors. That the permittee, by the acceptance, either expressed or implied, of the encroachment permit hereby agrees that upon receipt of notification from the City, permittee shall immediately repair or replace within 30 days all damages to permittee's encroachments within the public right-of-way which are damaged by the City or its contractors in carrying out the City's work. Permittee agrees to employ interim measures required and approved by the City until repair or replacement work is completed.

6. That upon the termination of the permission herein granted, permittee shall immediately remove said encroachment from the sidewalk and street area, and any damage resulting therefrom shall be repaired to the satisfaction of the Chief of Building Services.

7. That the permittee shall file with the City of Oakland for recordation a Minor Encroachment Permit and Agreement, and shall be bound by and comply with all the terms and conditions of said permit.

8. That said permittee shall obtain an excavation permit prior to the construction and a separate excavation permit prior to the removal of the ground water monitoring wells.

9. That said permittee shall provide to the City of Oakland an AS BUILT plan showing the actual location of the ground water monitoring wells and the results of all data collected from the monitoring wells.

10. That said permittee shall remove the monitoring wells and repair any damage to the sidewalk or street area in accordance with City standards two (2) years after construction or as soon as monitoring is complete.

11. That said permittee shall notify Building Services, Community and Economic Development Agency after the monitoring well(s) are removed and the sidewalk or street area restored to initiate the procedure to rescind the minor encroachment permit.

12. That monitoring well covers installed within the sidewalk area shall have a skid proof surface. A pre-cast concrete utility box may be used in conjunction with the bolted cast iron cover with City approval.

13. That the ground water monitoring well casting and cover shall be cast iron and shall meet H-20 load rating. The cover shall be secured with a minimum of two stainless steel bolts. Bolts and cover shall be mounted flush with the surrounding surface.

14. That the permittee acknowledges that the City makes no representations or warranties as to the conditions beneath said encroachment. By accepting this revocable permit, permittee agrees that it will use the encroachment area at its own risk, is responsible for the proper coordination of its activities with all other permittees, underground utilities, contractors, or workmen operating within the encroachment area and for the safety of itself and any of its personnel in connection with its entry under this revocable permit.

15. That the permittee acknowledges that the City is unaware of the existence of any hazardous substances beneath the encroachment area, and hereby waives and fully releases and forever discharges the City and its officers, directors, employees, agents, servants, representatives, assigns and successors from any and all claims, demands, liabilities, damages, actions, causes of action, penalties, fines, liens, judgments, costs, or expenses whatsoever (including, without limitation, attorneys' fees and costs), whether direct or indirect, known or unknown, foreseen

or unforeseen, that may arise out of or in any way connected with the physical condition, or required remediation of the excavation area or any law or regulation applicable thereto, including, without limitation, the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (42 U.S.C. Sections 9601 et seq.), the Resource Conservation and Recovery Act of 1976 (42 U.S.C. Section 6901 et seq.), the Clean Water Act (33 U.S.C. Section 466 et Seq.), the Safe Drinking Water Act (14 U.S.C. Sections 1401-1450), the Hazardous Materials Transportation Act (49 U.S.C. Section 1801 et seq.), the Toxic Substance Control Act (15 U.S.C. Sections 2601-2629), the California Hazardous Waste Control Law (California Health and Safety Code Sections 25100 et seq.), the Porter-Cologne Water Quality Control Act (California Health and Safety Code Section 13000 et seq.), the Hazardous Substance Account Act (California Health and Safety Code Section 25300 et seq.), and the Safe Drinking Water and Toxic Enforcement Act (California Health and Safety Code Section 25249.5 et seq.).

16. Permittee further acknowledges that it understands and agrees that it hereby expressly waives all rights and benefits which it now has or in the future may have, under and by virtue of the terms of California Civil Code Section 1542, which reads as follows: "A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM MUST HAVE MATERIALLY AFFECTED HIS SETTLEMENT WITH THE DEBTOR."

17. Permittee recognizes that by waiving the provisions of this section, permittee will not be able to make any claims for damages that may exist, and to which, if known, would materially affect his/her decision to execute this encroachment agreement, regardless of whether permittee's lack of knowledge is the result of ignorance, oversight, error, negligence, or any other cause.

18. (a) That the permittee, by the acceptance of this revocable permit, agrees and promises to indemnify, defend, and hold harmless the City of Oakland, its officers, agents, and employees, to the maximum extent permitted by law, from any and all claims, demands, liabilities, damages, actions, causes of action, penalties, fines, liens, judgments, costs, or expenses whatsoever (including, without limitation, attorneys' fees and costs; collectively referred to as "claims"), whether direct or indirect, known or unknown, foreseen or unforeseen, to the extent that such claims were caused by the permittee, its agents, employees, contractors or representatives.

(b) That, if any contamination is discovered below or in the immediate vicinity of the encroachment, and the contaminants found are of the type used, housed, stored, processed or sold on or from the 4035 Park Boulevard, Oakland, California site, such shall amount to a rebuttable presumption that the contamination below, or in the immediate vicinity of, the encroachment was caused by the permittee, its agents, employees, contractors or representatives.

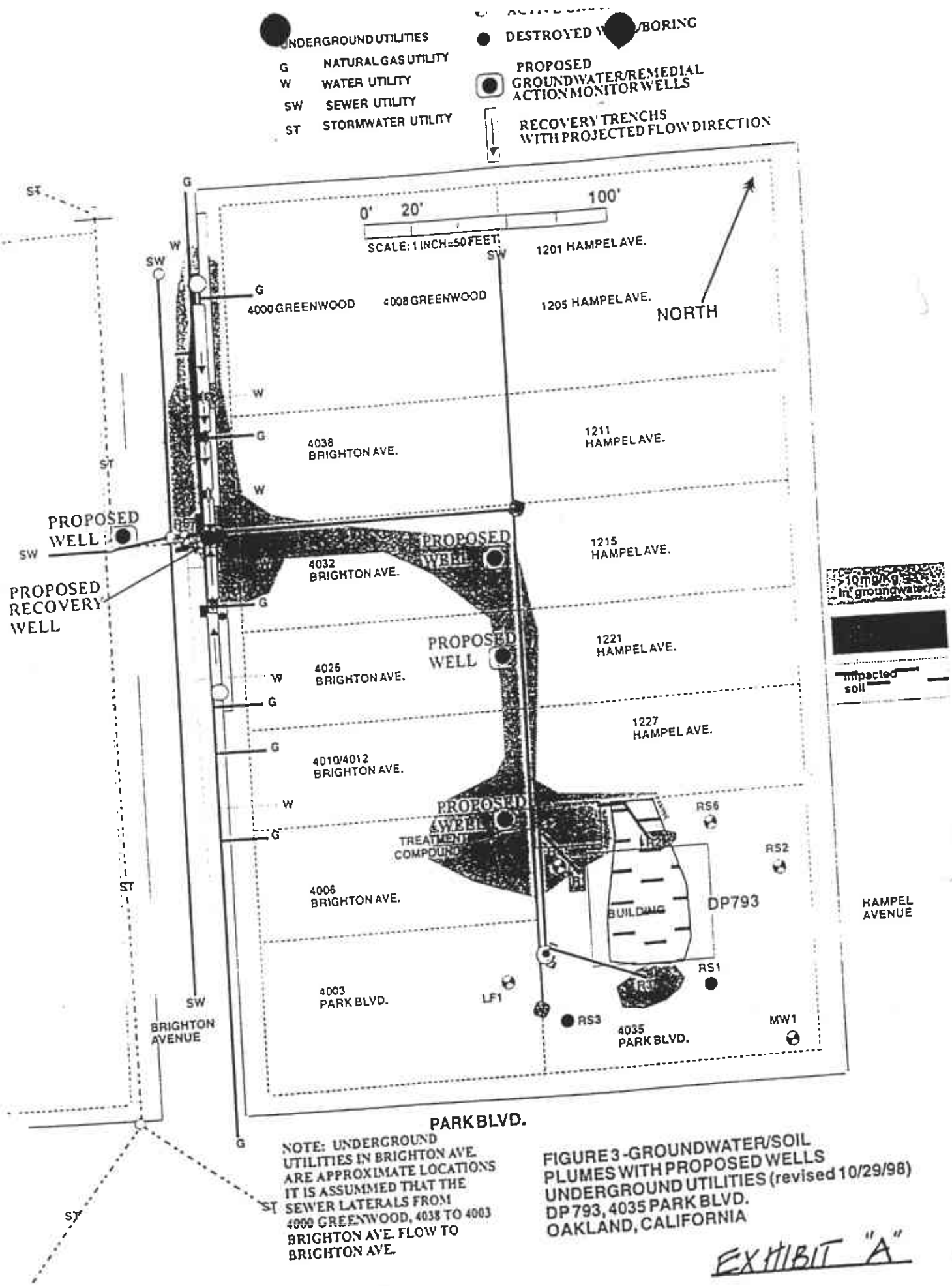
(c) That the permittee shall comply with all applicable federal, state, county and local laws, rules, and regulations governing the installation, maintenance, operation and abatement

of the encroachment.

(d) That the permittee hereby does remise, release, and forever discharge, and agree to defend, indemnify and save harmless, the City, its officers, agents and employees and each of them, from any and all actions, claims, and demands of whatsoever kind or nature, and any damage, loss or injury which may be sustained directly or by the undersigned and any other person or persons, and arising out of, or by reason of, the occupation of said public property, and the future removal of the above-mentioned encroachment.

19. That the herein above conditions shall be binding upon the permittee and the successive owners and assigns thereof.

20. That said Minor Encroachment Permit and Agreement shall take effect when all the conditions herein above set forth shall have been complied with to the satisfaction of the Chief of Building Services, and shall become null and void upon the failure of the permittee to comply with all conditions herein above set forth.



NOTE: UNDERGROUND UTILITIES IN BRIGHTON AVE. ARE APPROXIMATE LOCATIONS IT IS ASSUMMED THAT THE SEWER LATERALS FROM 4000 GREENWOOD, 4038 TO 4003 BRIGHTON AVE. FLOW TO BRIGHTON AVE.

FIGURE 3 - GROUNDWATER/SOIL PLUMES WITH PROPOSED WELLS UNDERGROUND UTILITIES (revised 10/29/98)
DP793, 4035 PARK BLVD.
OAKLAND, CALIFORNIA

EXHIBIT "A"

ALAMEDA COUNTY PUBLIC WORKS AGENCY

USA 538-874

WATER RESOURCES SECTION
951 TURNER COURT, SUITE 300, HAYWARD, CA 94545-2651
PHONE (510) 670-5575 ANDREAS GODFREY FAX (510) 670-5262
(510) 670-5248 ALVIN KAN

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT Brighton Avenue between Park Blvd. & Greenwood Avenue OAKLAND

California Coordinates Source / / ft. Accuracy ± ft.
CCN / / CCE / /
APN / / / /

CLIENT
Name DESERT PETROLEUM INC.
Address P.O. Box 1601 Phone (805) 654-8084
City Oxnard, CA Zip 93032

APPLICANT
Name WESTERN GEO-ENGINEERS
Fax (530) 662-0273
Address 1386 E. Beamer Street Phone (530) 668-5300
City Woodland, CA Zip 95776-6003

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	☐	General	☐
Water Supply	☐	Contamination	☐
Monitoring	☒	Well Destruction	☐

PROPOSED WATER SUPPLY WELL USE

New Domestic	☐	Replacement Domestic	☐
Municipal	☐	Irrigation	☐
Industrial	☐	Other monitoring	☒

DRILLING METHOD:

Mud Rotary	☐	Air Rotary	☐	Auger	☒
Cable	☐	Other	☐		

DRILLER'S LICENSE NO. C-57 513857

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 20 ft.
Surface Seal Depth 2 ft. Number 5 wells

GEOTECHNICAL PROJECTS
Number of Borings ____ Maximum
Hole Diameter ____ in. Depth ____ ft.

ESTIMATED STARTING DATE May 1, 1999
ESTIMATED COMPLETION DATE May 15, 1999

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE [signature] DATE 4/5/99

FOR OFFICE USE

PERMIT NUMBER 99WR180
WELL NUMBER
APN

PERMIT CONDITIONS

Circled Permit Requirements Apply

A. GENERAL
1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

B. WATER SUPPLY WELLS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

D. GEOTECHNICAL
Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

E. CATHODIC
Fill hole above anode zone with concrete placed by tremie.

F. WELL DESTRUCTION
See attached.

G. SPECIAL CONDITIONS

APPROVED [signature] DATE 5-3-99

KLEINFELDER

DAILY FIELD REPORT

Client Received Copy of this Report	[x] Yes [ ] No
Page	1 of 1

File Number: 44-000251	Project Name: PARK Blvd. ReceptoR	Location: OAKlAnd	Technician/Engineer: J.C.
Date: 8-16-99	Client: WesTERN Geo. Eng.	Contractor/Representative: Pile Const.	Time Arrived: 8:15
Daily Field Report Number:	Source of Fill: [ ] NATIVE [x] IMPORT	Gauge Number: 9701 Mileage: 14 R.T.	Time Departed: 12:15
Reviewed By:	Location of Fill: BACK-Fill Recepter TRENCH E of Briten Ave.	Results Reported To: John Pile	Travel Time (hours): 1 hr.
Date Reviewed:	Specified Compaction: 95%	Weather: CLEAR & Cool	Total Time (hours) (May not include minimum): 5 hrs.

Test Number	Test Location	Probe Depth (inches)	Test Elevation (feet)	Lab Max. Dry Density (lbs/cu ft)	Test Dry Density (lbs/cu ft)	Test Moisture %	% Of Max. Dry Density	Comments
	ReceptoR TRENCH (E) Side of Briten Ave.							Compact more with Jumping Jack
1	"	8"	-9 BFG	138.0	128.8	9.5	93	↓
2		8"	↓	138.0	128.6	8.0	93	↓
3		8"	↓	134.0	125.0	12.6	93	↓
4		8"	↓	134.0	125.1	9.8	93	↓
5		8"	↓	138.0	131.2	7.6	95	Retest 1
6		↓	↓	138.0	130.8	7.8	95	2
7		↓	↓	134.0	127.6	10.0	95	3
8		↓	↓	134.0	127.4	9.7	95	4

Any unresolved test (date/number): ______

Observations/Remarks: ARRived in THE AM. At (Project) PARK Blvd. Recepter in OAKlAnd To Do Compaction TEST on BACK Filled TRENCH on the EAST side of BRITEN AVE Alongside the sidewalk. 3 Pot Holes were dug for me in order to check the Bottom lift. TEST Did not meet required Compaction. THE whole Finale lift was TAKen off And recompacted About (75'). I tested Another Part of the TRENCH at the first lift And it had to be hit more. After recompaction of the whole TRENCH BACK-Fill when test were redone Compaction was At Required 95%

NOTES

1. Test results, pass/fail indications, and/or recommendations (if applicable) provided herein have not been reviewed by supervisory staff and, therefore, should be considered preliminary and subject to change.
2. Tests were conducted in general accordance with generally accepted testing procedures practiced within the site area at the time tests were performed.

Joe Castaneda

KLEINFELDER REPRESENTATIVE

[ ] Continued on next page.

L-30A WHITE COPY—OFFICE YELLOW COPY—FIELD PINK COPY—CLIENT 7/90