

Certified Mail No. Z 156 111 045

VIP Service Station
385 Century Cir.
Danville, Ca 94526
October 12, 1996

Alameda County
Env. Health Dept.
Env. Protection Div
1131 Harbor Bay Pkwy # 250
Alameda, CA 94502, 6577

Attn.: Scott Seery

Site: VIP Service Station
3889 Castro Valley Blvd.
Castro Valley, CA 94546

Subject: ~~Offsite Ground Water Quality Investigation Report, P&D Environmental~~
Report # 0047.R15, ~~Dated October 9, 1996~~

Reference : Your letter Dated December 20, 1994 requesting the Offsite ground water investigation.

Gentlemen:


We are submitting subject item report documenting the results of offsite ground water investigation performed by P&D Environmental. This work was carried out per your request per reference listed above and your approval of the work plan dated April 7, 1995. Based on above report, the extent of petroleum hydrocarbons in groundwater appears to have been defined.

Please note the Recommendations from P & D Environmental (Ref. P & D Report # 0047.R15, page 7) that a Risk Based Corrective Action evaluation be performed using ASTM methods to determine if any corrective actions are warranted. Please also provide us direction if Lawrence Livermore National Lab. Report UCRL-AR-121762 dated October 16, 1995 or any other related documents can be used to minimize the impact.

Should you have any questions regarding above subject, please contact us.

Thanks!

Sincerely,



L. B. Patel

Attachments: Above P&D Report..

P & D ENVIRONMENTAL

A Division of Paul H. King, Inc.

4020 Panama Court

Oakland, CA 94611

(510) 658-6916

October 9, 1996

Report 0047.R15

Mr. L.B. Patel
Mr. P. Gupta
VIP Service
385 Century Circle
Danville, CA 94526

SUBJECT: Offsite Groundwater Quality Investigation Report
VIP Service
3889 Castro Valley Blvd.
Castro Valley, CA

Gentlemen:

P&D Environmental, a division of Paul H. King, Inc. (P&D) is pleased to present this report documenting the collection of five offsite groundwater grab samples, designated as P11 through P15, to evaluate groundwater quality in the vicinity of the subject site. The groundwater grab samples were collected on August 8 and 9, 1996. This work was performed in accordance with a letter from Mr. Scott Seery of the Alameda County Department of Environmental Health (ACDEH) dated January 10, 1996 requesting the investigation and P&D's proposal 122795.P1 dated December 27, 1995. A Site Location Map (Figure 1) and a Site Vicinity Map (Figure 2) are attached with this report.

In response to Mr. Seery's January 10, 1996 letter and following authorization to proceed from VIP Service, P&D obtained site access permission on January 31, 1996 from the property owner for sample collection locations P14 and P15. On February 1, 1996 P&D requested site access permission for locations P11, P12 and P13. During the following six months, numerous requests were made for site access permission for these three sample collection locations. In August, 1996 the proposed locations were moved into the public right-of-way to end delays associated with obtaining site access permission for sample collection locations P11, P12 and P13.

Prior to performing field activities, P&D obtained permits for the groundwater grab sample locations from the Alameda County Water Agency, Zone 7; obtained permits from the Alameda County Department of Public Works for the groundwater grab sample locations in the north side of Castro Valley Boulevard (P11, P12 and P13); confirmed permission for offsite property access from the property owner for the property located at 3843 Castro Valley Boulevard (locations P14 and P15); notified Underground Service Alert for buried utility location; notified the ACDEH of the date for field activities; and prepared a health and safety plan.

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

BACKGROUND

It is P&D's understanding that the subject site was purchased by VIP Service in December, 1984. Prior to purchase of the property by VIP Service, the site was operated as a retail gasoline station for an undetermined period of time. The site was operated as a retail gasoline station from the time of purchase by VIP Service until the tanks were removed by Accutite on April 26, 1993. The site is presently operated as an automotive repair facility.

The underground tank system consisted of three 10,000 gallon capacity gasoline tanks, two dispenser islands, and one 550 gallon waste oil tank. It is P&D's understanding that the fuel tanks contained leaded and unleaded gasoline while in use by VIP Service. In addition, VIP Service reported that diesel fuel was not stored at the site at any time.

It is P&D's understanding that at the time of tank removal, eight soil samples were collected from the sidewalls of the fuel tank pit, and one soil sample was collected from the waste oil tank pit. Groundwater was reported to have been encountered in the fuel tank pit at a depth of approximately 11 feet. One water sample was collected from the water in the fuel tank pit. On April 28, 1993 Accutite returned to the site and collected seven soil samples from beneath the dispenser islands.

All of the samples were analyzed at Sequoia Analytical in Redwood City, California for Total Petroleum Hydrocarbons as Gasoline (TPH-G); Benzene, Toluene, Ethylbenzene and Xylenes (BTEX); and for Total Lead. In addition, the samples from the waste oil tank were analyzed for Total Petroleum Hydrocarbons as Diesel (TPH-D); Total Oil and Grease (TOG); Halogenated Volatile Organic Compounds using EPA Method 8010; Semi-Volatile Organic Compounds using EPA Method 8270; and for the metals cadmium, chromium, lead, nickel and zinc.

The results of the soil samples collected from the fuel tank pit showed TPH-G concentrations ranging from 120 to 6,200 parts per million (ppm), and total lead results ranging from not detected to 13 ppm. The results of the water sample from the fuel tank pit showed 140 ppm TPH-G, and 0.095 ppm total lead.

The results of the soil samples collected from beneath the fuel dispensers showed TPH-G values ranging from not detected to 4.7 ppm, and total lead values ranging from not detected to 7.6 ppm.

The results of the sample collected from the waste oil tank pit showed 670 ppm TPH-G; 410 ppm TPH-D; 1,300 ppm TOG; 0.023 ppm 1,2-Dichloroethane and 0.0094 ppm Tetrachloroethene in the EPA Method 8010 analysis; 2.7 ppm 2-Methylnaphthalene and 3.8 ppm Naphthalene in the EPA Method 8270 analysis; and various metals concentrations, none of which exceeded ten times their respective STLC values. The laboratory identified the TPH-D results as being a "non-diesel mix," and indicated that the compounds reported as diesel were diesel-range gasoline and diesel-range oil compounds.

Between August 27 and November 1, 1993 P&D personnel collected stockpiled soil samples for stockpiled soil disposal characterization and oversaw the excavation of approximately 680 cubic yards of soil from the vicinity of the fuel tank pit in an effort to remove petroleum hydrocarbon-impacted soil. In addition, during this time the soil which was stockpiled by Accutite during the tank removal activities and during the subsequent soil excavation activities was disposed of at an appropriate disposal facility, and the tank pit backfilled and compacted. A total of eight confirmation soil samples were collected from the sidewalls of the tank pit on November 19, 1993 at a depth of 10 feet after over-excavation and prior to backfilling. The analytical results of the samples ranged from 33 to 3,200 ppm TPH-G. The sample collection locations are shown on the attached Site Plan, Figure 3. Documentation of excavation, stockpiled soil characterization and disposal, and backfilling of the pit are provided in P&D's report 0047.R1 dated January 24, 1994. The samples results associated with the removal of the tanks by Accutite are also summarized in P&D's report 0047.R1.

On November 10, 1993 P&D personnel oversaw the installation of three groundwater monitoring wells, designated as MW1 through MW3, and one exploratory soil boring, designated as B1, at the subject site. The wells were developed on November 12 and sampled on November 16, 1993. The results of the water samples showed that TPH-G was not detected in wells MW1 and MW2, and that BTEX was not

detected in MW2. In well MW1, 0.0022 ppm of benzene was detected. In well MW3, TPH-G was detected at 12 ppm; BTEX was detected with benzene detected at 3.3 ppm; TRPH was not detected; EPA Method 8010 compounds were not detected except for 0.027 ppm 1,2-Dichloroethane; and EPA Method 8270 compounds were not detected except for 0.009 ppm Phenol, 0.006 ppm Benzyl Alcohol, 0.006 2-Methylphenol, 0.007 ppm 2,4-Dimethylphenol, 0.088 ppm Benzoic Acid, 0.042 ppm Naphthalene, and 0.015 2-Methylnaphthalene.

Documentation of the monitoring well and soil boring installation and associated sample results are presented in P&D's report 0047.R2 dated January 24, 1994. The locations of the monitoring wells are shown in Figure 2.

In response to a letter dated March 18, 1994 from Mr. Scott Seery of the ACDEH addressed to VIP Service which commented upon the results of the initial groundwater sampling associated with the installation of the monitoring wells at the subject site, a quarterly groundwater monitoring and sampling program was initiated.

On June 9, 1995, P&D personnel hand augered 5 offsite exploratory boreholes designated as boreholes P1 through P5 in the downgradient direction from the subject site. The locations of the soil borings are shown in Figure 2. The results of the groundwater grab samples showed that no gasoline or BTEX was detected in borehole P4. Gasoline and BTEX were detected in boreholes P1, P2, P3 and P5. The sample results are presented in Table 1. Documentation of the soil boring installation and associated sample results are presented in P&D's report 0047.R8 dated July 14, 1995. Based upon the sample results, Mr. Scott Seery of the ACDEH requested that further investigation be performed.

On November 17, 1995, P&D personnel hand augered 5 offsite exploratory boreholes designated as boreholes P6 through P10 for the collection of groundwater grab samples. The locations of the soil borings are shown in Figure 2. The results of the groundwater grab samples showed that no gasoline or BTEX were detected in boreholes P6, P8, and P10. Gasoline and BTEX were detected in boreholes P7, and P9. The sample results are presented in Table 1. Documentation of the soil boring installation and associated sample results are presented in P&D's report 0047.R11 dated December 27, 1995. Based upon the sample results, Mr. Scott Seery of the ACDEH requested in a letter dated January 10, 1996 that further investigation be performed.

FIELD ACTIVITIES

On August 8 and 9, 1996 P&D personnel hand augered boreholes P11 through P15 for the collection of groundwater grab samples. The groundwater grab sample collection locations are shown on Figure 2.

The boreholes were hand augered with a 3.5-inch outside diameter hand auger. All of the boreholes were hand augered to total depths of between approximately 11.0 and 12.0 feet below grade. Boreholes P11, P12, P13, P14 and P15 were hand augered to depths of 12.0, 11.5, 12.0, 11.0 and 11.0 feet below grade, respectively. Groundwater was first encountered at depths of 9.0, 8.5, 9.0, 9.0 and 8.5 feet below grade, respectively.

Soil from all of the boreholes was evaluated using a photoionization detector (PID). Prior to the beginning of field work on August 8, 1996 the PID was calibrated using a 100 ppm isobutylene standard. No petroleum hydrocarbon odors and no detectable PID values were encountered in the soil or groundwater in any of the boreholes.

During hand augering activities, soil samples were collected from all of the boreholes at depths of 7.0 and 11.0 feet below grade. The soil samples were collected using a percussion sampler lined with a 2-inch diameter, 6-inch long

brass tube. Following sample collection, the ends of the brass tubes for these samples were sealed with aluminum foil and plastic endcaps. In addition, soil from the bottom of the sampler for the samples collected at a depth of 7.0 feet was collected into 40-milliliter glass VOA vials and sealed. The brass tubes and VOA vials were then labeled, placed into ziplock baggies, and stored in a cooler with ice pending delivery to McCampbell Analytical, Inc. in Pacheco, California for Total Organic Carbon (TOC) analysis and to Construction Materials Testing, Inc. in Concord, California for bulk density analysis. McCampbell Analytical, Inc. is a State-accredited laboratory. Chain of custody procedures were observed for all sample handling.

The groundwater grab samples were collected from the boreholes using a Teflon bailer. The hand auger, the percussion soil sampler, and the Teflon bailer were thoroughly washed with an Alconox solution followed by a clean water rinse prior to each use.

Following collection into the Teflon bailer, the groundwater grab samples were transferred to 40-milliliter Volatile Organic Analysis (VOA) vials and capped with Teflon-lined screw caps. The VOA vials were overturned and tapped to assure that no air bubbles were present. The VOA vials were then labeled and stored in a cooler with ice pending delivery to McCampbell Analytical, Inc. in Pacheco, California. Chain of custody procedures were observed for all sample handling.

Following groundwater grab sample collection, the boreholes were filled with neat cement, in accordance with permit requirements. Soil generated during hand augering and water generated during decontamination procedures were stored in 55-gallon DOT-approved drums at the subject site pending appropriate disposal.

GEOLOGY AND HYDROGEOLOGY

Based on review of regional geologic maps from U.S. Geological Survey Professional Paper 943, "Flatland Deposits - Their Geology and Engineering Properties and Their Importance to Comprehensive Planning," by E.J. Helley and K.R. Lajoie, 1979 the subject site is underlain by Late Pleistocene alluvium (Qpa). The alluvium is described as typically consisting of weakly consolidated slightly weathered poorly sorted irregularly interbedded clay, silt, sand and gravel. Based on review of the regional geologic maps provided in U.S. Geological Survey Open File Report 80-540, "Preliminary Geologic Map of the Hayward Quadrangle, Alameda and Contra Costa Counties, California" by Thomas Dibblee, Jr., 1980 the alluvial materials are inferred to be underlain at depth by bedrock materials of the Upper Cretaceous Panoche Formation. Additionally, the site is situated approximately 0.8 miles northeast of the inferred trace of the East Chabot Fault and 1.7 miles northeast of the mapped trace of the active Hayward Fault.

Based upon interpretation of materials encountered in the boreholes for the monitoring wells MW1, MW2 and MW3 and the exploratory boring B1 at the subject site, the site is underlain by black or brown silty clay which contains trace amounts of sand and fine gravel and extends to the approximate depths of 6 to 7 feet below grade. This black to brown silty clay is in turn underlain by gray silty clay materials which contain extensive macropores measuring approximately one millimeter (mm) in diameter and extends to the approximate depths of 12 to 13 feet below grade. Additionally, based upon observations during drilling operations at the subject site, this gray silty clay zone contains a strong petroleum hydrocarbon odor beginning at a depth of approximately 7 to 7 feet, which extends to approximately 10.5 to 11.5 feet below grade at the subject site.

In the vicinity of MW1, the gray silty clay zone is underlain by brown silty clay to a depth of 15 feet below grade. The overall silty clay horizon, varying in thickness from approximately 12.5 to 15 feet, [REDACTED]

a saturated fine-grained, poorly graded sand. This sand bed appears to be only about one foot thick at MW1 and may be as thick as 4.5 to 5 feet at MW2 and MW3. This sand layer is interpreted as the same aquifer underlying the site and the sand layer is further underlain by brown silty clay to at least the minimum depths explored at the subject site of 20.5 feet below grade.

Geologic cross-sections A-A', B-B', and C-C' show the interpreted distribution of subsurface materials at the site and are presented in Figure 5 of P&D's Monitoring Well Installation Report dated January 24, 1994.

During the current investigation, boreholes P11, P12, and P13 were hand augered in the north side of the sidewalk on the north side of Castro Valley Boulevard. Boreholes P14 and P15 were hand augered in the parking lot located at the intersection of the south side of Castro Valley Boulevard and the west side of Aspen Avenue. In boreholes P11, P12, and P13, the surface cover materials consisted of a six inch thick layer of concrete which was underlain by an eight inch thick layer of gravel. In boreholes P14 and P15, the surface materials consisted of a six inch thick layer of asphalt which was underlain by a four inch thick layer of gravel.

Beneath the cover materials, the subsurface materials encountered in all of the boreholes generally consisted of brown silty clay with varying degrees of orange, white or gray mottling. In all of the boreholes, a layer of coarser grained material consisting of silty sand and in some cases gravel was encountered at a depth approximately coincident with the depth at which groundwater was first encountered in the boreholes. During the subsurface investigation on August 8 and 9, 1996, groundwater was initially encountered in boreholes P11, P12, P13, P14 and P15 at depths of 9.0, 8.5, 9.0, 9.0 and 8.5 feet below grade, respectively. Static water levels were not evaluated in the boreholes. These values are consistent with the depth to water encountered in boreholes P1 through P10 during previous investigations.

In borehole P11, silty fine sand was encountered between the depths of approximately 10.0 feet and the total depth explored of 12.0 feet below grade. In borehole P12, silty fine sand was encountered between the depths of approximately 9.5 feet and the total depth explored of 11.5 feet below grade. In borehole P13, silty fine sand was encountered between the depths of approximately 10.0 feet and the total depth explored of 12.0 feet below grade.

In borehole P14, silty fine sand was encountered between the depths of approximately 8.0 and 9.0 feet below grade, which was in turn underlain by gravel ranging up to 1.5 inches in diameter to a depth of approximately 9.5 feet below grade. Beneath this gravel, brown silty clay was encountered to the total depth explored of approximately 11.0 feet. In borehole P15, gravel ranging in size up to one inch in diameter was encountered between the depths of approximately 9.0 feet and the total depth explored of approximately 11.0 feet below grade.

* The sand layers encountered in the lower portions of boreholes P11 through P13 are interpreted to be laterally continuous with the fine grained sand layer encountered in boreholes MW1, MW2, MW3, and R1 at the subject site and in the groundwater grab sample boreholes P1 through P5, P8, and P10 from previous investigations.

Based upon review of the historical quarterly groundwater monitoring data for the subject site, the groundwater flow direction at the subject site has historically been westerly, with little change in the flow direction. Recent quarterly monitoring and sampling of the groundwater monitoring wells at the site was performed on April 23, 1996. The results of the monitoring and sampling showed a TPH-G concentration of 9.7 ppm in well MW3, and not detected in wells MW1 and MW2. Based upon the measured depth to water in the wells on

April 23, 1996, the calculated groundwater flow direction at the site was to the west-northwest with a gradient of 0.012.

LABORATORY RESULTS

All of the groundwater grab samples were analyzed for TPH-G using EPA Method 5030 in conjunction with Modified EPA Method 8015 (GCFID), and for BTEX and MTBE using EPA Method 8020. All of the soil samples collected from the boreholes were analyzed for Total Organic Carbon (TOC) by Loss On Ignition methods, with the exception of the soil samples from borehole P12. The soil samples at 7.0 and 11.0 feet from P12 were not analyzed for TOC because TPH-G was detected in the groundwater grab sample from this borehole. In addition, soil samples collected at a depth of 7.0 feet from all of the boreholes (including P12) were analyzed for bulk density and moisture.

*foc and
bulk density
not known
for P1 -
P10*

The laboratory analytical results of the groundwater grab samples collected from boreholes P11, P12, P13, P14, and P15 show that TPH-G, MTBE, and BTEX were not detected in any of the boreholes with the exception of P12, where TPH-G, and MTBE were detected at concentrations of 0.32, and 0.03 parts per million (ppm), respectively.

The laboratory analytical results of the soil samples collected from boreholes P11, P13, P14 and P15 at depths of 7.0 feet showed TOC concentrations ranging from 3300 to 7600 ppm, and at depths of 11.0 feet showed concentrations ranging from 4400 to 5000 ppm. The results of the soil samples collected from all of the boreholes (including P12) at a depth of 7.0 feet showed moisture contents ranging from 17.8 to 22.6 percent and dry densities ranging from 82.5 to 102.0 pounds per cubic foot.

The groundwater grab sample results from previous investigations for the samples collected from boreholes P1 through P10 are summarized in Table 1, and the groundwater grab sample results for the present investigation for the samples collected from boreholes P11 through P15 are summarized in Table 2. The sample results for the samples which were analyzed during the present investigation for TOC are summarized in Table 3. The sample results for the samples which were analyzed during the present investigation for bulk density and moisture are summarized in Table 4.

The TPH-G concentrations for the groundwater grab samples collected on May 2, 1995 from boreholes P1 through P5, on November 17, 1995 from boreholes P6 through P10, and on August 8 and 9, 1996 from boreholes P11 through P15 are shown on Figure 2. In addition, the sample result for groundwater monitoring well MW3 from the most recent monitoring and sampling episode (wells MW1 and MW2 were monitored but not sampled) which occurred on July 19, 1996 is shown on Figure 2.

DISCUSSION AND RECOMMENDATIONS

Based upon review of the historical quarterly groundwater monitoring data for the subject site, the groundwater flow direction at the subject site has historically been westerly, with little change in the flow direction. ~~Recent~~ recent quarterly monitoring and sampling of the groundwater monitoring wells at the site was performed on July 19, 1996. The results of the monitoring and sampling showed a TPH-G concentration of 18 ppm in well MW3. TPH-G and BTEX analysis were not performed for wells MW1 and MW2. Based upon the measured depth to water in the wells on July 19, 1996, the calculated groundwater flow direction at the site was to the west-southwest with a gradient of 0.012.

*↑
increase
from
4/96
event*


During the subsurface investigation on August 8 and 9, 1996, groundwater was initially encountered in boreholes P11, P12, P13, P14 and P15 at depths of 9.0, 8.5, 9.0, 9.0 and 8.5 feet below grade, respectively. Static water levels

were not evaluated in the boreholes. These values are consistent with the depth to water encountered in boreholes P1 through P10 during previous investigations.

Review of the historical groundwater quality data for the three groundwater monitoring wells at the subject site indicates that TPH-G and BTEX have not been detected in wells MW1 and MW2, with the exception of benzene which was detected in well MW1 on November 16, 1993 and on July 29, 1994 at concentrations of 0.0022 and 0.0012 ppm, respectively.

Review of the subsurface conditions for the subject site and adjacent downgradient sites indicates that these sites are underlain by silty clay to a depth of approximately 10 to 15 feet below grade. A sand layer was encountered in the boreholes for all three of the groundwater monitoring wells (MW1 through MW3) and in one of the three groundwater quality monitoring wells (P1 through P3) and in one of the three groundwater quality monitoring wells (P4 through P6) and in one of the three groundwater quality monitoring wells (P7 through P9). The sand layer is encountered generally appears to become shallower in the downgradient direction. This sand layer is interpreted to be continuous beneath the subject site and the area of the offsite groundwater quality investigation.

Review of the groundwater flow direction data for the subject site indicates that groundwater flow has remained consistently in a westerly direction since quarterly monitoring and sampling was initiated in November, 1993. Based on the laboratory analytical results of the water samples collected from the groundwater grab sample collection locations P11 through P15, petroleum hydrocarbons appear to be present to the north of the site, as identified in the sample from borehole P12. The presence of petroleum hydrocarbons to the north of the site in borehole P12 is interpreted to be the result of preferential movement of the petroleum hydrocarbons in the silty fine sand layer which is interpreted to be continuous beneath the site.

Key  The comparatively low concentration of petroleum hydrocarbons in sample P2 from a previous investigation is interpreted to be associated with the fine grained materials which were encountered in boreholes P1 and P2, resulting in limited contaminant migration in the vicinity of these two boreholes and a divergent groundwater flow towards locations P3 and P9. Groundwater isoconcentration contours showing the estimated locations of 100, 10 and 1 ppm and not detected concentrations (ND) contours are shown on Figure 2.

Analyses of the soil samples for TOC, bulk density, and moisture content were performed in preparation for future risk assessment to determine if remediation is warranted. With the exception of borehole P14, the TOC results for samples collected at a depth of 11.0 feet below grade are for coarse grained material. The TOC results for P11 and P13 at a depth of 11.0 feet below grade are for coarse grained material which is considered to be continuous with the first aquifer encountered beneath the subject site. The TOC results for all of the samples collected at a depth of 7.0 feet below grade are considered to be representative of the fine grained materials in the vicinity of the site.

Based upon the results of this investigation, the extent of petroleum hydrocarbons in groundwater appears to have been defined. P&D recommends that a Risk Based Corrective Action evaluation be performed using ASTM methods to determine if any additional actions are warranted.

DISTRIBUTION

Copies of this report should be distributed to Mr. Scott Seery at the Alameda County Department of Environmental Health, and to Mr. Richard Hiatt at the San Francisco Bay Regional Water Quality Control Board. Copies of the report should be accompanied by a transmittal letter signed by the principal executive officer of VIP Service.

LIMITATIONS

This report was prepared solely for the use of VIP Service. The content and conclusions provided by P&D in this assessment are based on information collected during our investigation, which may include, but not be limited to, visual site inspections; interviews with site owner, regulatory agencies and other pertinent individuals; review of available public documents; subsurface exploration and our professional judgement based on said information at the time of preparation of this document. Any subsurface sample results and observations presented herein are considered to be representative of the area of investigation; however, geological conditions may vary between borings and may not necessarily apply to the general site as a whole. If future subsurface or other conditions are revealed which vary from these findings, the newly-revealed conditions must be evaluated and may invalidate the findings of this report.

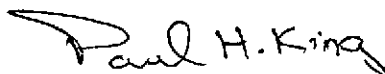
This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information contained herein is brought to the attention of the appropriate regulatory agencies, where required by law. Additionally, it is the sole responsibility of the owner to properly dispose of any hazardous materials or hazardous wastes left onsite, in accordance with existing laws and regulations.

This report has been prepared in accordance with generally accepted practices using standards of care and diligence normally practiced by recognized consulting firms performing services of a similar nature. P&D is not responsible for the accuracy or completeness of information provided by other individuals or entities which is used in this report. This report presents our professional judgement based upon data and findings identified in this report and interpretation of such data based upon our experience and background, and no warranty, either express or implied, is made. The conclusions presented are based upon the current regulatory climate and may require revision if future regulatory changes occur.

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

Sincerely,

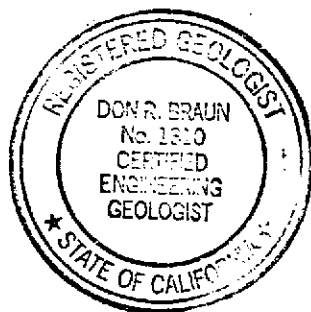
P&D Environmental



Paul H. King
Hydrogeologist



Don R. Braun
Certified Engineering Geologist
Registration No.: 1310
Expiration Date: 6/30/98



PHK/aog
0047.R15

- Attachments: Tables 1, 2, 3 & 4
Site Location Map (Figure 1)
Site Vicinity Map (Figure 2)
Laboratory Analytical Results
Chain of Custody Documentation

TABLE 1
GROUNDWATER GRAB SAMPLE
SUMMARY OF LABORATORY ANALYTICAL RESULTS

Location No.	TPH-G	MTBE	Benzene	Toluene	Ethyl-benzene	Total Xylenes
Samples Collected on June 9, 1995						
P1	160	NA	27	27	3.5	18
P2	3.9	NA	0.026	0.0054	0.034	0.029
P3	44	NA	2.6	2.9	2.2	7.5
P4	ND	NA	ND	ND	ND	ND
P5	0.43	NA	0.040	0.0012	0.0081	0.0028
Samples Collected on November 17, 1995						
P6	ND	0.017	ND	ND	ND	ND
P7	7.3	0.067	ND	0.0077	0.010	0.0069
P8	ND	ND	ND	ND	ND	ND
P9	51	0.25	2.0	1.5	1.9	8.8
P10	ND	ND	ND	ND	ND	ND

NOTE:

TPH-G = Total Petroleum Hydrocarbons as Gasoline.
 TPH-D = Total Petroleum Hydrocarbons as Diesel.
 ND = Not Detected.
 NA = Not Analyzed.
 Results in parts per million (ppm), unless otherwise indicated.

TABLE 2
GROUNDWATER GRAB SAMPLE
SUMMARY OF LABORATORY ANALYTICAL RESULTS

Location No.	TPH-G	MTBE	Benzene	Toluene	Ethyl-benzene	Total Xylenes
Samples Collected on August 8 and 9, 1996						
P11	ND	ND	ND	ND	ND	ND
P12	0.32	0.03	ND	ND	ND	ND
P13	ND	ND	ND	ND	ND	ND
P14	ND	ND	ND	ND	ND	ND
P15	ND	ND	ND	ND	ND	ND

NOTE:

TPH-G = Total Petroleum Hydrocarbons as Gasoline.

TPH-D = Total Petroleum Hydrocarbons as Diesel.

ND = Not Detected.

NA = Not Analyzed.

Results in parts per million (ppm), unless otherwise indicated.

TABLE 3
SOIL SAMPLE TOTAL ORGANIC CARBON
SUMMARY OF LABORATORY ANALYTICAL RESULTS
(Samples Collected on August 8, and 9, 1996)

Location No.	TOC	
P11-7.0	7,600	0.76 %
P13-7.0	3,800	
P14-7.0	3,300	0.33 %
P15-7.0	4,200	0.42 %
P11-11.0	5,000	
P13-11.0	4,500	
P14-11.0	4,400	
P15-11.0	4,800	0.48 %

NOTE:

TOC = Total Organic Carbon.
Results in ~~parts per~~ million (ppm), unless otherwise indicated.

TABLE 4
SOIL SAMPLE MOISTURE CONTENT AND DRY DENSITY
SUMMARY OF LABORATORY ANALYTICAL RESULTS
(Samples Collected on August 8, and 9, 1996)

Location No.	Percent Moisture	Dry Density
P11-7.0	22.6	82.5 1.32 gm cm ⁻³
P12-7.0	18.0	97.5
P13-7.0	18.4	85.2
P14-7.0	17.8	89.1
P15-7.0	17.9	102.0 → SAME AS 1.634 gm cm ⁻³

NOTE:

Dry density results are in pounds per cubic feet.

CONVERSIONS

$$\left(1.602 \times 10^{-2}\right) \frac{\text{lb}}{\text{ft}^3} = \frac{\text{gm}}{\text{cm}^3}$$

$$\frac{\text{lb}}{\text{ft}^3} = (62.42) \frac{\text{gm}}{\text{cm}^3}$$

P & D ENVIRONMENTAL

A Division of Paul H. King, Inc.

4020 Panama Court

Oakland, CA 94611

(510) 658-6916



Base Map From
U.S. Geological Survey
Hayward, Calif.
7.5 Minute Quadrangle
Photorevised 1980

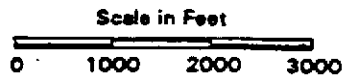
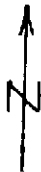


Figure 1
SITE LOCATION MAP
VIP Service
3889 Castro Valley Blvd.
Castro Valley, California

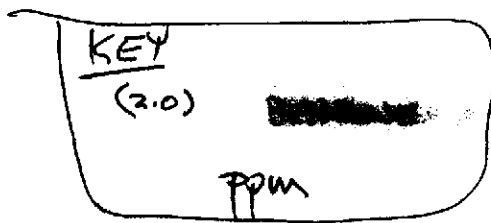
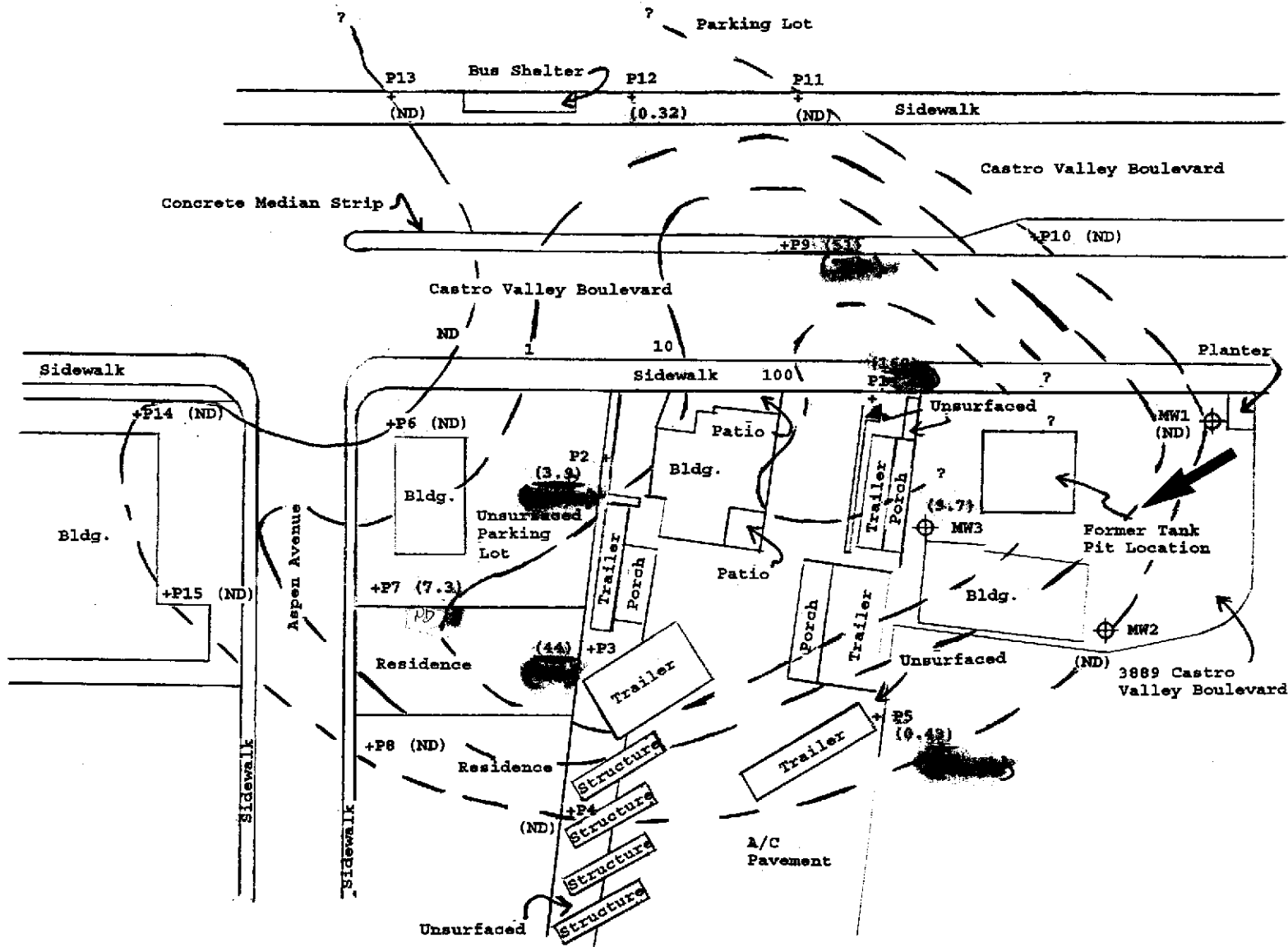
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4020 Panama Court

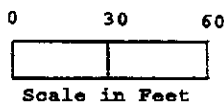
Oakland, CA 94611

(510) 658-6916



- LEGEND**
- (9.7) ⊕ Existing Groundwater Monitoring Well and TPH-Gasoline Concentration in ppm on April 23, 1996.
 - (160) + Groundwater Grab Sample Collection Location and TPH-Gasoline Concentration on June 9, 1995 (P1-P5), November 17, 1995 (P6-P10), and August 8 and 9, 1996 (P11-P15)
 - - - - - Groundwater Isoconcentration Contour for TPH-Gasoline in ppm
 - Groundwater Flow Direction on April 23, 1996

North



Base Map From
 P&D Environmental
 October, 1993
 January, 1995
 June, 1995
 Prepared Using a
 Rolatape

Figure 2
SITE VICINITY MAP
 VIP Service
 3889 Castro Valley Blvd.
 Castro Valley, California

QC REPORT FOR HYDROCARBON ANALYSES

Date: 08/12/96

Matrix: Water

Analyte	Concentration (ug/L) Sample (#67680)			Amount Spiked	% Recovery		RPD
	MS	MSD			MS	MSD	
TPH (gas)	0.0	100.8	99.7	100.0	100.8	99.7	1.1
Benzene	0.0	10.6	10.8	10.0	106.0	108.0	1.9
Toluene	0.0	10.3	10.4	10.0	103.0	104.0	1.0
Ethyl Benzene	0.0	10.4	10.5	10.0	104.0	105.0	1.0
Xylenes	0.0	30.7	30.9	30.0	102.3	103.0	0.6
TPH (diesel)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TRPH (oil & grease)	0	21800	23200	23700	92	98	6.2

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

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CHAIN OF CUSTODY RECORD

6966 APD191 PAGE 1 OF 1

PROJECT NUMBER: 0047		PROJECT NAME: VIP Service			NUMBER OF CONTAINERS	ANALYSIS(ES): TPH - Gas & Hex 9 mg/L					PRESERVATIVE	REMARKS
SAMPLED BY: (PRINTED AND SIGNATURE) Ahmad Ghannouchi <i>Ahmad Ghannouchi</i>												
SAMPLE NUMBER	DATE	TIME	TYPE	SAMPLE LOCATION								
+10 P11	8/8/96		Water		2	X					ICB	Normal Turn Above L
+10 P12	8/8/96		"		2	X					"	" " " "
+10 P13	8/8/96		"		2	X					"	" " " "
+10 P14	8/9/96		"		2	X					"	" " " "
+10 P15	8/9/96		"		2	X					"	" " " "
ICEP <input checked="" type="checkbox"/> PRESERVATIVE <input checked="" type="checkbox"/> GOOD CONDITION <input checked="" type="checkbox"/> APPROPRIATE <input checked="" type="checkbox"/> HEAD SPACE ABSENT <input checked="" type="checkbox"/> CONTAINERS <input checked="" type="checkbox"/>					VIS <input checked="" type="checkbox"/>			67839 67840 67841 67842 67843				
RELINQUISHED BY: (SIGNATURE) <i>Ahmad Ghannouchi</i>		DATE 8/9/96	TIME 15:04	RECEIVED BY: (SIGNATURE) <i>Nidia Ricca</i>		TOTAL NO. OF SAMPLES (THIS SHIPMENT) 5	LABORATORY: McLambell analytical					
RELINQUISHED BY: (SIGNATURE)		DATE	TIME	RECEIVED BY: (SIGNATURE)		TOTAL NO. OF CONTAINERS (THIS SHIPMENT) 10	LABORATORY CONTACT: Ed. Hamilton LABORATORY PHONE NUMBER: (510) 798-1620					
RELINQUISHED BY: (SIGNATURE)		DATE	TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)		SAMPLE ANALYSIS REQUEST SHEET ATTACHED: () YES (X) NO						
REMARKS: VOA's preserved with HCL												

DELLA

McCAMPBELL ANALYTICAL

110 2nd AVENUE, # D7
PACHECO, CA 94553

CHAIN OF CUSTODY RECORD

TURN AROUND TIME: RUSH 24 HOUR 48 HOUR 5 DAY ROUTINE

(510) 798-1620

FAX (510) 798-1622

REPORT TO: Ed Hamilton BILL TO: MAI.
PROJECT NUMBER: 6998 PROJECT NAME: PD-VIP-0047
PROJECT LOCATION:

ANALYSIS REQUEST										OTHER			COMMENTS	
EPA 601/6010	EPA 602/6020	EPA 608/6080	EPA 608/6080 - PCBs Only	EPA 624/6240/6260	EPA 625/6270	CAM - 17 Metals	EPA - Priority Pollutant Metals	LUFT Metals	LEAD (7240/7421/239.2/6010)	ORGANIC LEAD	RCI			
												TOC	By Loss on Ignition	
												X		
												X		
												X		
												X		
												X		
												X		
												X		
												X		
												X		

SAMPLE ID	LOCATION	SAMPLING		# CONTAINERS	TYPE CONTAINERS	MATRIX					METHOD PRESERVED							
		DATE	TIME			WATER	SOIL	AIR	SLUDGE	OTHER	HCL	HNO3	ICE	OTHER				
P11-7.0		8/8/96		1														
P11-11.0		↓		↓														
P13-7.0		↓		↓														
P13-11.0		↓		↓														
P14-7.0		8/9/96																
P14-11.0		↓		↓														
P15-7.0		↓		↓														
P15-11.0		↓		↓														

RELINQUISHED BY: <i>Alexis Price</i>	DATE: 8/16	TIME:	RECEIVED BY: <i>Miller</i>	DATE/TIME: 8/20/96 9:15AM
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:	
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY LABORATORY:	

REMARKS: Please Report Results IN mg/kg

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CHAIN OF CUSTODY RECORD

6998APD193 PAGE 1 OF 1

PROJECT NUMBER: 6047		PROJECT NAME: NIP - Service			NUMBER OF CONTAINERS	ANALYSIS(ES): Total Organics						PRESERVATIVE	REMARKS	
SAMPLED BY: (PRINTED AND SIGNATURE) Ahmad Ghandour <i>Ahmad Ghandour</i>														
SAMPLE NUMBER	DATE	TIME	TYPE	SAMPLE LOCATION										
P11-11.0	8/8/96		Soil		1	X						SEE	Normal Turn Around	
P12-11.0	"		"		1	X						"	" " "	
P13-11.0	"		"		1	X						"	" " "	
P14-11.0	8/9/96		"		1	X						"	" " "	
P15-11.0	"		"		1	X						"	" " "	
													P12 ON Hold	
					ICE/GOOD CONDITION HEAD SPACE ABSENT		PRESERVATIVE APPROPRIATE CONTAINERS		WAS FOR METALS OTHER					
RELINQUISHED BY: (SIGNATURE) <i>Ahmad Ghandour</i>		DATE 8/9/96	TIME 15:04	RECEIVED BY: (SIGNATURE) <i>Neidi Pica</i>		TOTAL NO. OF SAMPLES (THIS SHIPMENT)		TOTAL NO. OF CONTAINERS (THIS SHIPMENT)		LABORATORY: <i>McCampbell Analytical</i>				
RELINQUISHED BY: (SIGNATURE)		DATE	TIME	RECEIVED BY: (SIGNATURE)		LABORATORY CONTACT: <i>Ed. Hamilton</i>		LABORATORY PHONE NUMBER: (510) 778-620						
RELINQUISHED BY: (SIGNATURE)		DATE	TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)		SAMPLE ANALYSIS REQUEST SHEET ATTACHED: () YES (X) NO								
REMARKS:														

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CHAIN OF CUSTODY RECORD

69F8APd193 PAGE 1 OF 1

PROJECT NUMBER: 0047		PROJECT NAME: VIP Service			NUMBER OF CONTAINERS	ANALYSIS(ES): Total Organic Carbon					PRESERVATIVE	REMARKS
SAMPLED BY: (PRINTED AND SIGNATURE) Ahmad Ghadareh <i>Ahmad Ghadareh</i>												
SAMPLE NUMBER	DATE	TIME	TYPE	SAMPLE LOCATION								
P11-7.0	8/8/96		Soil		1	X				ICE	Normal Win Around	
P12-7.0	"		"		1	X				"	" " "	
P13-7.0	"		"		1	X				"	" " "	
P14-7.0	8/9/96		"		1	X				"	" " "	
P15-7.0	"		"		1	X				"	" " "	
											P12 - ON Hold	
					NOAS	D&G	MEALS	OTHER				
					ICE/T	GOOD CONDITION	HEAD SPACE ABSENT			PRESERVATIVE	APPROPRIATE	CONTAINERS
RELINQUISHED BY: (SIGNATURE) <i>Ahmad Ghadareh</i>		DATE 8/9/96	TIME 15:04	RECEIVED BY: (SIGNATURE) <i>Nidia Trova</i>	TOTAL NO. OF SAMPLES (THIS SHIPMENT)	5	LABORATORY: <i>McCannhall Analytical</i>					
RELINQUISHED BY: (SIGNATURE)		DATE	TIME	RECEIVED BY: (SIGNATURE)	TOTAL NO. OF CONTAINERS (THIS SHIPMENT)	5	LABORATORY CONTACT: <i>Ed Hamilton</i>					
RELINQUISHED BY: (SIGNATURE)		DATE	TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	LABORATORY PHONE NUMBER: <i>(510) 798-1620</i>							
					SAMPLE ANALYSIS REQUEST SHEET ATTACHED: () YES (X) NO							
					REMARKS:							



CONSTRUCTION MATERIALS TESTING, INC.

Job Name: VIP SERVICE
Sample Description: _____
Source: _____
Client No: P&D ENVIRONMENTAL 0047

Job No. 93503
Sample No: _____
Date: 8-13-96
Sampled: _____ Tested: _____

MOISTURE - DENSITY TESTS

98 8 in 15/54

Test No.	Location	Elev.	Wet Weight	Dry Weight	Length	Wet Density	% Moisture	Dry Density
	P11 - 7.0		451	368	5.8	101.1	22.6	82.5
	P12 - 7.0		504	427	5.7	115.0	18.0	97.5
	P13 - 7.0		450	380	5.8	100.9	18.4	85.2
	P14 - 7.0		476	404	5.9	105.0	17.8	89.1
	P15 - 7.0		462	392	5.0	120.2	17.9	102.0

REMARKS LINER DIA. = 1.93"

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Fax 658-9074

93503

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NUMBER: 0047		PROJECT NAME: VIP Service			NUMBER OF CONTAINERS	ANALYSIS(ES): Bulk Heads by W.D. King Company				PRESERVATIVE	REMARKS
SAMPLED BY: (PRINTED AND SIGNATURE) Ahmed Ghandour <i>Ahmed Ghandour</i>											
SAMPLE NUMBER	DATE	TIME	TYPE	SAMPLE LOCATION							
P11-7.0	8/2/96		Soil	5.6 451 368	1	X	X			ICE	Normal Turn Around
P12-7.0	"		"	5.7 501 427	1	X	X			"	" "
P13-7.0	"		"	5.8 450 380	1	X	X			"	" "
P14-7.0	8/9/96		"	5.9 476 404	1	X	X			"	" "
P15-7.0	"		"	5.0 462 392	1	X	X			"	" "
RELINQUISHED BY: (SIGNATURE) <i>Ahmed Ghandour</i>					DATE	TIME	RECEIVED BY: (SIGNATURE) <i>Donald Jones</i>		TOTAL NO. OF SAMPLES (THIS SHIPMENT)	5	LABORATORY:
RELINQUISHED BY: (SIGNATURE)					DATE	TIME	RECEIVED BY: (SIGNATURE)		TOTAL NO. OF CONTAINERS (THIS SHIPMENT)	5	CMT
RELINQUISHED BY: (SIGNATURE)					DATE	TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)		LABORATORY CONTACT: (510) 825-2840		
RELINQUISHED BY: (SIGNATURE)					DATE	TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)		SAMPLE ANALYSIS REQUEST SHEET ATTACHED: () YES (X) NO		
REMARKS:											