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SUPPLEMENTAL REPORT OF GEOENVIRONMENTAL SERVICES
OFF-SITE SUBSURFACE CONTAMINATION STUDY
FORMER UNOCAL SERVICE STATION 5533
LYNNWOOD, WASHINGTON
FOR
UNOCAL

SE 11-13-91 Sent for Sent for Review

#1696

SUPPLEMENTAL REPORT OF GEOENVIRONMENTAL SERVICES OFF-SITE SUBSURFACE CONTAMINATION STUDY FORMER UNOCAL SERVICE STATION 5533 LYNNWOOD, WASHINGTON FOR UNOCAL

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Geotechnical,
Geoenvironmental and
Geologic Services

November 6, 1991

Unocal
P.O. Box 76
Seattle, Washington 98111

Attention: Mr. Leigh Carlson

We are submitting three copies of our "Supplemental Report of Geotechnical Services" for characterization of off-site areas near Unocal Service Station 5533. Contractual terms for our services are included in blanket contract number B1982E.

We appreciate the opportunity to be of continued service to Unocal. Please call if you have questions regarding this report.

Yours very truly,

GeoEngineers, Inc.

James A. Miller, P.E.
Principal

DJK:JAM:cs

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Lynnwood, WA 98037

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SUPPLEMENTAL REPORT OF GEOENVIRONMENTAL SERVICES

OFF-SITE SUBSURFACE CONTAMINATION STUDY

FORMER UNOCAL SERVICE STATION 5533

LYNNWOOD, WASHINGTON

FOR

UNOCAL

INTRODUCTION AND BACKGROUND

The results of our expanded off-site subsurface hydrocarbon contamination study in the vicinity of former Unocal Service Station 5533 are presented in this supplemental report. The service station site is located at 16404 - 36th Avenue West, southwest of the intersection between 36th Avenue West and 164th Street Southwest in Snohomish County, Washington. The study area is shown relative to surrounding physical features in Figure 1. The service station site is shown relative to surrounding properties in Figure 2.

GeoEngineers explored subsurface conditions beneath the service station site by installing four monitor wells (MW-1 through MW-4) in December 1989 at the locations shown in Figure 1. Two additional monitor wells (MW-5 and MW-6) were installed in August 1991 to monitor ground water quality at the downgradient property limits of the service station site. Our firm observed the removal of four underground storage tanks, associated product lines and service islands, three concrete sumps, one hydraulic hoist and approximately 2,600 cubic yards of gasoline-contaminated soil between October 1990 and June 1991.

Gasoline was detected at concentrations greater than current regulatory cleanup levels in three soil samples obtained from the final eastern limit of the remedial excavation. Benzene, ethylbenzene, toluene and/or xylenes also were detected in three soil samples obtained from the eastern limits of the excavation at concentrations exceeding regulatory cleanup levels. Additional excavation in this vicinity was not possible without endangering 36th Avenue West.

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Benzene, ethylbenzene and/or xylenes were detected at concentrations greater than regulatory cleanup levels in ground water samples obtained from monitor wells MW-1, MW-4, MW-5 and MW-6. The results of our earlier studies at the service station site are presented in our reports dated February 27, 1990, July 12, 1991 and September 10, 1991.

Off-site subsurface soil conditions were explored on residential property located approximately 80 feet east and downgradient of former Unocal Service Station 5533 in July 1991. The residential property is owned by Mr. and Mrs. Pennock and is located southeast of the intersection between 164th Street Southwest and 36th Avenue West. The Pennock property is shown relative to the service station site in Figure 2. A GeoEngineers representative observed the excavation of four test pits on the Pennock property on July 1, 1991. Benzene was detected at a concentration greater than the regulatory cleanup level in a soil sample obtained from one of the four test pits. The results of our preliminary study of the Pennock property are presented in our report dated August 2, 1991.

GeoEngineers conducted a Phase 1 ESA (environmental site assessment) of the service station site and surrounding properties in July 1991. The results of our Phase 1 ESA are presented in our report dated September 13, 1991.

SCOPE

The purpose of our most recent services was to explore the extent of off-site soil contamination, evaluate off-site ground water quality and to evaluate air quality within the Pennock residence. The scope of services completed for our expanded off-site study is listed below.

1. Install an air sampling tube in the crawl space beneath the Pennock residence.
2. Obtain seven air samples from inside the Pennock residence, two air samples from the crawl space beneath the Pennock residence and six air samples from outside the Pennock residence for chemical analysis of volatile aromatic hydrocarbons by EPA Method 410.A and fuel hydrocarbons by modified EPA Method 8015.
3. Install seven temporary vapor probes to a depth of approximately 1 foot on the Pennock property and measure hydrocarbon vapor concentrations in each probe with a Bacharach TLV Sniffer calibrated to hexane.

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4. Obtain one surface soil sample from beneath the Pennock residence.
5. Drill one hand-auger boring to a depth of approximately 5 feet on the Pennock property and complete the hand boring as a monitor well.
6. Drill 10 off-site exploratory borings in the service station vicinity using hollow-stem auger drilling equipment.
7. Obtain soil samples from each power boring at approximate 2.5-foot to 5-foot intervals.
8. Test at least one soil sample from each power boring for fuel hydrocarbons (gasoline and diesel) by modified EPA Method 8015 and BETX (benzene, ethylbenzene, toluene and xylenes) by EPA Method 8020.
9. Install a monitor well casing with a flush-grade, locking surface monument in each power boring.
10. Determine the monitor well casing elevations to an accuracy of 0.01 feet using an engineer's level and an assumed site datum.
11. Develop the well screens by hand-bailing.
12. Measure the depth to ground water in each well casing and sample the water table interface for the presence of free (floating) product.
13. Measure the airspace in the monitor well casings and in three utility vaults for combustible vapors using a Bacharach TLV Sniffer calibrated to hexane.
14. Obtain ground water samples from the off-site monitor wells for laboratory analysis of fuel hydrocarbons by modified EPA Method 8015 and BETX by EPA Method 8020.
15. Obtain air samples from the well casings of MW-7, MW-9, MW-10 and MW-12 for chemical analysis of volatile aromatic hydrocarbons, fuel hydrocarbons, and methane.
16. Evaluate the field and laboratory data with regard to current regulatory criteria.

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REGULATORY CRITERIA

Ecology (Washington State Department of Ecology) has adopted soil and ground water cleanup standards under the MTCA (Model Toxics Control Act). Method A cleanup levels were developed by Ecology to provide conservative cleanup levels for sites undergoing routine cleanup actions or for sites with relatively few hazardous substances. MTCA Method A cleanup levels are listed below:

Compound	MTCA Method A Soil Cleanup Level (mg/kg)	MTCA Method A Ground Water Cleanup Level (µg/l)
Total Petroleum Hydrocarbons		1000.0
Gasoline	100	
Diesel	200	
Other	200	
Benzene	0.5	5.0
Ethylbenzene	20	30
Toluene	40	40
Xylenes	20	20

mg/kg=milligrams per kilogram
µg/l=micrograms per liter

SITE CONDITIONS

GENERAL

The site of former Unocal Service Station 5533 is located a short distance north of the Lynnwood city limits in an area of commercial and residential development. The service station site is located near the top of a broad hill. The service station site and surrounding properties to the north, south and west are relatively level and slope gently downward to the east and northeast. The service station site has a ground surface elevation of approximately 600 feet above mean sea level.

In general, property east of the site slopes downward to the east. The west property boundary of the Pennock property consists of a steep slope with an approximate maximum height of 7 feet adjacent to 36th Avenue West. The Pennock property has been graded level and has a ground surface

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elevation approximately 7 feet lower than elevation of the service station site. The property east of the Pennock property is undeveloped and is owned by Ms. Julie Campbell.

Several utility lines are present beneath the streets in the study area. A GTE (General Telephone) fiber optic line and a 12-inch-diameter pressure gas line owned by WNG (Washington Natural Gas) are located along the east side of 36th Avenue West at depths of approximately 5.5 to 6 feet. Alderwood Water District maintains a 24-inch water main beneath the west side of 36th Avenue West at a depth of approximately 6.25 feet. This water main flows toward the south. A 4-inch WNG gas line and a stormwater sewer line are present beneath the south side of 164th Street Southwest at depths of approximately 3.5 to 4 feet. The storm sewer line flows to the east. An abandoned wooden water line also is located beneath the south side of 164th Street Southwest at a depth of approximately 6.25 feet.

SITE HISTORY

GeoEngineers reviewed pertinent historical information regarding the study area during our Phase 1 ESA study. Our review of this historical data indicated that a service station may have operated at the site of former Unocal Service Station 5533 as early as 1929. Unocal Service Station 5533 was constructed in 1966. The historical information also indicated that service stations operated on the property north of the Unocal site since 1969. A small shopping center with a convenience store and associated Chevron station currently operates on the property located north of the former Unocal station. No other fuel handling facilities were identified by the ESA. The results of our Phase 1 ESA are presented in our report dated September 13, 1991.

SUBSURFACE SOIL CONDITIONS

Off-site subsurface soil conditions in the vicinity of former Unocal Service Station 5533 were explored by completing one hand-auger boring (HB-1) and 10 power borings (MW-7 through MW-16) at the approximate locations shown in Figure 2. Details of the field exploration program and the boring logs for MW-7 through MW-12 are presented in Appendix A. Hand boring HB-1 was installed in the location of a previously excavated test pit (test pit C) and the disturbed soil encountered was not recorded in a boring log.

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In general, the borings encountered glacial till consisting of very dense silty sand and sandy silt with occasional gravel. A contact between weathered and unweathered till was encountered at a depth of approximately 3 feet in the five borings (MW-7 through MW-11) installed on private property. Six feet of very dense, fine to medium sand with silt was encountered at a depth of approximately 8 feet in boring MW-7. Up to 5 feet of fill material was encountered beneath the road surface in the borings completed in the street (MW-12 through MW-16). The base of the till was not encountered in the borings.

GROUND WATER CONDITIONS

Ground water conditions were explored by constructing a monitor well in the hand (HB-1) and power (MW-7 through MW-16) borings. Construction details for MW-7 through MW-16 are included in Appendix A.

GeoEngineers measured the depth to ground water and determined the water table elevations in wells MW-1 through MW-16 on September 4, 1991. The ground water table was approximately 2.5 to 7.2 feet below the ground surface at the time of our measurements. Water table elevations measured in MW-1 through MW-16 on September 4, 1991 are included in Figure 2.

In general, the ground water level in all off-site wells (MW-7 through MW-16) corresponds with the upper surface of the dense glacial till. This shallow (perched) ground water appears to flow toward the east and southeast. Ground water elevations in the six wells (MW-1 through MW-6) installed on the service station site appear to correlate with the base of the adjacent remedial excavations. Ground water elevations from MW-7, MW-9, MW-10, MW-11, MW-12, MW-14 and MW-16 were used to generate the ground water elevation contours shown in Figure 2.

It does not appear that the shallow (perched) water table aquifer in the vicinity of the site is currently being used as a source of domestic or municipal water. Water well records on file with Ecology indicate there are no records of active water wells within 1 mile of the service station site. Records for three well abandonments and one anode grounding system are on file with Ecology for the 1-mile area. Information on the anode grounding system well log indicates that the regional water table lies 150 to 200 feet below the ground surface in the vicinity of the site. Copies of the well logs are presented in our report dated July 12, 1991.

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AIR QUALITY

The air quality at the Pennock residence was evaluated by the following:

1. Installing seven temporary vapor probes and obtaining combustible vapor measurements from the seven probes.
2. Obtaining seven air samples from inside the Pennock residence, two air samples from the crawl space beneath the Pennock residence and six air samples from outside the Pennock residence for laboratory analysis of volatile aromatic hydrocarbons and fuel hydrocarbons.
3. Submitting analytical results to ICF (ICF Kaiser Engineers, Inc.) for evaluation with regard to health risk and regulatory criteria.

Seven temporary vapor probes were installed to a depth of approximately 1 foot near the northeast corner of the Pennock residence on July 29, 1991. The airspace within the vapor probes was monitored for the presence of combustible vapors using a Bacharach TLV Sniffer calibrated to hexane. Combustible vapors were not detected at concentrations greater than 100 ppm, which is the lowest level of reliable detection for the instrument. Details of vapor probe monitoring and installation are presented in Appendix A.

Air samples were collected from inside the Pennock residence and/or from the crawl space beneath the house on July 25, July 31 and August 15, 1991 and analyzed for volatile aromatic hydrocarbons and fuel hydrocarbons. Three samples were collected from the northwest bedroom, one sample was collected from the living room and two were collected from the crawl space beneath the Pennock residence. The air samples were obtained to evaluate the possible presence of gasoline-related compounds in the Pennock house and to provide data for assessment of health risk associated with exposure to the compounds at the concentrations detected.

The highest concentrations of BETX and fuel hydrocarbons were detected in the air samples obtained from the northwest bedroom. A benzene concentration of 10 ppb (parts per billion) was reported for sample 910815-2. Gasoline was detected at a concentration of 3 ppm (parts per million) in sample 910725-1. Sample locations and analytical results are summarized in Table 1. Laboratory reports are included in Appendix B.

Analytical results for the air samples were forwarded to ICF for review and evaluation. ICF reported that the concentrations of BETX in the air samples obtained from the Pennock residence were within background

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concentrations in ambient air and may be typical of the concentrations in the average home in the United States. ICF indicated that the benzene concentrations detected represent an estimated cancer (leukemia) risk of 8×10^{-5}, or 8 in 100,000, for exposure durations of 30 years (18 hours/day, 365 days/year). ICF also reported that the concentrations of ethylbenzene, toluene, xylenes and dichlorobenzenes detected in the air samples are less than the permissible long-term exposure concentrations established by the EPA (U.S. Environmental Protection Agency). A copy of ICF's report is included in Appendix C.

ICF reported that the source of the BETX vapors could not be determined from the sampling program established and that the concentrations detected may represent background conditions present near the busy intersection of 164th Street Southwest and 36th Avenue West. ICF recommended that samples of ambient air be obtained from the vicinity of the Pennock residence during periods of high and low traffic volumes to determine ambient air quality in this area. The background air samples were collected on September 10, 1991. Three samples were collected from the northwest bedroom, three were collected from the Pennock's yard outside the northwest bedroom and three were collected from the southeast corner of the intersection between 164th Street Southwest and 36th Avenue West. One sample was obtained from each of these locations at approximately 10:00 A.M. to evaluate background air quality during low traffic flow and at approximately 4:30 P.M. and 5:30 P.M. to evaluate background air quality during high traffic flow.

The nine air samples were submitted for analysis of fuel hydrocarbons and volatile aromatic hydrocarbons. The greatest concentrations of benzene (7 ppb), ethylbenzene (3 ppb) and xylenes (9 ppb) were detected in the air samples obtained from the Pennock yard at 5:30. Benzene was also detected at 7 ppb in the air sample obtained from the southeast corner of the street intersection at 5:30. The greatest concentrations of toluene were detected in the bedroom sample (21 ppb) obtained at 10:00 and the yard sample (20 ppb) obtained at 5:30. The greatest concentration of gasoline was detected in the air samples obtained from the yard (7 ppm) and intersection (7 ppm) at 10:00. Analytical data for the air samples collected on September 10 are summarized in Table 1.

ICF also recommended obtaining vapor readings from inside the Pennock residence on a weekly basis for two months and obtaining a sample for analyses once a month to establish trends and fluctuations in the data and

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to identify any significant increases in hydrocarbon vapor concentrations. Details of ICF's recommendations are provided in their report (Appendix C).

SUBSURFACE CONTAMINATION

GENERAL

The presence of petroleum-related subsurface contamination off-site in the vicinity of former Unocal Service Station 5533 was evaluated by the following:

1. Conducting field screening on soil samples using visual, water sheen and headspace vapor screening methods.
2. Measuring the airspace in the well casings and in two utility vaults for combustible vapors.
3. Testing air samples from four monitor wells for fuel hydrocarbons and methane and air samples from two wells for BETX.
4. Testing the water table interface in each ground water monitor well for free (floating) hydrocarbons.
5. Testing soil and ground water samples for BETX and fuel hydrocarbons.

The air sample analytical data are summarized in Table 1. Subsurface soil analytical data are summarized in Table 2. Combustible vapor measurements for the well casings and ground water analytical data are summarized in Table 3. The field screening methods and results are presented in Appendix A. Laboratory reports for the air samples are presented in Appendix B. Laboratory reports and our review of the laboratory's quality control data for the soil and ground water samples are also included in Appendix B.

SOIL

Field screening was conducted on soil samples obtained from the borings for evidence of petroleum-related contamination using visual, water sheen and headspace vapor screening methods. Evidence of contamination was not detected during field screening of soil samples obtained from the borings installed on the Pennock (MW-7, MW-8 and MW-9) and Campbell (MW-10 and MW-11) properties or in MW-14.

Moderate or heavy sheens were observed during water sheen screening of at least one soil sample obtained from borings MW-12, MW-13, MW-15 and MW-16. Headspace vapor concentrations between 1,000 and 5,000 ppm were

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measured in at least one soil sample from MW-12, MW-13 and MW-15. Headspace vapors were measured at concentrations ranging from less than 100 ppm to 400 ppm in the soil samples obtained from MW-16.

The surface soil sample (HCS-1) obtained from beneath the Pennock residence and at least one soil sample from each power boring were submitted for laboratory analysis of BETX and fuel hydrocarbons. BETX and gasoline were not detected in HCS-1 or in the soil samples obtained from the five borings (MW-7 through MW-11) installed on residential property. Diesel was detected at a concentration less than the MTCA Method A cleanup level in the sample obtained from a depth of 2.5 feet in MW-11 (15 mg/kg). BETX and/or fuel hydrocarbons were detected at concentrations greater than MTCA Method A cleanup levels in the soil samples obtained from a depth of 5 feet from three (MW-12, MW-13 and MW-16) of the five borings installed in the street. The soil analytical data are summarized in Table 2.

SUBSURFACE COMBUSTIBLE VAPORS

The concentrations of combustible vapors were measured in the well casing of HB-1 on July 29 and in the casings of MW-7 through MW-16 on September 4, 1991 with a Bacharach TLV Sniffer calibrated to hexane. Combustible vapors were measured at concentrations greater than 10,000 ppm in the well casings of MW-7, MW-10, MW-12, MW-15 and MW-16. Combustible vapors were measured at concentrations of 8,200 ppm in MW-9 and MW-11, 1,800 ppm in MW-14, 900 ppm in HB-1, 420 ppm in MW-13 and at 240 ppm in MW-8.

Air samples were obtained from the well casings of MW-7, MW-9, MW-10 and MW-12 on September 23 for laboratory analysis of fuel hydrocarbons and methane. Gasoline was detected at 3,000 ppm in the air sample from MW-12 and at 4 ppm in the air sample obtained from MW-7. Gasoline was not detected in the air samples from MW-9 and MW-10. Methane was detected in the air samples obtained from MW-7 (10 ppm), MW-10 (190 ppm), MW-9 (2,300 ppm) and MW-12 (4,400 ppm). The samples from MW-9 and MW-12 also were tested for BETX. BETX was detected at concentrations ranging from 3,000 ppb to 48,000 ppb in the air sample from MW-12; BETX was detected at concentrations between 2 ppb and 17 ppb in the sample from MW-9. The analytical data are summarized in Table 1.

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Vapor measurements were obtained in three utility vaults located along 164th Street Southwest on September 23, 1991 with a Photovac MicroTIP meter calibrated to isobutylene. The vaults are owned by WNG, GTE and Snohomish County (traffic signal vault) and are shown on Figure 2. A vapor concentration of 15 ppm was measured in the WNG vault. Vapor concentrations were measured at 18 ppm in the GTE and traffic signal vaults.

GROUND WATER

Free (floating) hydrocarbons were not detected in the hand-auger well (HB-1) or in the 10 monitor wells. A sheen was observed on the ground water while sampling well MW-12. Sheen was not observed on the water in the remaining wells during sampling.

A ground water sample was obtained from HB-1 on July 29 and submitted for testing of BETX. Ground water samples were obtained from MW-7 through MW-16 on August 30, 1991 for analysis of BETX and fuel hydrocarbons. Concentrations of BETX in the ground water sample obtained from monitor well HB-1 exceeded MTCA Method A cleanup levels. BETX and fuel hydrocarbons either were not detected or were detected at concentrations less than Method A cleanup levels in the ground water samples obtained from the other five monitor wells (MW-7 through MW-11) completed on private property. BETX constituents and/or fuel hydrocarbons were detected at concentrations greater than MTCA Method A cleanup levels in ground water samples obtained from the five monitor wells (MW-12 through MW-16) completed in the street. The ground water chemical analytical results are summarized in Table 3.

CONCLUSIONS

Analytical results indicate that concentrations of gasoline-related compounds are present in the air within the Pennock residence. Benzene concentrations from air samples from the Pennock residence measured during this study range from less than 2 ppb to 10 ppb. ICF indicated that a benzene concentration of 10 ppb represents a somewhat elevated cancer risk for long-term exposure. The concentrations of ethylbenzene, toluene, xylenes and dichlorobenzenes detected in the air samples from the residence were less than the permissible long-term exposure concentrations established by the EPA. ICF also indicated that the concentrations of BETX in the air

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samples obtained from the Pennock residence were within background concentrations in ambient air and may be typical of the concentrations in the average home in the United States.

Air samples were collected from inside the Pennock residence and from the crawl space on August 15. The concentrations of gasoline-related compounds in the air samples collected from inside and beneath the house on that date were similar. We anticipate that gasoline-related vapors would accumulate in the crawl space at concentrations greater than those passing into the house if the ground were the source of vapors. The analytical results for air samples obtained in September indicate that concentrations of gasoline-related compounds are similar inside and outside the residence. Low concentrations of gasoline-related compounds were detected in two of the three air samples obtained from wells located around the Pennock residence. Gasoline-related compounds were not detected in the third air sample obtained from the wells. In our opinion, the gasoline-related compounds detected in the Pennock residence represent ambient air conditions in the study area and are not a result of vapor seepage from the subsurface.

The results of our subsurface studies indicate that gasoline-related soil and ground water contamination is present beneath 164th Street Southwest and 36th Avenue West and in the northwest corner of the Pennock property. Soil and ground water contamination were not detected beneath the Pennock residence at concentrations greater than MTCA Method A cleanup levels. The concentration of diesel detected in 2.5-foot soil sample from MW-11 is less than the MTCA Method A cleanup level and does not appear to be associated with the gasoline-related contamination present at this site.

The subsurface petroleum-related soil contamination discovered on the Pennock property during our previous study appears to be limited to the northwestern portion of the Pennock property. Gasoline-related contamination was not detected in any of the soil samples obtained from borings completed on the Pennock or Campbell properties.

The soil contamination beneath the streets is located near the northeast corner of the service station site and extends eastward along 164th Street Southwest. The soil contamination beneath the streets appears to be limited to the upper 5 to 8 feet of soil. The northern and eastern limits of soil contamination beneath the streets have not been determined.

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Ground water contamination at concentrations greater than MTCA Method A cleanup levels does not appear to have migrated downgradient beyond the limits of soil contamination. Ground water in the vicinity of the site flows toward the east, and appears to follow the contact between the dense, unweathered glacial till and the overlying weathered till or fill.

The presence of underground utilities possibly influenced distribution of gasoline-related soil and ground contamination eastward beneath 164th Street Southwest in the vicinity of MW-16. The presence of underground utilities may also be directing the flow of contaminated ground water southward beneath 36th Avenue West. The concentration of benzene in ground water from MW-14 slightly exceeds the MTCA Method A cleanup level. Soil contamination was not detected in samples obtained from MW-14. In our opinion, explorations within the utility trenches are not practical. It is also our opinion that the concentrations of combustible vapors measured in the utility vaults are typical of background conditions and do not represent an explosion hazard.

REMEDIAL ACTION AND MONITORING RECOMMENDATIONS FOR OFF-SITE AREAS

Based on current data, gasoline-related soil and ground water contamination extends from the eastern property boundary of the site of former Unocal Service Station 5533 to the northwest corner of the Pennock property. The impacted areas consist of two locations with unique constraints for remedial actions: (1) beneath the streets and (2) the Pennock property. Specific remedial recommendations are presented later in this report for each of these areas.

The primary cleanup options for fuel hydrocarbon-contaminated soil are (1) excavation with soil treatment or disposal, (2) in-place (in-situ) soil venting (vapor extraction) and (3) in-situ biological treatment. Removing or treating the source of ground water contamination (hydrocarbons in the soil) facilitates natural degradation of residual hydrocarbons in the ground water.

In-situ biological treatment requires the ability to control ground water movement beneath the site so that nutrients and oxygen can be delivered effectively to the affected zones. It is our opinion that the dense silty soils at this site are not amenable to remediation using in-situ biotreatment methods. It is likely that the injected water would flow along the till surface at this site, rather than being evenly dispersed throughout

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the contaminated zone. We anticipate that in-situ biological treatment methods would not be effective in degrading the residual petroleum-related contamination to concentrations less than the MTCA cleanup levels in the relatively impermeable soil at this site. Based upon our experience with biological soil treatment methods, we recommend against further consideration of this option at this site.

The viable options for each of the two impacted areas and our recommendations for each area are presented below.

STREET AREAS

Gasoline-related contamination is present in the shallow soil and ground water beneath 164th Street Southwest and 36th Avenue West. Most of the source of this contamination was removed by excavation of gasoline-contaminated soil from the site of Unocal Service Station 5533 between October 1990 and June 1991. Direct excavation and removal of contaminated soil is not feasible in the street areas. Remedial options for this area are limited by access constraints.

Limited Action: Choice of the limited action alternative may be appropriate for petroleum contaminated sites where residual contamination poses limited risk to human health and the environment. Concentrations of petroleum-related contamination in shallow soil and ground water will decline over time by natural biological processes. Engineering controls are warranted if exposure pathways are present. If contaminated ground water is present at a site, a limited action alternative should be accompanied by ground water monitoring to confirm that contaminated ground water is not migrating significantly.

The exposure pathways related to residual soil contamination beneath the street areas are: (1) potential direct contact with contaminated soil and (2) downgradient migration of dissolved hydrocarbons in ground water. Recommendations for limited actions to address these exposure pathways are presented below.

We recommend that the east road embankment for 36th Avenue West adjacent to the Pennock property be capped to reduce the possibility of direct dermal contact with the gasoline-contaminated soil. Possible capping methods include: (1) placement of impermeable fabric, (2) construction of a rockery, and (3) paving.

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We recommend obtaining ground water samples from MW-7 through MW-16 twice a year and testing the samples for BETX. Samples from MW-12 and MW-13 also should be tested for fuel hydrocarbons. We recommend continuing the ground water monitoring program until the BETX and fuel hydrocarbon concentrations are less than applicable ground water quality standards. Sampling of the remote downgradient wells (MW-9, MW-10 and MW-11) may be reduced in frequency or eliminated if analytical testing continues to indicate noncontaminated ground water at these locations. We recommend that sampling of the two downgradient wells (MW-7 and MW-8) closest to the source of contamination be maintained throughout the monitoring program. The monitor wells should be sealed and abandoned in accordance with state law after monitoring indicates that ground water quality standards have been achieved.

We recommend that additional remedial actions be evaluated for the residual contamination present beneath the streets if ground water monitoring indicates movement of the BETX plume in ground water, or if significant hydrocarbon sheens are observed on puddles on the Pennock property. Our recommended alternative remedial action is presented below.

In-Situ Soil Venting and Vapor Extraction: In-situ soil venting and vapor extraction is a cleanup method that removes the volatile components of petroleum products from subsurface soil. Vacuum is applied to wells and/or perforated piping placed in the zone of soil contamination to increase the rate of air flow through the subsurface soil. The increased rate of air flow causes an increase in the rate of volatilization of the petroleum compounds. The vapor extraction process also increases the amount of oxygen in the subsurface soil, which enhances the natural biological degradation of the residual petroleum hydrocarbons.

Soil venting and vapor extraction is most effective in areas where the contamination is in relatively permeable soil located above the water table. The process is most effective for cleanup of gasoline-contaminated soil. Treatment times for this cleanup method are long in glacial till soil, typically two or more years.

We recommend that in-situ vapor extraction be considered as a remedial method if continued monitoring indicates a need for remedial measures beneath the streets. In our opinion, the most practical VES (vapor extraction system) would consist of horizontal vapor recovery lines

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installed within the county right-of-way adjacent to the north and west boundaries of the Pennock property and along the north and east boundaries of the former Unocal property. Placement of a VES should be accompanied by a ground water collection gallery placed along the east side of 36th Avenue West. Easements for underground VES facilities, blowers and exhaust stacks would be needed from Snohomish County.

PENNOCK PROPERTY

Air Monitoring: ICF recommended obtaining vapor readings from inside the Pennock residence using an OVA (organic vapor analyzer) on a weekly basis for two months, and obtaining an air sample for analysis once a month to establish trends and fluctuations in the data and to identify any significant increases in hydrocarbon vapor concentrations. We concur with ICF's recommendations and suggest that the on-site monitoring data collection and data review be performed by ICF. We also recommend that any chemical analytical work be performed by the testing laboratory utilized to date.

Soil Excavation and Treatment: Based on our experience, the most effective method for remediation of fuel contamination in shallow soil and ground water is excavation and aboveground treatment or disposal of the contaminated soil. Removing the source of ground water contamination (hydrocarbons in the soil) will facilitate natural degradation of residual hydrocarbons in the ground water.

We recommend excavating as much additional gasoline-contaminated soil as possible from the northwest corner of the Pennock property. Well HB-1 will be removed during excavation. The locations of underground utilities and road stability will control the practical limits of excavation in this area. We recommend that the excavated soil be transported to a Unocal site for treatment or transported to an approved landfill for disposal.

LIMITATIONS

We have prepared this report for use by Unocal. This report may be made available to the property owners and to regulatory agencies. The report is not intended for use by others and the information contained herein is not applicable to other sites.

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Our interpretations of subsurface conditions are based on data from widely spaced explorations at the site. It is always possible that contamination may exist in on-site or off-site areas that were not explored by drilling or excavating.

- o O o -

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in this area at the time this report was prepared. No other conditions, express or implied, should be understood.

Respectfully submitted,

GeoEngineers, Inc.

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TABLE 1 (PAGE 1 0F 2)
SUMMARY OF AIR CHEMICAL ANALYTICAL DATA

Sample Number	Date Sampled	Sample Location	Sample Height[1] (feet)	Approx. Time Sampled	Field Screening Results[2] (ppm)		Volatile Aromatic Hydrocarbons (EPA Method 410.A) (ppb)						Fuel Hydrocarbons as Gasoline (Modified EPA Method 8015) (ppm)	Methane (ASTM Method D-1946) (ppm)
					TLV	MicroTIP	B	E	T	X	1,3- and 1,4-dichlorobenzene	1,2-dichlorobenzene		
Residence Samples														
910725-1	07/25/91	Pennock residence NW bedroom	0.25	9:30 AM	<100	1.5	<5	<4	13	<4	12	<3	3	–
910731-1	07/31/91	Crawl space	1.5	1:00 PM	<100	–	3	32	23	16	<6	<6	<2	–
910815-1	08/15/91	Pennock residence living room	4.0	8:15 AM	<100	0.0	<3	<2	<3	2	<2	<2	<2	–
910815-2	08/15/91	Pennock residence NW Bedroom	1.0	8:20 AM	<100	0.0	10	4	14	12	<2	<2	<2	–
910815-3	08/15/91	Pennock residence NW Bedroom	4.0	8:25 AM	<100	0.0	8	2	13	10	<2	<2	<2	–
910815-4	08/15/91	Crawl space	1.5	8:45 AM	<100	0.0	9	10	11	14	<2	<2	<2	–
Background Samples														
1-A	09/10/91	NW bedroom	3.0	10:00 AM	<100	3.0	6	<2	21	4	<4	<2	5	–
1-B		Yard[3]	3.0	10:05 AM	<100	0.0	4	<2	6	<2	<4	<2	7	–
1-C		Intersection[4]	3.0	10:10 AM	<100	0.0	4	<2	7	<2	<4	<2	7	–
2-A	09/10/91	NW bedroom	3.0	4:30 PM	<100	0.0	4	<2	10	<2	<4	<2	3	–
2-B		Yard[3]	3.0	4:35 PM	<100	0.0	4	<2	<3	<2	<4	<2	6	–
2-C		Intersection[4]	3.0	4:40 PM	<100	0.0	4	<2	6	<2	<4	<2	<2	–
3-A	09/10/91	NW bedroom	3.0	5:30 PM	<100	0.0	4	<2	11	<2	<4	<2	5	–
3-B		Yard[3]	3.0	5:35 PM	<100	0.0	7	3	20	9	<4	<2	4	–
3-C		Intersection[4]	3.0	5:40 PM	<100	0.0	7	<2	14	4	<4	<2	5	–

TABLE 1 (PAGE 2 OF 2)

Sample Number	Date Sampled	Sample Location	Sample Height[1] (feet)	Approx. Time Sampled	Field Screening Results[2] (ppm)		Volatile Aromatic Hydrocarbons (EPA Method 410.A) (ppb)						Fuel Hydrocarbons as Gasoline (Modified EPA Method 8015) (ppm)	Methane (ASTM Method D-1946) (ppm)
					TLV	MicroTIP	B	E	T	X	1,3- and 1,4-dichlorobenzene	1,2-dichlorobenzene		
Monitor Well Casing														
910923-1	09/23/91	MW-7	N/A	11:30 AM	2,500	21	–	–	–	–	–	–	4	10
910923-2	09/23/91	MW-12	N/A	11:40 AM	>10,000	970	43,000	3,000	45,000	48,000	–	–	3,000	4,400
910923-3	09/23/91	MW-9	N/A	11:50 AM	8,000	43	5	2	17	15	<4	<2	<2	2,300
910923-4	09/23/91	MW-10	N/A	12:00 noon	350	50	–	–	–	–	–	–	<2	190

Notes:

[1]Height (in feet) above the floor or ground surface.

[2]TLV measurements obtained with a Bacharach TLV Sniffer calibrated to hexane. MicroTIP measurements obtained with a Photovac MicroTIP calibrated to isobutylene.

[3]Air sample collected from immediately outside of the northwest corner of the Pennock residence.

[4]Air sample collected from the southeast corner of the intersection of 164th Street Southwest and 36th Avenue West.

B = benzene, E = ethylbenzene, T = toluene, X = xylenes

ppm = parts per million

ppb = parts per billion

">" = greater than

"<" = less than

"–" = not tested

N/A = not applicable

TABLE 2
SUMMARY OF FIELD SCREENING AND SOIL CHEMICAL ANALYTICAL DATA

Boring Number	Sample Date	Sample Depth (feet)	Field Screening Results[1]		BETX (EPA Method 8020) (mg/kg)				Fuel Hydrocarbons (Modified EPA Method 8015) (mg/kg)	
			Headspace Vapors (ppm)	Sheen	Benzene	Ethylbenzene	Toluene	Xylenes	Gasoline	Diesel
MW-7	08/22/91	2.5	<100	SS	<0.025	<0.025	<0.025	<0.025	<5	<5
	08/22/91	10.0	<100	NS	<0.025	<0.025	<0.025	<0.025	<5	<5
MW-8	08/22/91	2.5	<100	NS	<0.025	<0.025	<0.025	<0.025	<5	<5
MW-9	08/22/91	2.5	<100	SS	<0.025	<0.025	<0.025	<0.025	<5	<5
	08/22/91	10.0	<100	NS	<0.025	<0.025	<0.025	<0.025	<5	<5
MW-10	08/23/91	2.5	<100	NS	<0.025	<0.025	<0.025	<0.025	<5	<5
	08/23/91	7.5	<100	NS	<0.025	<0.025	<0.025	<0.025	<5	<5
MW-11	08/28/91	2.5	<100	SS	<0.025	<0.025	<0.025	<0.025	<5	15
	08/28/91	5.0	<100	NS	<0.025	<0.025	<0.025	<0.025	<5	<5
MW-12	08/26/91	5.0	5,000	HS	11	87	250	540	4,200	250
	08/26/91	10.0	<100	NS	<0.025	<0.025	<0.025	0.034	<5	<5
MW-13	08/26/91	5.0	3,000	MS	2.2	18	47	120	1,400	82
MW-14	08/26/91	5.0	200	NS	<0.025	<0.025	0.032	0.042	<5	<5
	08/26/91	10.0	<100	NS	<0.025	<0.025	<0.025	<0.025	<5	<5
MW-15	08/27/91	7.5	1,000	HS	0.042	<0.025	<0.025	0.094	<5	<5
	08/27/91	10.0	<100	SS	<0.025	<0.025	<0.025	<0.025	<5	<5
MW-16	08/27/91	5.0	300	HS	<0.025	<0.025	<0.025	0.19	200	<5
	08/27/91	10.0	<100	NS	<0.025	0.042	<0.025	0.16	22	<5
HCS-1	07/29/91	0.0	–	–	<0.025	<0.025	<0.025	<0.025	<5	<5
MTCA Method A Soil Cleanup Level					0.5	20	40	20	100	200

Notes:

[1]See Appendix A for a detailed explanation of field screening methods.

NS = no sheen, SS = slight sheen, MS = moderate sheen, HS = heavy sheen

ppm = parts per million

mg/kg = milligrams per kilogram

< = less than; – = not tested

TABLE 3
SUMMARY OF HYDROCARBON VAPOR CONCENTRATIONS AND GROUND WATER CHEMICAL ANALYTICAL DATA

Monitor Well Number	Date Sampled	Hydrocarbon Vapor Concentrations[1] (ppm)	BETX (EPA Method 8020) (µg/l)				Fuel Hydrocarbons (Modified EPA Method 8015) (mg/l)	
			Benzene	Ethylbenzene	Toluene	Xylenes	Gasoline	Diesel
MW-7	08/30/91	>10,000	1.3	<0.5	<0.5	<0.5	<1	<1
MW-8	08/30/91	240	1.2	<0.5	0.6	<0.5	<1	<1
MW-9	08/30/91	8,200	<0.5	<0.5	<0.5	<0.5	<1	<1
MW-10	08/30/91	>10,000	<0.5	<0.5	<0.5	<0.5	<1	<1
MW-11	08/30/91	8,200	<0.5	<0.5	<0.5	<0.5	<1	<1
MW-12	08/30/91	>10,000	2,100	1,900	2,800	10,000	49	<1
MW-13	08/30/91	420	2,800	1,400	12,000	8,200	130	6
MW-14	08/30/91	1,800	6.6	2.6	1.9	8.7	<1	<1
MW-15	08/30/91	>10,000	9.4	<0.5	0.6	2.9	<1	<1
MW-16	08/30/91	>10,000	35	3.1	1.3	2.3	<1	<1
HB-1	07/29/91	900	2,000	1,700	15,000	12,000	–	–
MTCA Method A Ground Water Cleanup Level			5	30	40	20	1	1

Notes:

[1]Measurements obtained in HB-1 on July 29 and in MW-7 through MW-16 on September 4, 1991 using a Bacharach TLV Sniffer calibrated to hexane.

ppm = parts per million

µg/l = micrograms per liter

mg/l = milligrams per liter

">" = greater than

"<" = less than

"–" = not tested



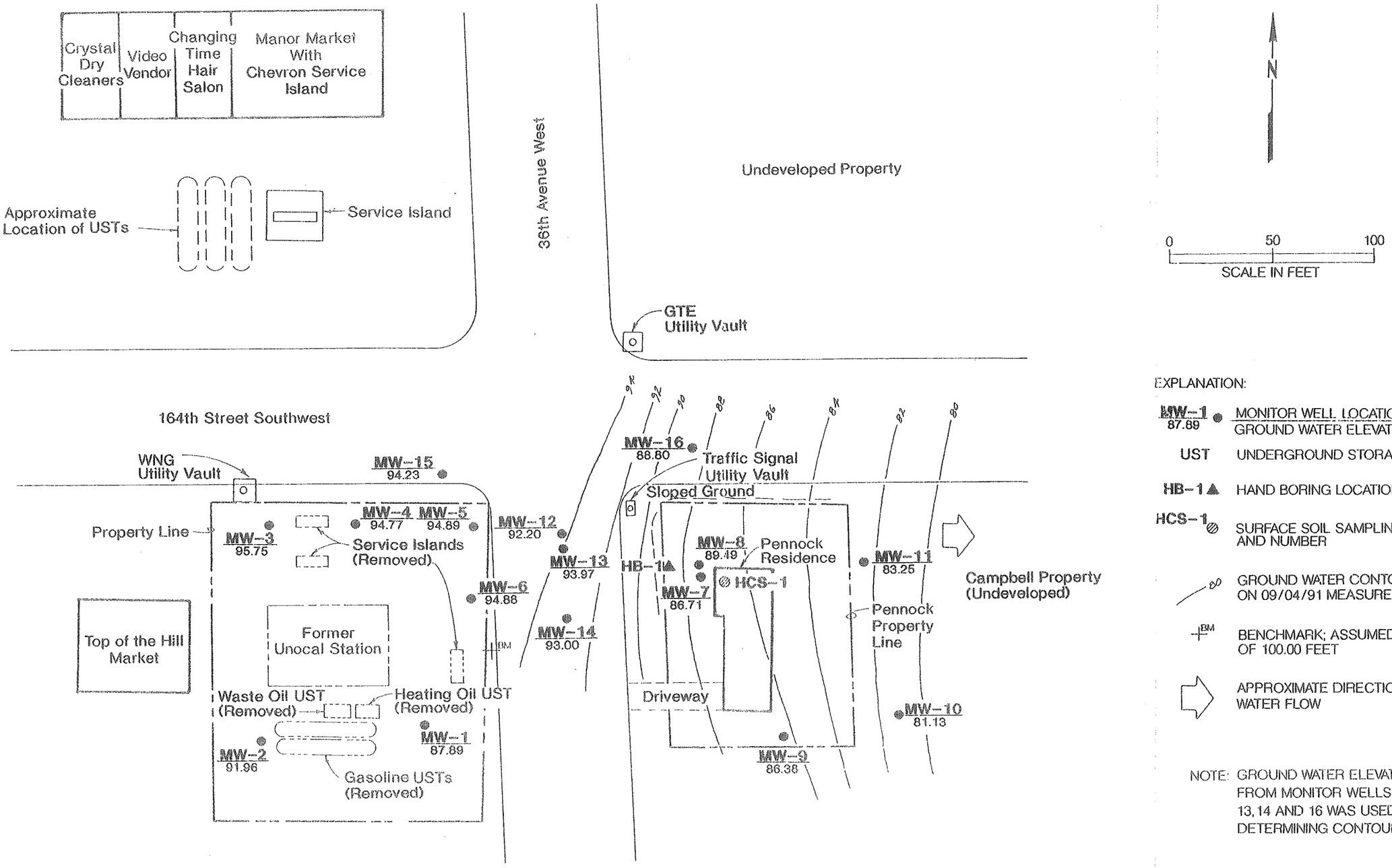
REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE MAP
"EDMONDS EAST, WASH."

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VICINITY MAP

FIGURE 1

0161-236-804 DJK:KKT 2.21.90



EXPLANATION:

- MW-1 87.89 — MONITOR WELL LOCATION AND NUMBER / GROUND WATER ELEVATION ON 09/04/91
- UST — UNDERGROUND STORAGE TANK
- HB-1 ▲ — HAND BORING LOCATION AND NUMBER
- HCS-1 ⊘ — SURFACE SOIL SAMPLING LOCATION AND NUMBER
- GROUND WATER CONTOURS BASED ON 09/04/91 MEASUREMENTS
- BM — BENCHMARK; ASSUMED ELEVATION OF 100.00 FEET
- APPROXIMATE DIRECTION OF GROUND WATER FLOW

NOTE: GROUND WATER ELEVATION DATA FROM MONITOR WELLS 7,9,10,11, 13,14 AND 16 WAS USED FOR DETERMINING CONTOURS.

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SITE PLAN

FIGURE 2

0161-256-B04 DFW 4-10 9/17/91 (8)

APPENDIX A

A P P E N D I X A

FIELD EXPLORATIONS

AIR SAMPLING AND MONITORING

A technician from GeoEngineers installed a ½-inch diameter vapor sampling tube in the crawl space beneath the Pennock residence on July 29, 1991. The sampling tube was suspended from the floor joists in the crawl space. The terminus of the sampling tube is suspended approximately 1.5 feet above the ground surface near the northeast corner of the house. Oxygen levels and organic vapor concentrations were monitored during installation using a Bacharach Sentinel oxygen meter and Photovac MicroTIP.

Air samples were collected from the Pennock residence and/or crawl space on July 25, July 31 and August 15, 1991. Background samples were collected from outside the residence on September 10. Air samples were collected from four well casings on September 23. Air quality at each sample location was monitored using a Bacharach TLV Sniffer calibrated to hexane and a Photovac MicroTIP calibrated to isobutylene before each sample was collected. The air samples were collected in 500-milliliter evacuated stainless steel canisters supplied by the analytical laboratory. The sampling hose was purged with the sample source before each sample was collected. The air canisters were sealed with a brass cap and shipped to the analytical laboratory under chain-of-custody.

HYDROCARBON VAPOR CONCENTRATIONS

Seven temporary vapor probes were installed on July 29, 1991 by a GeoEngineers field technician. The vapor probes consisted of 1-inch-diameter steel pipe that was driven approximately 12 inches into the ground. Combustible vapor concentrations within the probes were measured with a Bacharach TLV Sniffer calibrated to hexane.

Organic vapor concentrations in the nearby utility vaults were monitored by our staff on September 23, 1991 using a Photovac MicroTIP. Readings were obtained through Tygon tubing lowered into the vaults through ventilation holes. The terminus of the tubing in the WNG and GTE vaults was located approximately 5 feet below grade. The terminus of the tubing in the traffic signal vault was located approximately 1.5 feet below grade.

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Combustible hydrocarbon vapor concentrations were measured in monitor well HB-1 on July 29 and in monitor wells MW-7 through MW-16 on September 4, 1991 using a Bacharach TLV Sniffer calibrated to hexane and a drop tube that was lowered into the well to within approximately 1 foot above the water surface. The well casing vapor data are presented on Table 3.

DRILLING AND SOIL SAMPLING

Surface soil conditions beneath the Pennock residence were explored by obtaining one soil sample (HB-1) on July 29, 1991 for laboratory analysis. The sample was collected with a clean plastic bag and was immediately transferred to a glass sample jar supplied by the laboratory and placed in a cooler with ice. The location of this sample is shown on Figure 2.

Off-site subsurface conditions in the vicinity of former Unocal Service Station 5533 were explored by drilling one hand boring on July 29 and 10 power borings between August 22 and 27, 1991 at the locations shown in Figure 2. The hand boring was drilled by licensed well driller from our staff to a depth of 4.8 feet using hand-auger drilling equipment. The power borings were drilled to depths ranging from 7.5 to 20 feet below ground surface using truck-mounted, hollow-stem auger drilling equipment owned and operated by GeoBoring and Development, Inc. The drilling equipment was cleaned with a hot-water pressure washer between drilling each boring. The soil sampling equipment was cleaned with a TSP (trisodium phosphate) wash and a distilled water rinse between each sampling attempt. Permits were obtained from the Snohomish County Community Development and Public Works departments prior to drilling in the rights-of-way.

A geologist from our staff determined the boring locations, examined and classified the soils encountered, and prepared a detailed log of each boring. Soils encountered were classified visually in general accordance with ASTM D-2488-84, which is described in Figure A-1. An explanation of the boring log symbols is presented in Figure A-2. The boring logs are given in Figures A-3 through A-12.

Soil samples were obtained from the 10 power borings at approximate 2.5- to 5.0-foot intervals using a split-barrel sampler (1.5-inch ID). The sampler was driven 18 inches by a 140-pound weight falling a vertical distance of approximately 30 inches. The number of blows needed to advance the sampler the final 12 inches or other specified interval is indicated to the left of the corresponding sample notations on the boring logs.

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At least one sample was selected from each boring for chemical analysis of BETX and fuel hydrocarbons. Samples that were tested are denoted in our boring logs with a "CA." Chain-of-custody procedures were followed in transporting the soil samples to the analytical laboratory.

Soil cuttings from each boring were placed in labeled drums and stored on the Unocal site pending the results of analytical testing. The soil cuttings from borings MW-7 through MW-11 and MW-14 were later placed on the Unocal site as fill material. Soil cuttings from borings MW-12, MW-13, MW-15 and MW-16 were transported to Fife Sand and Gravel for treatment.

FIELD SCREENING OF SOIL SAMPLES

A GeoEngineers representative field screened soil samples obtained from the borings. Field screening results are used as a general guideline to delineate areas of possible petroleum-related contamination. In addition, field screening results are used to aid in the selection of soil samples for chemical analysis. The screening methods used include (1) visual examination, (2) water sheen screening, and (3) headspace vapor screening using a Bacharach TLV Sniffer. The results of headspace and sheen screening are included on the boring logs.

Visual screening consists of inspecting the soil for stains indicative of fuel-related contamination. Visual screening is generally more effective when contamination is related to heavy petroleum hydrocarbons such as motor oil, or when hydrocarbon concentrations are high. Water sheen screening and headspace vapor screening are more sensitive methods that have been effective in detecting contamination at concentrations less than regulatory cleanup guidelines.

Water sheen screening involves placing soil in water and observing the water surface for signs of sheen. Sheens observed are classified as follows:

No Sheen (NS)	No visible sheen on the water surface.
Slight Sheen (SS)	Light, colorless, dull sheen; spread is irregular, not rapid; sheen dissipates rapidly.

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Moderate Sheen (MS)	Light to heavy sheen; may have some color/iridescence; spread is irregular to flowing, may be rapid; few remaining areas of no sheen on water surface.
Heavy Sheen (HS)	Heavy sheen with color/iridescence; spread is rapid; entire water surface may be covered with sheen.

Headspace vapor screening involves placing a soil sample in a plastic sample bag. Air is captured in the bag and the bag is shaken to expose the soil to the air trapped in the bag. The probe of a Bacharach TLV Sniffer is inserted in the bag and the Sniffer measures the concentrations of combustible vapor in the air removed from the sample headspace. The Sniffer measures concentrations in ppm (parts per million) and is calibrated to hexane. The Sniffer is designed to quantify combustible gas concentrations in the range between 100 and 10,000 ppm.

Field screening results are site- and boring-specific. The results vary with temperature, soil type, soil moisture content and type of contaminant.

MONITOR WELL CONSTRUCTION

Two-inch-diameter, Schedule 40 PVC (polyvinyl chloride) pipe was installed in each boring at the completion of drilling. The lower portion of the PVC pipe is machine-slotted (0.02-inch slot width) to allow entry of hydrocarbon vapors and ground water into the well casings. Medium sand was placed in the borehole annulus surrounding the slotted portion of the PVC pipe. Monitor well construction details for MW-7 through MW-16 are shown in Figures A-3 through A-12.

Monitor well HB-1 was developed on July 29 and monitor wells MW-7 through MW-16 were developed on August 30, 1991 by removing at least 5 gallons of water from each well or by bailing each well dry with a stainless steel or disposable polyethylene bailer and new nylon rope. Purged water from the monitor wells was placed in labeled 55-gallon drums, which are currently stored on the Unocal site. We determined the elevations of the well casings of MW-7 through MW-16 to the nearest 0.01 foot with an engineer's level on August 30, 1991. An elevation datum of 100.00 feet was

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assumed at the base of a utility pole at the location shown in Figure 2. Elevations referenced to this datum are included on the monitor well logs.

GROUND WATER ELEVATIONS

The depth to the ground water table relative to monitor well casing rims was measured in MW-1 through MW-16 on September 4, 1991. The measurements were taken using a weighted fiberglass tape and water-sensitive paste. The tape was decontaminated prior to each water level measurement with an Alconox wash and a distilled water rinse. Water table elevations were calculated by subtracting the water table depth from the casing rim elevations. Water table positions measured in on September 4, 1991 are shown on the monitor well logs and on Figure 2.

GROUND WATER SAMPLING

A ground water sample was collected from HB-1 on July 29, 1991 after 1 gallon of water was purged from the well casing. Purging and sampling of the well was completed using a disposable polyethylene bailer.

Ground water samples were obtained from MW-7 through MW-16 following well development on August 30 using stainless steel and disposable polyethylene bailers and new nylon rope. Portions of the ground water samples intended for BETX analysis were acidified in the field following sampling. All of the ground water samples were transferred into appropriate containers in the field and placed in a cooler with ice. Chain-of-custody procedures were followed during transport to the analytical laboratory.

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SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOL	GROUP NAME
COARSE GRAINED SOILS MORE THAN 50% RETAINED ON NO. 200 SIEVE	GRAVEL MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVEL	GW	WELL-GRADED GRAVEL, FINE TO COARSE GRAVEL
			GP	POORLY-GRADED GRAVEL
		GRAVEL WITH FINES	GM	SILTY GRAVEL
			GC	CLAYEY GRAVEL
	SAND MORE THAN 50% OF COARSE FRACTION PASSES NO. 4 SIEVE	CLEAN SAND	SW	WELL-GRADED SAND, FINE TO COARSE SAND
			SP	POORLY-GRADED SAND
		SAND WITH FINES	SM	SILTY SAND
			SC	CLAYEY SAND
FINE GRAINED SOILS MORE THAN 50% PASSES NO. 200 SIEVE	SILT AND CLAY LIQUID LIMIT LESS THAN 50	INORGANIC	ML	SILT
			CL	CLAY
		ORGANIC	OL	ORGANIC SILT, ORGANIC CLAY
	SILT AND CLAY LIQUID LIMIT 50 OR MORE	INORGANIC	MH	SILT OF HIGH PLASTICITY, ELASTIC SILT
			CH	CLAY OF HIGH PLASTICITY, FAT CLAY
		ORGANIC	OH	ORGANIC CLAY, ORGANIC SILT
HIGHLY ORGANIC SOILS			PT	PEAT

NOTES:

1. Field classification is based on visual examination of soil in general accordance with ASTM D2488-84.
2. Soil classification using laboratory tests is based on ASTM D2487-85.
3. Descriptions of soil density or consistency are based on interpretation of blowcount data, visual appearance of soils, and/or test data.

SOIL MOISTURE MODIFIERS:

Dry - Absence of moisture, dusty, dry to the touch

Moist - Damp, but no visible water

Wet - Visible free water or saturated, usually soil is obtained from below water table

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SOIL CLASSIFICATION SYSTEM

FIGURE A-1

LABORATORY TESTS:

CA Chemical Analysis

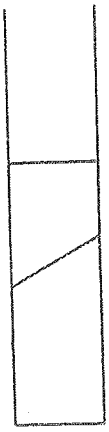
FIELD SCREENING TESTS:

Headspace vapor concentration data given in parts per million

Sheen classification system:

NS No Visible Sheen
SS Slight Sheen
MS Moderate Sheen
HS Heavy Sheen
NT Not Tested

SOIL GRAPH:



SM Soil Group Symbol (See Note 2)

Distinct Contact Between Soil Strata

Gradual or Approximate Location of Change Between Soil Strata

Water Level

Bottom of Boring

BLOW-COUNT/SAMPLE DATA:

Blows required to drive a 2.4-inch I.D. split-barrel sampler 12 inches or other indicated distances using a 300-pound hammer falling 30 inches.

22 — Location of relatively undisturbed sample

12 — Location of disturbed sample

17 — Location of sampling attempt with no recovery

Blows required to drive a 1.5-inch I.D. (SPT) split-barrel sampler 12 inches or other indicated distances using 140-pound hammer falling 30 inches.

10 — Location of sample obtained in general accordance with Standard Penetration Test (ASTM D-1586) procedures

26 — Location of SPT sampling attempt with no recovery

Location of grab sample

"P" indicates sampler pushed with weight of hammer or against weight of drill rig.

NOTES:

1. The reader must refer to the discussion in the report text, tne Key to Boring Log Symbols and the exploration logs for a proper understanding of subsurface conditions.

2. Soil classification system is summarized in Figure A-1.

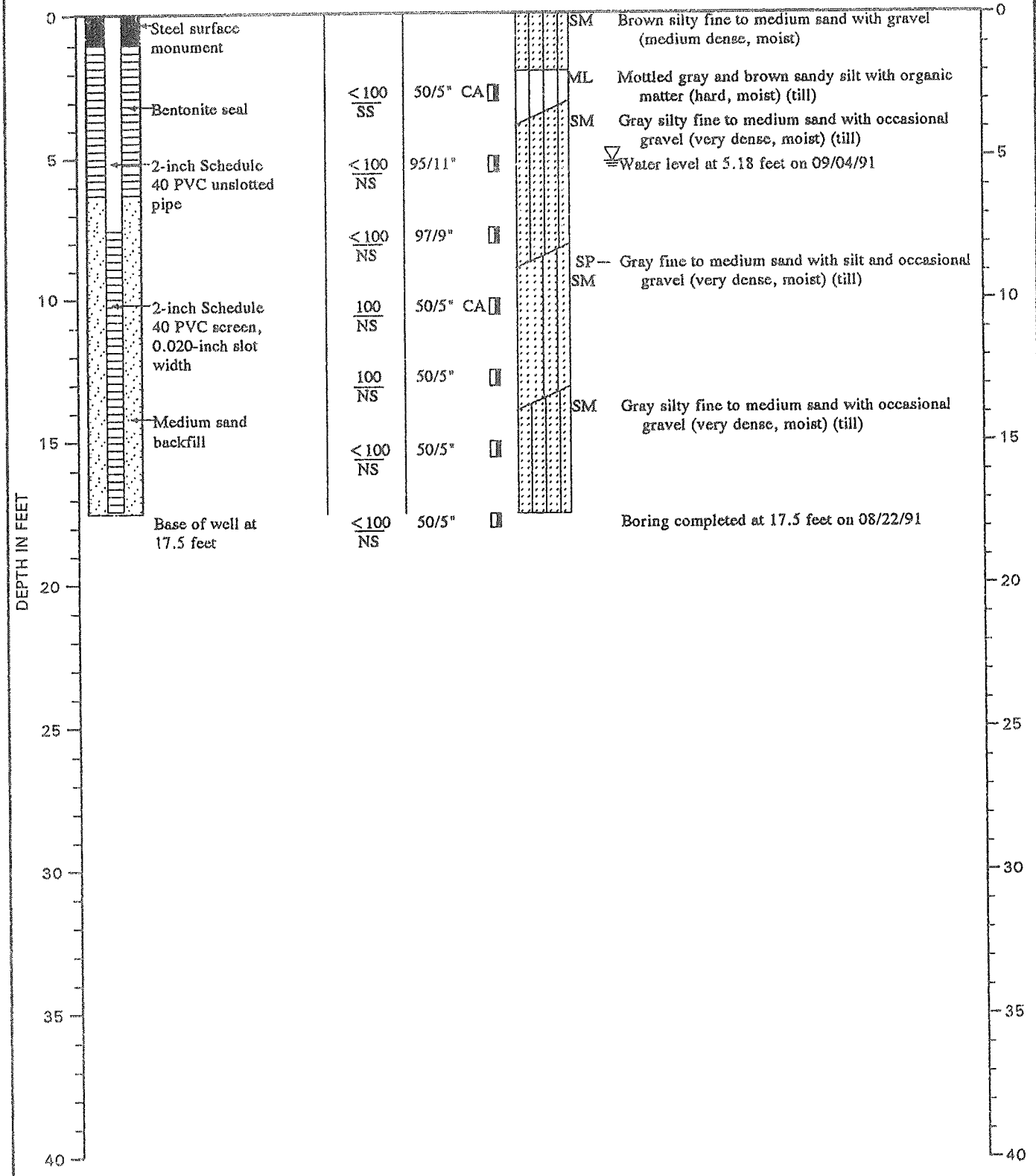
GEI 121-90

Geo Engineers

KEY TO BORING LOG SYMBOLS

FIGURE A-2

MONITOR WELL NO. MW-7



Note: See Figure A-2 for explanation of symbols

Geo Engineers

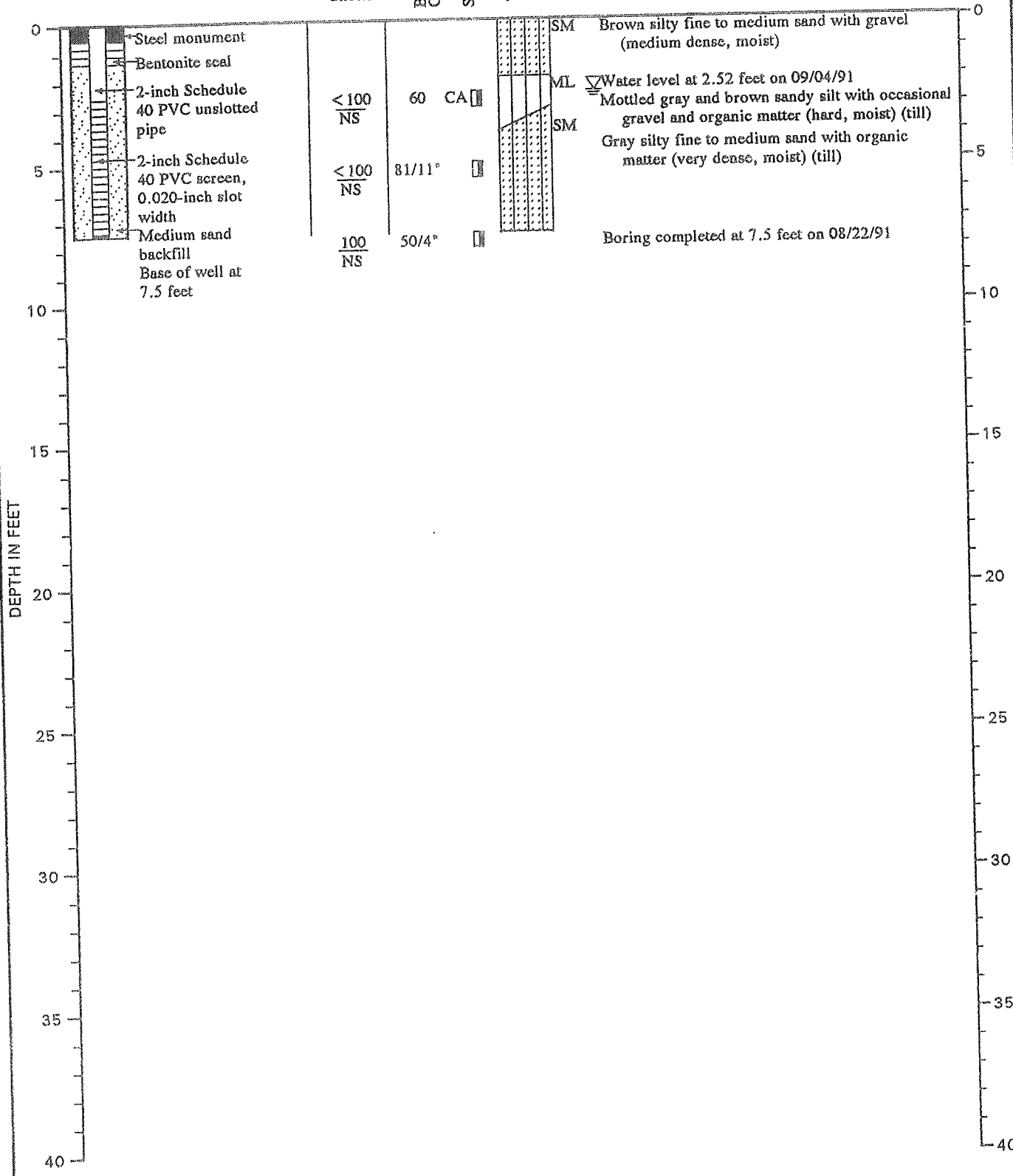
Log of Monitor Well

Figure A-3

:CRW:CAH:CMS 10/11/91

0161-236-B04

MONITOR WELL NO. MW-8



Note: See Figure A-2 for explanation of symbols

Geo Engineers

Log of Monitor Well

Figure A-4

:CRW:CAH:CMS 10/11/91

0161-236-B04

MONITOR WELL NO. MW-9

WELL SCHEMATIC

Casing Elevation (ft.): 91.24
Casing Stickup (ft.): -0.25

Vapor Conc. (ppm) / Sheen	Blow Count	Samples	Group Symbol	DESCRIPTION (Surface Elevation (ft.): 91.49)
			SM	Brown silty fine to medium sand with gravel (medium dense, moist)
< 100 / SS	68	CA	SM	Gray silty fine to medium sand (very dense, moist) (till)
				▽ Water level at 5.11 feet on 09/04/91
100 / NS	50/5"			
120 / NS	50/5"			
< 100 / NS	50/4"	CA		
< 100 / NS	50/4"			
< 100 / NS	91/10"			

Steel surface monument

Bentonite seal

2-inch Schedule 40 PVC unslotted pipe

2-inch Schedule 40 PVC screen, 0.020-inch slot width

Medium sand backfill

Base of well at 19.4 feet

Boring completed at 20.0 feet on 08/23/91

DEPTH IN FEET

0, 5, 10, 15, 20, 25, 30, 35, 40

Note: See Figure A-2 for explanation of symbols

Geo Engineers

Log of Monitor Well

Figure A-5

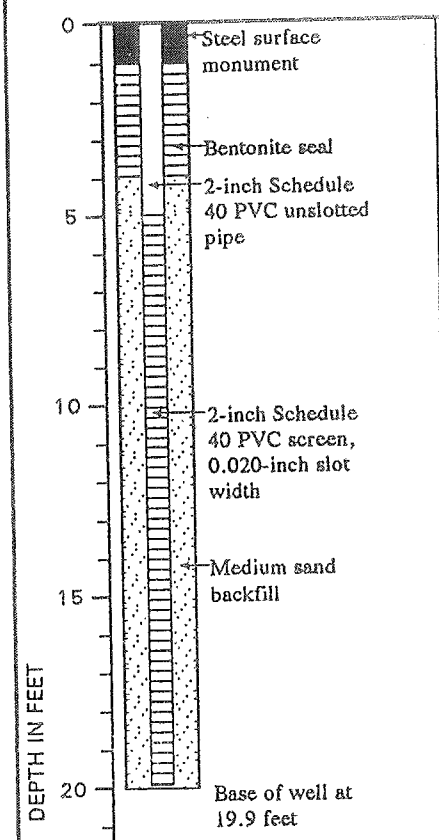
:CRW:CAH:CMS 10/11/91

0161-236-B04

MONITOR WELL NO. MW-10

WELL SCHEMATIC

Casing Elevation (ft.): 87.78
Casing Stickup (ft.): -0.20



Vapor Conc.(ppm) / Sheen	Blow Count	Samples	Group Symbol	DESCRIPTION (Surface Elevation (ft.): 87.98)
			SM	Brown silty fine to medium sand with gravel (medium dense, moist)
<100 / NS	61	CA	SM	Brown silty fine to medium sand (very dense, moist) (till)
<100 / NS	91/11"			
				▽ Water level at 6.85 feet on 09/04/91
<100 / NS	50/3"	CA		
<100 / NS	50/5"			Becomes gray
<100 / NS	50/6"			
				Boring completed at 20.0 feet on 08/23/91

DEPTH IN FEET

0, 5, 10, 15, 20, 25, 30, 35, 40

Note: See Figure A-2 for explanation of symbols

Geo Engineers

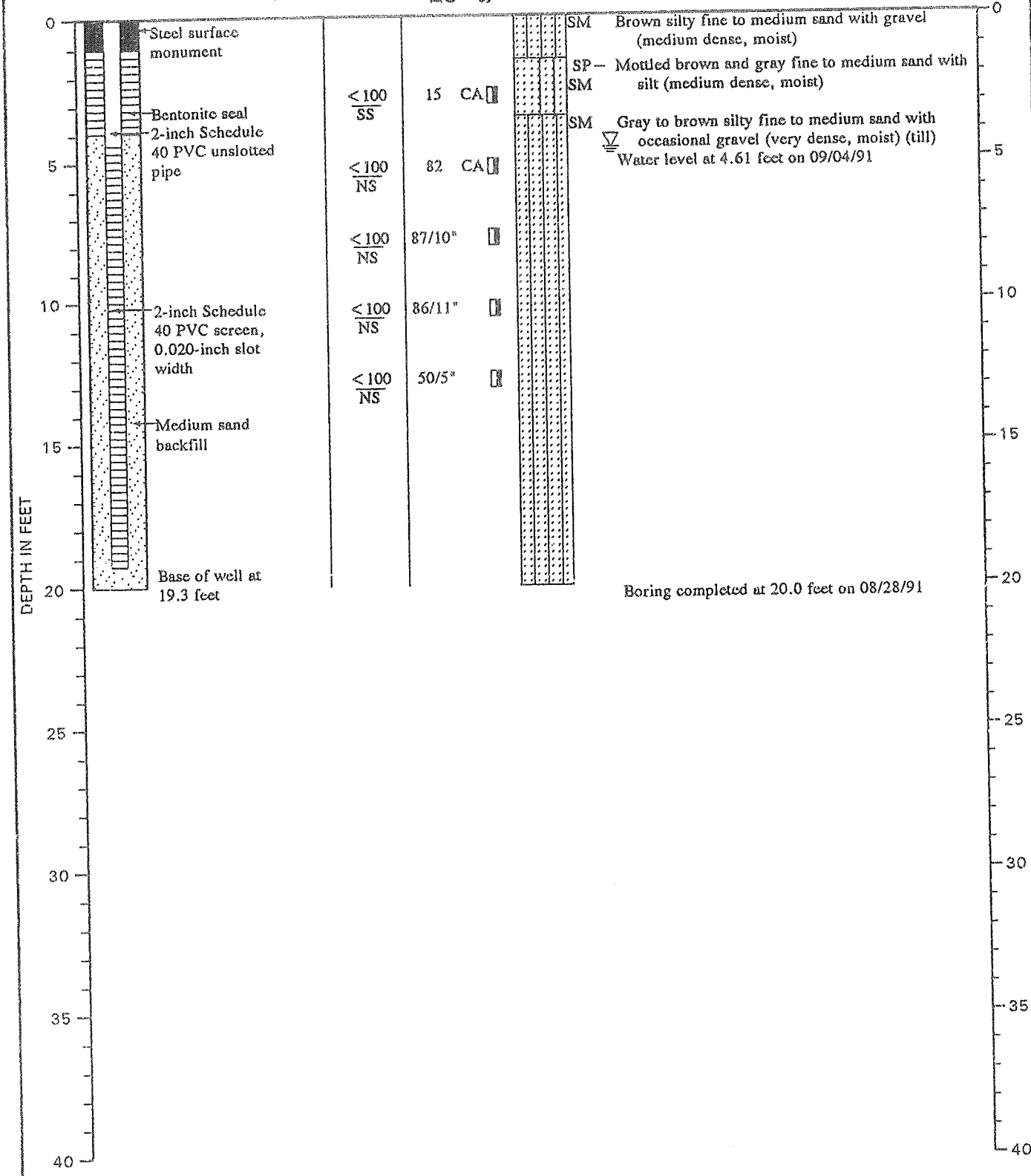
Log of Monitor Well

Figure A-6

:CRW:CAH:CMS 10/11/91

0161-236-B04

MONITOR WELL NO. MW-11



Note: See Figure A-2 for explanation of symbols

Geo Engineers

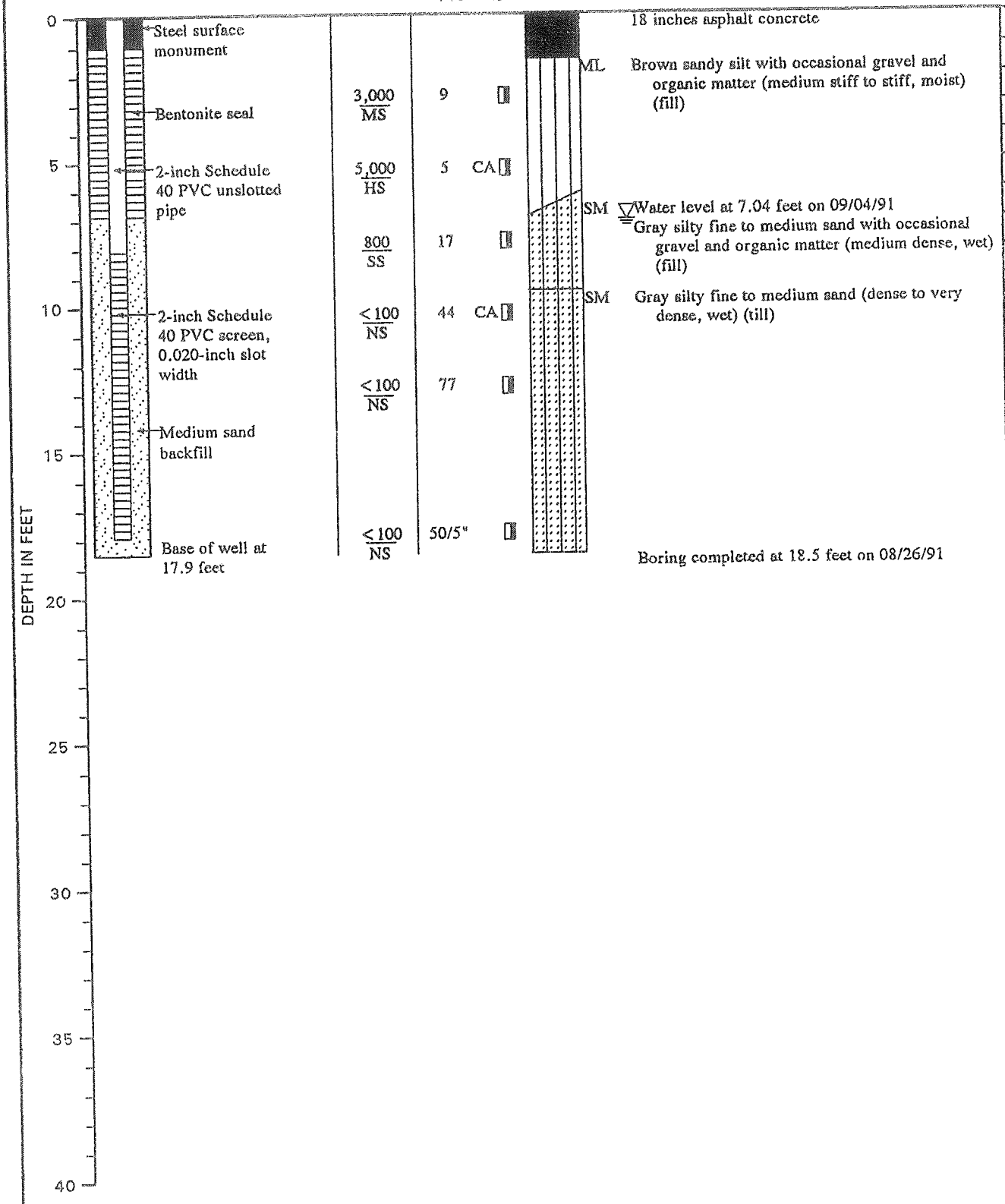
Log of Monitor Well

Figure A-7

:CRW:CAH:CMS 10/11/91

0161-236-B04

MONITOR WELL NO. MW-12



Note: See Figure A-2 for explanation of symbols

Geo Engineers

Log of Monitor Well

Figure A-8

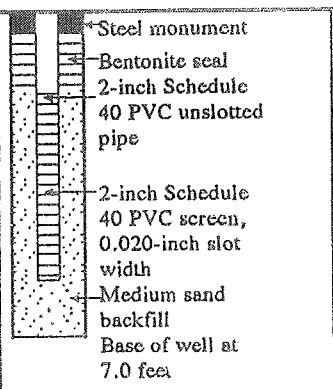
:CRW:CAH:CMS 10/11/91

0161-236-804

MONITOR WELL NO. MW-13

WELL SCHEMATIC

Casing Elevation (ft.): 99.03
Casing Stickup (ft.): -0.33



Vapor Conc. (ppm) / Sheen	Blow Count	Samples	Group Symbol	DESCRIPTION (Surface Elevation (ft.): 99.36)
				18 inches asphalt concrete
	3		ML	Brown sandy silt with gravel (medium stiff, wet) (fill)
3,000 / MS	6	CA		▽ Water level at 5.39 feet on 09/04/91
			SM	Gray silty fine to medium sand with gravel (very dense, wet) (till)
1,000 / SS	77			Boring completed at 8.5 feet on 08/26/91

DEPTH IN FEET

0 5 10 15 20 25 30 35 40

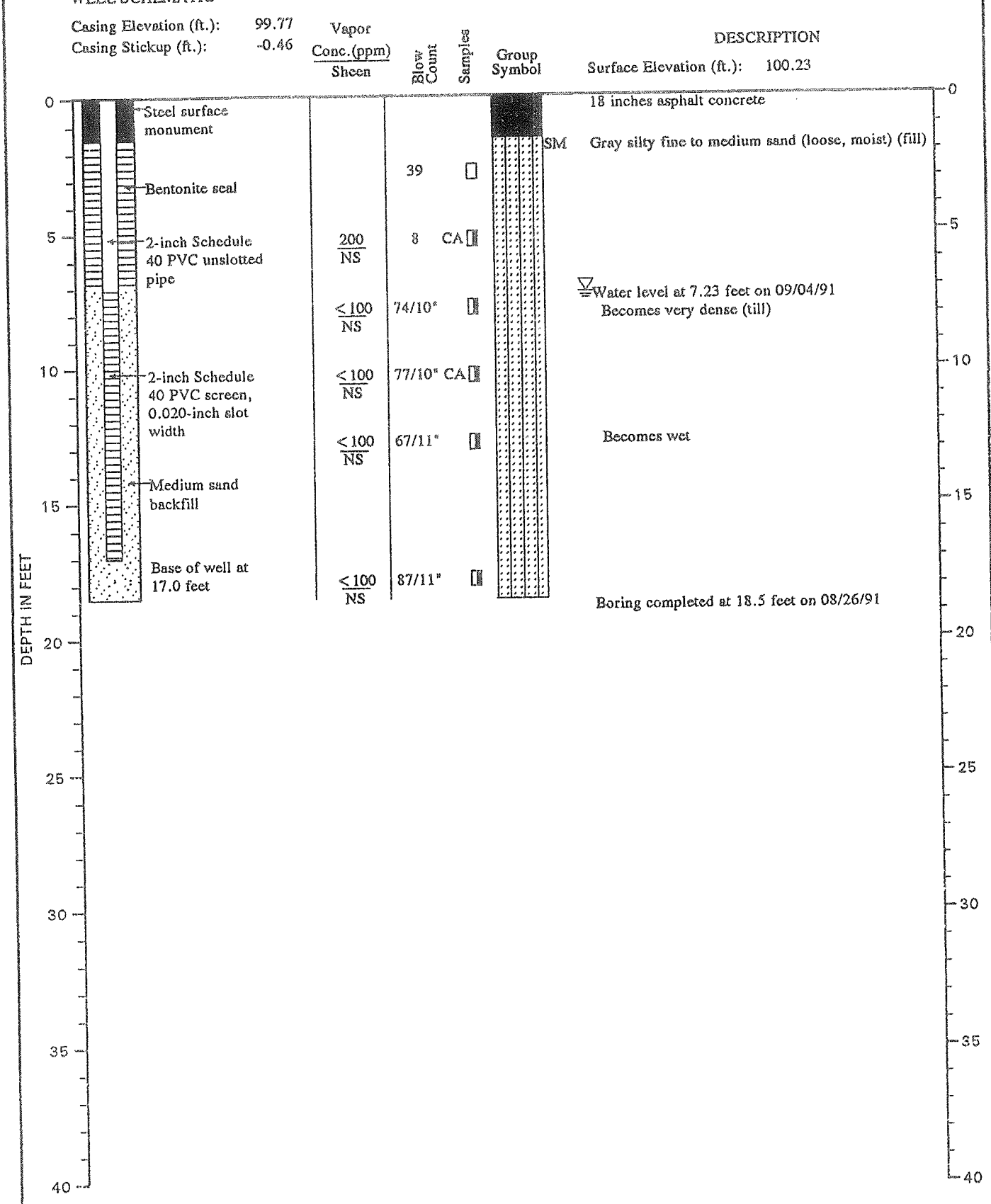
Note: See Figure A-2 for explanation of symbols

Geo Engineers

Log of Monitor Well

Figure A-9

MONITOR WELL NO. MW-14



Note: See Figure A-2 for explanation of symbols

GeoEngineers

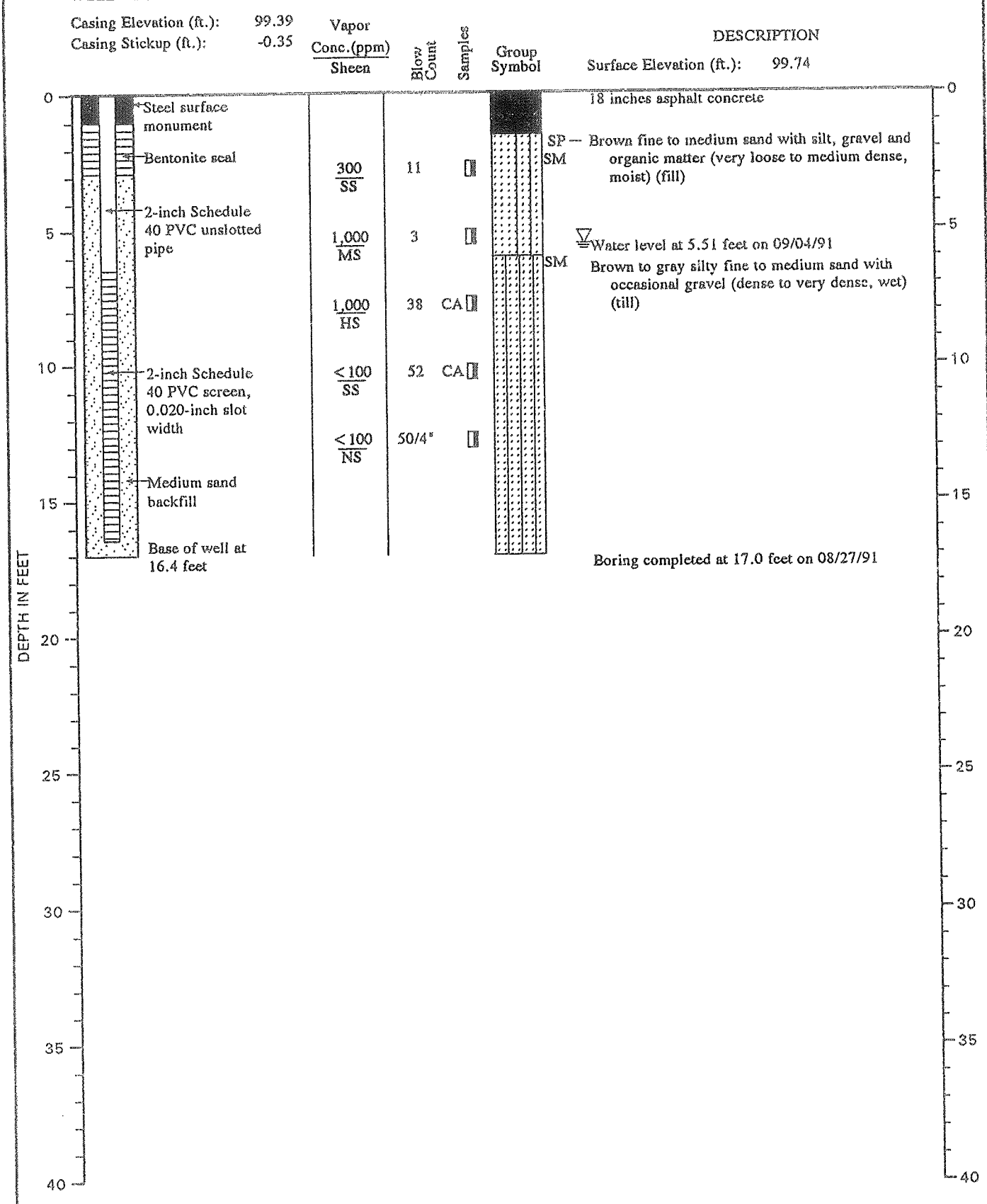
Log of Monitor Well

Figure A-10

:CRW:CAH:CMS 10/11/91

0161-236-B04

MONITOR WELL NO. MW-15



Note: See Figure A-2 for explanation of symbols

Geo Engineers

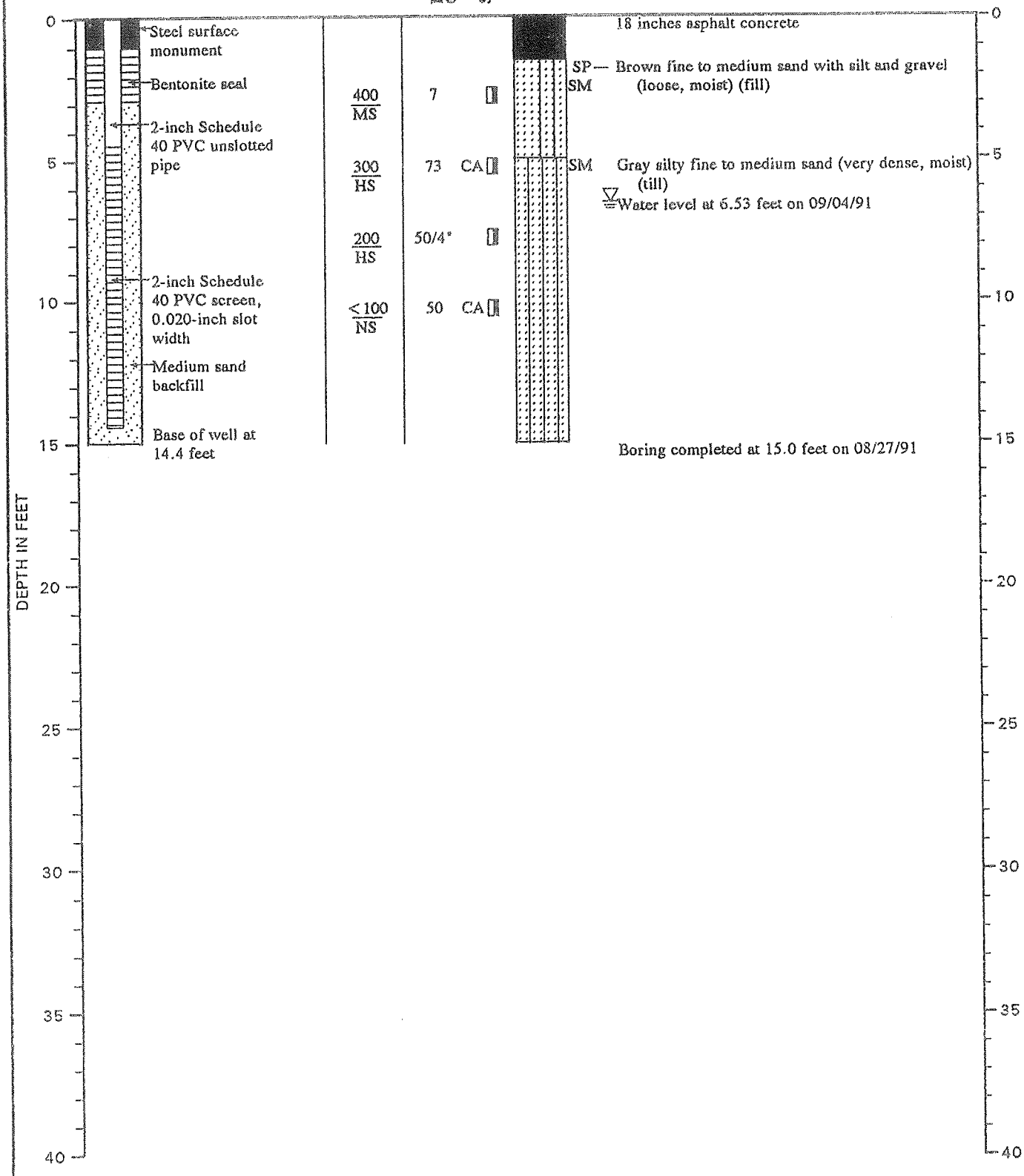
Log of Monitor Well

Figure A-11

:CRW:CAH:CMS 10/11/91

0161-236-B04

MONITOR WELL NO. MW-16



Note: See Figure A-2 for explanation of symbols

Geo Engineers

Log of Monitor Well

Figure A-12

:CRW:CAH:CMS 10/11/91

0161-236-B04

APPENDIX B

A P P E N D I X B

CHEMICAL ANALYTICAL PROGRAM

ANALYTICAL METHODS

Chain-of-custody procedures were followed during transport of the air soil and ground water samples to the analytical laboratory. The soil and water samples were held in cold storage pending extraction and/or analysis. Soil and ground water samples were analyzed by ATI (Analytical Technologies, Inc.) of Renton, Washington. Air samples were analyzed by ATI of Costa Mesa, California. A total of 19 soil samples, 11 water samples and 19 air samples were analyzed using one or more of the following methods:

Analyte	Technique/Equipment	Method
BETX	Gas Chromatograph/ Photoionization Detector	EPA 8020
Fuel Hydrocarbons	Gas Chromatograph/ Flame Ionization Detector	Modified EPA 8015
Methane	Gas Chromatograph/ Flame Ionization Detector	ASTM Method
Moisture	Gravimetric	Lab Method 7-2.2

Laboratory data reports are included in Appendix B.

ANALYTICAL DATA REVIEW

Data Quality Goals: ATI maintains an extensive internal quality assurance program as documented in their laboratory quality assurance manual. The laboratory uses a combination of surrogate percent recovery, matrix spike recovery and duplicate recovery to evaluate the validity of analytical results. ATI also uses data quality goals for individual chemicals or groups of chemicals based on the long-term performance of the test methods.

Data Quality Review:

Surrogates: Surrogates were added to all soil samples prior to extraction and analysis and to water samples prior to analysis for volatile organic compounds to monitor sample handling procedures, matrix effects and purging efficiency. Surrogate recoveries were all within recommended control limits.

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Matrix Spike/Matrix Spike Duplicates (MS/MSD): Matrix spikes and matrix spike duplicates were analyzed in all tests performed on soil and ground water samples to monitor matrix effects. All MS/MSD recoveries and relative percent differences were within recommended control limits.

Duplicates: Duplicates were analyzed in air sample analyses to monitor analytical accuracy. All relative percent differences were within recommended control limits.

Holding Times: All soil samples were extracted and analyzed within the recommended holding times. All water and air samples were analyzed within the recommended holding times.

Blanks: Laboratory blanks were analyzed for contaminants introduced during sample analysis of soil, water and air samples. Contaminants were not detected in the blanks.

Analytical results were reviewed for conformance with the data quality goals. It is our opinion that the quality of chemical analytical data utilized to form conclusions in this report is good, based on our review of ATI's quality assurance methods and results.

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Analytical Technologies, Inc. 2950 Airway Avenue, Suite A-1 Costa Mesa, CA 92626 (714) 435-9180 (714) 435-9184 (FAX)

ATI I.D. : 91-207-001

July 31, 1991

GeoEngineers

AUG 05 1991

Routing JDK/LC

File 161-236

Geo Engineers, Inc.
8410 154th Avenue N.E.
Redmond, WA 98052

Project Name: Unocal/Lynwood
Project # : 0161-236-4

Attention: Debbie Kristof

Analytical Technologies, Inc. has received the following sample(s):

Date Received	Quantity	Matrix
July 26, 1991	1	Air

The sample(s) were analyzed with EPA methodology or equivalent methods as specified in the enclosed analytical schedule. The symbol for "less than" indicates a value below the reportable detection limit. Please see the attached sheet for the sample cross reference table.

The results of these analyses and the quality control data are enclosed. If you have any questions please do not hesitate to call.

Jo-An Kittleson
Chemist

Leon Levan
Laboratory Manager

Analytical Technologies, Inc.

SAMPLE CROSS REFERENCE

Client : Geo Engineers, Inc.
Project# : 0161-236-4
Project Name : Unocal/Lynwood

Report Date: July 31, 1991
ATI I.D. # : 91-207-001

ATI #	Client Description	Matrix	Date Collected
1	910725-1	Air	25-JUL-91

---TOTALS---

Matrix	# Samples
Air	1

Analytical Technologies, Inc.

ANALYTICAL SCHEDULE

Client : Geo Engineers, Inc.
Project # : 0161-236-4
Project Name : Unocal/Lynwood

ATI I.D. # : 91-207-001

Analysis	Technique/Description
TPH as Gasoline (8015 mod.)	GC/FID
8020 CONSTITUENTS (EPA 410.A)	GC/PID

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY RESULTS

Client : Geo Engineers, Inc.
Project # : 0161-236-4
Project Name : Unocal/Lynwood

ATI I.D. #: 91-207-001

ATI #	Sample Client ID #	Matrix	Date Sampled	Date Received	Date Analyzed
1	910725-1	Air/Canister	25-JUL-91	26-JUL-91	30-JUL-91
Method Blank		Air/Tedlar	NA	NA	30-JUL-91

Parameter	Units	1	Method Blank
TPH as Gasoline	PPM(V)	3	ND<2
BENZENE	PPB(V)	ND<5	ND<3
TOLUENE	PPB(V)	13	ND<3
ETHYLBENZENE	PPB(V)	ND<4	ND<2
TOTAL XYLENES	PPB(V)	ND<4	ND<2
1,3&1,4-DICHLOROBENZENE	PPB(V)	12	ND<2
1,2-DICHLOROBENZENE	PPB(V)	ND<3	ND<2

* ND=Not Detected

* See Appendix for ppm(v) calculation formulas.

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - QUALITY CONTROL

DUP/GC

Client : Geo Engineers, Inc.
Project # : 0161-236-4
Project Name : Unocal/Lynwood

ATI I.D. #: 91-207-001

Parameter	REF I.D.	UNITS	SAMPLE RESULT	DUP RESULT	RPD
TPH as Gasoline	91-211-003-01	PPM(V)	4400	4500	2.3
BENZENE	91-207-001-01	PPB(V)	ND < 5	ND < 5	-
TOLUENE	91-207-001-01	PPB(V)	13	13	0.0
ETHYLBENZENE	91-207-001-01	PPB(V)	ND < 4	ND < 4	-
TOTAL XYLENES	91-207-001-01	PPB(V)	ND < 4	ND < 4	-
1,3&1,4-DICHLOROBENZENE	91-207-001-01	PPB(V)	12	10	18.0
1,2-DICHLOROBENZENE	91-207-001-01	PPB(V)	ND < 3	ND < 3	-

* RPD (Relative Percent Difference) = (Sample Result - Duplicate Result) * 100/average result

APPENDIX
PPM(V) CALCULATION FORMULAS

The following condensed formula was used to calculate sample results in ppm(v).

$$\text{concentration ppm(v)} = \frac{(m)(10E3)(24.45)}{(V)(MW)}$$

where: m = mg of constituent detected in the air sample
v = volume in liters of sample injected
MW = molecular weight of constituent detected

The ppm(v) results are dependent on the molecular weight used in the above equation. To compare ppm(v) results that have different reference molecular weights the following relationship is used:

$$\text{ppm(v)} \propto 1/\text{MW}$$

Using this basic relationship the following equation can be derived:

$$\frac{ppm(v)a}{ppm(v)b} = \frac{MWb}{MWa}$$

The above equation can be used to compare the ppm(v) results of different constituents.

Notes:

1. The molecular weight of octane, 114 g/mole was used in calculating the TPH results in ppm(v).

Analytical Technologies, Inc. 560 Naches Avenue, S.W., Suite 101, Renton, WA 98055, (206) 228-8335

ATI I.D. # 9107-344

August 5, 1991

GeoEngineers, Inc.
8410-154th Ave. N.E.
Redmond, WA 98052

Attention : Debbie Kristoff

Project Number : 161-236-B04

Project Name : Unocal Lynnwood

On July 31, 1991, Analytical Technologies, Inc., received one water and one soil sample for analysis. The samples were analyzed with EPA methodology or equivalent methods as specified in the attached analytical schedule. The results, sample cross reference, and quality control data are enclosed.

Bob A. Olsiewski
Project Manager

Mary C. Silva for:
Frederick W. Grothkopp
Technical Manager

FWG/hal/cn

Analytical Technologies, Inc.

ATI I.D. # 9107-344

SAMPLE CROSS REFERENCE SHEET

CLIENT : GEOENGINEERS, INC.
PROJECT # : 161-236-B04
PROJECT NAME : UNOCAL LYNNWOOD

ATI #	CLIENT DESCRIPTION	DATE SAMPLED	MATRIX
9107-344-1	HB-1	07/31/91	WATER
9107-344-2	HCS-1	07/31/91	SOIL

TOTALS

MATRIX	# SAMPLES
SOIL	1
WATER	1

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of the report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

ATI I.D. # 9107-344

ANALYTICAL SCHEDULE

CLIENT : GEOENGINEERS, INC.
PROJECT # : 161-236-B04
PROJECT NAME : UNOCAL LYNNWOOD

ANALYSIS	TECHNIQUE	REFERENCE	LAB
BETX	GC/PID	EPA 8020	R
FUEL HYDROCARBONS	GC/FID	EPA 8015 MODIFIED	R
MOISTURE	GRAVIMETRIC	CLP SOW ILMO1.0	R

R = ATI - Renton
SD = ATI - San Diego
T = ATI - Tempe
PNR = ATI - Pensacola
FC = ATI - Fort Collins
SUB = Subcontract

Analytical Technologies, Inc.

ATI I.D. # 9107-344

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: N/A
PROJECT #	: 161-236-B04	DATE RECEIVED	: N/A
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: N/A
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 07/31/91
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
ETHYLBENZENE	<0.5
TOLUENE	<0.5
TOTAL XYLENES	<0.5

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	97

Analytical Technologies, Inc.

ATI I.D. # 9107-344-1

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 07/31/91
PROJECT #	: 161-236-B04	DATE RECEIVED	: 07/31/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: N/A
CLIENT I.D.	: HB-1	DATE ANALYZED	: 08/01/91
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 500

COMPOUNDS	RESULTS
BENZENE	2000
ETHYLBENZENE	1700
TOLUENE	15000
TOTAL XYLENES	12000

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	95

Analytical Technologies, Inc.

ATI I.D. # 9107-344

VOLATILE ORGANIC COMPOUNDS
QUALITY CONTROL DATA

CLIENT	: GEOENGINEERS, INC.	SAMPLE I.D. #	: 9107-341-1
PROJECT #	: 161-236-BO4	DATE EXTRACTED	: N/A
PROJECT NAME	: UNOCAL LYNNWOOD	DATE ANALYZED	: 07/31/91
EPA METHOD	: 8020 (BETX)	UNITS	: ug/L
SAMPLE MATRIX	: WATER		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	<0.5	20.0	19.0	95	19.1	95	1
TOLUENE	<0.5	20.0	19.8	99	20.4	102	3
TOTAL XYLENES	<0.5	40.0	40.8	102	41.0	103	0

$$\%\text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{|(\text{Spike Result} - \text{Duplicate Result})|}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ATI I.D. # 9107-344

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: N/A
PROJECT #	: 161-236-B04	DATE RECEIVED	: N/A
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: 08/01/91
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 08/01/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

RESULTS BASED ON DRY WEIGHT

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	<0.025

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	104

Analytical Technologies, Inc.

ATI I.D. # 9107-344-2

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 07/31/91
PROJECT #	: 161-236-B04	DATE RECEIVED	: 07/31/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: 08/01/91
CLIENT I.D.	: HCS-1	DATE ANALYZED	: 08/02/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1
RESULTS BASED ON DRY WEIGHT		% MOISTURE	: 25

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	<0.025

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	70

Analytical Technologies, Inc.

ATI I.D. # 9107-344

VOLATILE ORGANIC COMPOUNDS
QUALITY CONTROL DATA

CLIENT	: GEOENGINEERS, INC.	SAMPLE I.D. #	: 9108-002-1
PROJECT #	: 161-236-B04	DATE EXTRACTED	: 08/01/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE ANALYZED	: 08/01/91
EPA METHOD	: 8020 (BETX)	UNITS	: mg/Kg
SAMPLE MATRIX	: SOIL		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	<0.025	1.00	0.728	73	0.762	76	5
TOLUENE	<0.025	1.00	0.774	77	0.755	76	2
TOTAL XYLENES	0.029	2.00	1.67	82	1.58	78	6

$$\%\text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{|(\text{Spike Result} - \text{Duplicate Result})|}{\text{Average Result}} \times 100$$

AnalyticalTechnologies,Inc.

ATI I.D. # 9107-344

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: N/A
PROJECT #	: 161-236-B04	DATE RECEIVED	: N/A
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: 08/01/91
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 08/01/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9107-344-2

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 07/31/91
PROJECT #	: 161-236-B04	DATE RECEIVED	: 07/31/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: 08/01/91
CLIENT I.D.	: HCS-1	DATE ANALYZED	: 08/01/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9107-344

FUEL HYDROCARBONS
QUALITY CONTROL DATA

CLIENT	: GEOENGINEERS, INC.	SAMPLE I.D. #	: 9107-344-2
PROJECT #	: 161-236-B04	DATE EXTRACTED	: 08/01/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE ANALYZED	: 08/01/91
EPA METHOD	: 8015 (MODIFIED)	UNITS	: mg/Kg
SAMPLE MATRIX	: SOIL		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
DIESEL	<5.0	500	581	116	588	118	1

$$\%\text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{|(\text{Spike Result} - \text{Duplicate Result})|}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ATI I.D. # 9107-344

GENERAL CHEMISTRY QUALITY CONTROL

CLIENT	: GEOENGINEERS, INC.	DATE ANALYZED	: 08/02/91
PROJECT #	: 161-236-B04	MATRIX	: SOIL
PROJECT NAME	: UNOCAL LYNNWOOD	UNITS	: %

PARAMETER	ATI I.D.	SAMPLE RESULT	DUP RESULT	RPD	SPIKED RESULT	SPIKE ADDED	% REC
MOISTURE	9108-002-3	11	11	0	N/A	N/A	N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.
560 Naches Avenue SW, Suite 101 Renton, WA 98055 (206)228-8335

VO2 / RH

Chain of Custody

DATE 7-31-91 PAGE 1 OF 1

LABORATORY NUMBER: 9107-344

PROJECT MANAGER: Debbie Kristoff
COMPANY: GeoEngineers Inc
ADDRESS: 8410 154th AVE NE
PHONE: 881-6000 SAMPLED BY: JCK

SAMPLE DISPOSAL INSTRUCTIONS

☒ ATI Disposal @ $5.00 each ☐ Return

SAMPLE ID	DATE	TIME	MATRIX	LAB ID
HB-1	7-31-91		H2O	-1
HCS-1	7-31-91		Soil	2

ANALYSIS REQUEST

SAMPLE ID	8010 Halogenated Volatiles	8020 Aromatic Volatiles	BETX ONLY	8240 GCMS Volatiles	8270 GCMS BNA	8310 HPLC PNA	8080 Pesticides & PCB's	PCB's ONLY	8140 Phosphate Pesticides	8150 Herbicides	WDOE PAH/HH (WAC 173)	418.1 (TPH)	413.2 Grease & Oil	8015 (Modified)	TOC 9060	TOX 9020	% Moisture	EP TOX Metals (8) EP EXT	Priority Pollutant Metals (13)	TCLP ONLY: 8080 Pesticide (4)	TCLP ONLY: 8240 ZH-EXT	TCLP ONLY: 8270	TCLP ONLY: 8150 Herbicides (2)	TCLP ONLY: Metals (8)			NUMBER OF CONTAINERS
HB-1			X																								2
HCS-1			X											X													1

PROJECT INFORMATION

PROJECT NUMBER: 161-236-804
PROJECT NAME: Unocal Lynnwood
PURCHASE ORDER NUMBER: Rep 7/31/91 per pkt
ONGOING PROJECT? YES ☒ NO ☐

SAMPLE RECEIPT

TOTAL NUMBER OF CONTAINERS	3
COC SEALS/INTACT? Y/N/NA	NA
RECEIVED GOOD COND./COLD	Y
RECEIVED VIA:	Hand del

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TAT: (NORMAL) ☒ 2WKS (RUSH) ☐ 24HR ☒ 48 HRS ☐ 72 HRS ☐ 1 WK
GREATER THAN 24 HR. NOTICE? YES ☐ NO ☐ (LAB USE ONLY)

SPECIAL INSTRUCTIONS:
OK BTEX

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company: GEI	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company: ATI	Company:	Analytical Technologies, Inc.

Analytical Technologies, Inc. 2950 Airway Avenue, Suite A-1 Costa Mesa, CA 92626 (714) 435-9180 (714) 435-9184 (FAX)

ATI I.D. : 91-213-002

August 7, 1991

GeoEngineers

AUG 1 2 1991

Routing DJC

File

Geo Engineers, Inc.
8410 154th Avenue N.E.
Redmond, WA 98052

Project Name: Unocal
Project # : 161-236-B04

Attention: Debbie Kristoff

Analytical Technologies, Inc. has received the following sample(s):

Date Received	Quantity	Matrix
August 1, 1991	1	Air

The sample(s) were analyzed with EPA methodology or equivalent methods as specified in the enclosed analytical schedule. The symbol for "less than" indicates a value below the reportable detection limit. Please see the attached sheet for the sample cross reference table.

The results of these analyses and the quality control data are enclosed. If you have any questions please do not hesitate to call.

Jo-An Kittleson
Chemist

Leon Levan
Laboratory Manager

Analytical Technologies, Inc.

SAMPLE CROSS REFERENCE

'lient : Geo Engineers, Inc.
roject# : 161-236-B04
roject Name : Unocal

Report Date: August 7, 1991
ATI I.D. # : 91-213-002

TI # Client Description	Matrix	Date Collected
910731-1	Air	31-JUL-91

---TOTALS---

Matrix	# Samples
Air	1

ANALYTICAL SCHEDULE

Client : Geo Engineers, Inc.
Project # : 161-236-B04
Project Name : Unocal

ATI I.D. # : 91-213-002

Analysis	Technique/Description
TPH as Gasoline (8015 mod.)	GC/FID
8020 CONSTITUENTS (EPA 410.A)	GC/PID

AnalyticalTechnologies,Inc.

GAS CHROMATOGRAPHY RESULTS

lient : Geo Engineers, Inc.
roject # : 161-236-B04
roject Name : Unocal

ATI I.D. #: 91-213-002

.TI #	Sample Client ID #	Matrix	Date Sampled	Date Received	Date Analyzed
910731-1		Air/Canister	31-JUL-91	01-AUG-91	02-AUG-91
lethod Blank		Air/Tedlar	NA	NA	02-AUG-91

arameter	Units	1	Method Blank
PH as Gasoline	PPM(V)	ND<2	ND<2
ENZENE	PPB(V)	3	ND<3
OLUENE	PPB(V)	23	ND<3
THYLBENZENE	PPB(V)	32	ND<2
OTAL XYLENES	PPB(V)	16	ND<2
,3&1,4-DICHLOROBENZENE	PPB(V)	ND<6	ND<6
,2-DICHLOROBENZENE	PPB(V)	ND<6	ND<6

ND=Not Detected

See Appendix for ppm(v) calculation formulas.

GAS CHROMATOGRAPHY - QUALITY CONTROL

DUP/GC

Client : Geo Engineers, Inc.
Project # : 161-236-B04
Project Name : Unocal

ATI I.D. #: 91-213-002

Parameter	REF I.D.	UNITS	SAMPLE RESULT	DUP RESULT	RPD
TPH as Gasoline	91-212-001-01	PPM(V)	5900	5900	0
BENZENE	91-213-002-01	PPB(V)	3	3	0
TOLUENE	91-213-002-01	PPB(V)	23	20	14
ETHYLBENZENE	91-213-002-01	PPB(V)	32	27	17
TOTAL XYLENES	91-213-002-01	PPB(V)	16	14	13
1,3&1,4-DICHLOROBENZENE	91-213-002-01	PPB(V)	ND<6	ND<6	-
1,2-DICHLOROBENZENE	91-213-002-01	PPB(V)	ND<6	ND<6	-

* RPD (Relative Percent Difference) = (Sample Result - Duplicate Result) * 100/average result

APPENDIX
PPM(V) CALCULATION FORMULAS

The following condensed formula was used to calculate sample results in ppm(v).

$$\text{concentration ppm(v)} = \frac{(m)(10E3)(24.45)}{(V)(MW)}$$

where: m = mg of constituent detected in the air sample
v = volume in liters of sample injected
MW = molecular weight of constituent detected

The ppm(v) results are dependent on the molecular weight used in the above equation. To compare ppm(v) results that have different reference molecular weights the following relationship is used:

$$\text{ppm(v)} \propto 1/\text{MW}$$

Using this basic relationship the following equation can be derived:

$$\frac{ppm(v)a}{ppm(v)b} = \frac{MWb}{MWa}$$

The above equation can be used to compare the ppm(v) results of different constituents.

Notes:

1. The molecular weight of octane, 114 g/mole was used in calculating the TPH results in ppm(v).

Analytical Technologies, Inc. 2950 Airway Avenue, Suite A-1 Costa Mesa, CA 92626 (714) 435-9180 (714) 435-9184 (FAX)

Remit to Corporate Office:
5550 Morehouse Drive
San Diego, CA 92121-1709
(619) 458-9141

INVOICE
CM 40083

BILLED TO:
Geo Engineers, Inc.
8410 154th Avenue N.E.
Redmond, WA 98052

AUTHORIZED BY: Debbie Kristoff

PROJECT NAME: Unocal
PROJECT #: 161-236-B04

ACCESSION #: 91213002-01
DATE: August 5, 1991

CUSTOMER #: 342565

P.O. #:

*** SAMPLES RECEIVED ON 8/1/91

TEST DESCRIPTION	QTY.	PRICE	SURCHARGE	TOTAL
TPH as Gasoline (8015 mod.) 8020 CONSTITUENTS (EPA 410.A)	1	$250.00	(50%) $125.00	$375.00
CANISTER LEASING	1	$75.00	$0.00	$75.00
			REMIT —>	$450.00

TERMS: Net 30 Days - 1½% Finance Charge on Balance Due over 30 days.

Analytical Technologies, Inc.
560 Naches Avenue SW, Suite 101 Renton, WA 98055 (206)228-8335

Chain of Custody

DATE 7-31 PAGE 1 OF 1

LABORATORY NUMBER: 91213002

PROJECT MANAGER: Debbie Kristoff
COMPANY: GeoEngineers Inc.
ADDRESS: 8410 154th AVE NE
Redmond, Wa. 98052
PHONE: 861-6000 SAMPLED BY: JCK

SAMPLE DISPOSAL INSTRUCTIONS

☐ ATI Disposal @ $5.00 each ☐ Return

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID
910731-1	7-31-91	3:00	AIR	01

SAMPLE ID	8010 Halogenated Volatiles	8020 Aromatic Volatiles	BETX ONLY	8240 GCMS Volatiles	8270 GCMS BNA	8310 HPLC PNA	8080 Pesticides & PCB's	PCB's ONLY	8140 Phosphate Pesticides	8150 Herbicides	WDOE PAH/HH (WAC 173)	418.1 (TPH)	413.2 Grease & Oil	8015 (Modified)	TOC 9060	TOX 9020	% Moisture	EP TOX Metals (8) EP EXT	Priority Pollutant Metals (13)	TCLP ONLY: 8080 Pesticide (4)	TCLP ONLY: 8240 ZH-EXT	TCLP ONLY: 8270	TCLP ONLY: 8150 Herbicides (2)	TCLP ONLY: Metals (8)			NUMBER OF CONTAINERS
910731-1			X											X													

PROJECT INFORMATION

PROJECT NUMBER: 161-236-R04
PROJECT NAME: Wocal
PURCHASE ORDER NUMBER:
ONGOING PROJECT? YES ☒ NO ☐

SAMPLE RECEIPT

TOTAL NUMBER OF CONTAINERS	1
COC SEALS/INTACT? Y/N/NA	NA
RECEIVED GOOD COND./COLD	Y
RECEIVED VIA:	FED-X

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TAT: (NORMAL) ☐ 2WKS (RUSH) ☐ 24HR ☐ 48 HRS ☒ 72 HRS ☐ 1 WK
GREATER THAN 24 HR. NOTICE? YES ☐ NO ☐ (LAB USE ONLY)

SPECIAL INSTRUCTIONS: TPH 2 BETX - METHOD 8020
GASOLINE & DIESEL - 8015

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Time: Jon C Koloski 3:00	Signature: Time:	Signature: Time:
Printed Name: Date: JON C Koloski 7-31-91	Printed Name: Date:	Printed Name: Date:
Company: GEI	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time:	Signature: Time:	Signature: Time: Jon Rollins 0930
Printed Name: Date:	Printed Name: Date:	Printed Name: Date: T. Rommelhanger 8/1/91
Company:	Company:	Analytical Technologies, Inc.

Analytical Technologies, Inc. 2950 Airway Avenue, Suite A-1 Costa Mesa, CA 92626 (714) 435-9180 (714) 435-9184 (FAX)

ATI I.D. : 91-228-001

August 22, 1991

GeoEngineers

AUG 2 6 1991

Routing

File

Geo Engineers, Inc.
8410 154th Avenue N.E.
Redmond, WA 98052

Project Name: Unocal #5533/Lynwood
Project # : 161-236-B04

Attention: Debbie Kristoff

Analytical Technologies, Inc. has received the following sample(s):

Date Received	Quantity	Matrix
August 16, 1991	4	Air

The sample(s) were analyzed with EPA methodology or equivalent methods as specified in the enclosed analytical schedule. The symbol for "less than" indicates a value below the reportable detection limit. Please see the attached sheet for the sample cross reference table.

The results of these analyses and the quality control data are enclosed. If you have any questions please do not hesitate to call.

Jo-Ann Kittleson
Chemist

Leon Levan
Laboratory Manager

Analytical Technologies, Inc.

SAMPLE CROSS REFERENCE

Client : Geo Engineers, Inc.
Project# : 161-236-B04
Project Name : Unocal #5533/Lynwood

Report Date: August 22, 1991
ATI I.D. # : 91-228-001

ATI #	Client Description	Matrix	Date Collected
910815-1		Air	15-AUG-91
910815-2		Air	15-AUG-91
910815-3		Air	15-AUG-91
910815-4		Air	15-AUG-91

---TOTALS---

Matrix	# Samples
Air	4

ANALYTICAL SCHEDULE

Client : Geo Engineers, Inc.
Project # : 161-236-B04
Project Name : Unocal #5533/Lynwood

ATI I.D. # : 91-228-001

Analysis	Technique/Description
TPH as Gasoline (8015 mod.)	GC/FID
8020 CONSTITUENTS (EPA 410.A)	GC/PID

GAS CHROMATOGRAPHY RESULTS

lient : Geo Engineers, Inc.
roject # : 161-236-B04
roject Name : Unocal #5533/Lynwood

ATI I.D. #: 91-228-001

.TI #	Sample Client ID #	Matrix	Date Sampled	Date Received	Date Analyzed
	910815-1	Air/Canister	15-AUG-91	16-AUG-91	19-AUG-91
	910815-2	Air/Canister	15-AUG-91	16-AUG-91	19-AUG-91
	910815-3	Air/Canister	15-AUG-91	16-AUG-91	19-AUG-91
	910815-4	Air/Canister	15-AUG-91	16-AUG-91	19-AUG-91
lethod Blank		Air/Tedlar	NA	NA	19-AUG-91

arameter	Units	1	2	3	4	Method Blank
PH as Gasoline	PPM(V)	ND<2	ND<2	ND<2	ND<2	ND<2
ENZENE	PPB(V)	ND<3	10	8	9	ND<3
OLUENE	PPB(V)	ND<3	14	13	11	ND<3
THYLBENZENE	PPB(V)	ND<2	4	2	10	ND<2
OTAL XYLENES	PPB(V)	2	12	10	14	ND<2
,3&1,4-DICHLOROBENZENE	PPB(V)	ND<2	ND<2	ND<2	ND<2	ND<2
,2-DICHLOROBENZENE	PPB(V)	ND<2	ND<2	ND<2	ND<2	ND<2

ND=Not Detected

See Appendix for ppm(v) calculation formulas.

GAS CHROMATOGRAPHY - QUALITY CONTROL

DUP/GC

Client : Geo Engineers, Inc.
Project # : 161-236-B04
Project Name : Unocal #5533/Lynwood

ATI I.D. #: 91-228-001

Parameter	REF I.D.	UNITS	SAMPLE RESULT	DUP RESULT	RPD
TPH as Gasoline	91-228-001-04	PPM(V)	ND<2	ND<2	0
BENZENE	91-228-001-04	PPB(V)	9	9	0
TOLUENE	91-228-001-04	PPB(V)	11	11	0
ETHYLBENZENE	91-228-001-04	PPB(V)	10	10	0
TOTAL XYLENES	91-228-001-04	PPB(V)	14	15	8
1,3&1,4-DICHLOROBENZENE	91-228-001-04	PPB(V)	ND<2	ND<2	-
1,2-DICHLOROBENZENE	91-228-001-04	PPB(V)	ND<2	ND<2	-

* RPD (Relative Percent Difference) = (Sample Result - Duplicate Result) * 100/average result

APPENDIX
PPM(V) CALCULATION FORMULAS

The following condensed formula was used to calculate sample results in ppm(v).

$$\text{concentration ppm(v)} = \frac{(m)(10E3)(24.45)}{(V)(MW)}$$

where: m = mg of constituent detected in the air sample
v = volume in liters of sample injected
MW = molecular weight of constituent detected

The ppm(v) results are dependent on the molecular weight used in the above equation. To compare ppm(v) results that have different reference molecular weights the following relationship is used:

$$\text{ppm(v)} \propto 1/\text{MW}$$

Using this basic relationship the following equation can be derived:

$$\frac{ppm(v)a}{ppm(v)b} = \frac{MWb}{MWa}$$

The above equation can be used to compare the ppm(v) results of different constituents.

Notes:

1. 1 ppm(v) is equivalent to 1000 ppb(v).

2. The molecular weight of octane, 114 g/mole was used in calculating the TPH results in ppm(v).

Analytical Technologies, Inc. 2950 Airway Avenue, Suite A-1 Costa Mesa, CA 92626 (714) 435-9180 (714) 435-9184 (FAX)

Remit to Corporate Office:
5550 Morehouse Drive
San Diego, CA 92121-1709
(619) 458-9141

INVOICE

CM 40098

BILLED TO:
Geo Engineers, Inc.
8410 154th Avenue N.E.
Redmond, WA 98052

AUTHORIZED BY: Debbie Kristoff

PROJECT NAME: Unocal #5533/Lynwood
PROJECT #: 161-236-B04

*** SAMPLES RECEIVED ON 8/16/91

ACCESSION #: 91-228-001
DATE: August 22, 1991

CUSTOMER #: 342565

P.O. #:

TEST DESCRIPTION	QTY.	PRICE	SURCHARGE	TOTAL
TPH as Gasoline (8015 mod.) 8020 CONSTITUENTS (EPA 410.A)	4	$250.00	[50%] $125.00	$1500.00
CANISTER LEASING	4	$75.00	$0.00	$300.00
			10 % DISCOUNT =	$180.00
			REMIT —>	$1620.00

TERMS: Net 30 Days - 1½% Finance Charge on Balance Due over 30 days.

Analytical Technologies, Inc.
560 Naches Avenue SW, Suite 101 Renton, WA 98055 (206)228-8335

Chain of Custody

LABORATORY NUMBER: 91228-001

PROJECT MANAGER: Debbie Kristoff
COMPANY: GeoEngineers
ADDRESS: 8410 154th Ave NE
Redmond, WA 98052
PHONE: (206) 861-6000
SAMPLED BY: DEH

SAMPLE DISPOSAL INSTRUCTIONS
☐ ATI Disposal @ $5.00 each ☐ Return

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	8010 Halogenated Volatiles	8020 Aromatic Volatiles	8020 BETX ONLY	8240 GCMS Volatiles	8270 GCMS BNA	8310 HPLC PNA	8080 Pesticides & PCB's	8080 PCB's ONLY	8140 Phosphate Pesticides	8150 Herbicides	WDOE PAH/HH (WAC 173)	418.1 (TPH)	413.2 Grease & Oil	8015 (Modified)	TOC 9060	TOX 9020	% Moisture	EP TOX Metals (8) EP EXT	Priority Pollutant Metals (13)	TCLP ONLY: 8080 Pesticide (4)	TCLP ONLY: 8240 ZH-EXT	TCLP ONLY: 8270	TCLP ONLY: 8150 Herbicides (2)	TCLP ONLY: Metals (8)			NUMBER OF CONTAINERS
910815-1	8/15/91	0815	Air	01			X											X													1
910815-2	"	0820	"	02			X											X													1
910815-3	"	0830	"	03			X											X													1
910815-4	"	0840	"	04			X											X													1

PROJECT INFORMATION
PROJECT NUMBER: 161-236-B04
PROJECT NAME: Unocal Lynnwood
PURCHASE ORDER NUMBER:
ONGOING PROJECT? YES ☒ NO ☐

SAMPLE RECEIPT
TOTAL NUMBER OF CONTAINERS: 4
COC SEALS/INTACT? Y/N/NA: Y
RECEIVED GOOD COND./COLD: Y
RECEIVED VIA: Fed-X

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS
TAT: (NORMAL) ☐ 2WKS (RUSH) ☐ 24HR ☐ 48 HRS ☒ 72 HRS ☐ 1 WK
GREATER THAN 24 HR. NOTICE? YES ☐ NO ☐ (LAB USE ONLY)

SPECIAL INSTRUCTIONS:
Service Station #5533

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Donald E. Hanson Time: 1200	Signature: Time:	Signature: Time:
Printed Name: DONALD E. HANSON Date: 8/15/91	Printed Name: Date:	Printed Name: Date:
Company: GeoEngineers	Company:	Company:
RECEIVED BY: 1.	RECEIVED BY: 2.	RECEIVED BY: (LAB) 3.
Signature: Time:	Signature: Time:	Signature: Time: 0845
Printed Name: Date:	Printed Name: Date:	Printed Name: T. Rommel-Lauzon Date: 8/16/91
Company:	Company:	Analytical Technologies, Inc.

ATI Labs: San Diego (619)458-9141 • Phoenix (602)438-1530 • Seattle (206)228-8335 • Pensacola (904)474-1001 DISTRIBUTION: White, Canary - ATI • Pink - ORIGINATOR

Analytical Technologies, Inc. 560 Naches Avenue, S.W., Suite 101, Renton, WA 98055, (206) 228-8335

ATI I.D. # 9108-255

GeoEngineers

SEP 04 1991

Routing

File

August 29, 1991

GeoEngineers, Inc.
8410-154th Ave. N.E.
Redmond, WA 98052

Attention : Debbie Kristof

Project Number : 0161-236-B04

Project Name : Unocal - Lynnwood

On August 23, 1991, Analytical Technologies, Inc., received 3 soil samples for analysis. The samples were analyzed with EPA methodology or equivalent methods as specified in the attached analytical schedule. The results, sample cross reference, and quality control data are enclosed.

Bob A. Olsiewski
Project Manager

Frederick W. Grothkopp
Technical Manager

FWG/hal/cn

Analytical Technologies, Inc.

ATI I.D. # 9108-255

SAMPLE CROSS REFERENCE SHEET

CLIENT : GEOENGINEERS, INC.
PROJECT # : 0161-236-B04
PROJECT NAME : UNOCAL - LYNNWOOD

ATI #	CLIENT DESCRIPTION	DATE SAMPLED	MATRIX
9108-255-1	MW-7, 2.5'	08/22/91	SOIL
9108-255-2	MW-7, 10'	08/22/91	SOIL
9108-255-3	MW-8, 2.5'	08/22/91	SOIL

TOTALS

MATRIX	# SAMPLES
SOIL	3

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of the report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

ATI I.D. # 9108-255

ANALYTICAL SCHEDULE

CLIENT : GEOENGINEERS, INC.
PROJECT # : 0161-236-B04
PROJECT NAME : UNOCAL - LYNNWOOD

ANALYSIS	TECHNIQUE	REFERENCE	LAB
BETX	GC/PID	EPA 8020	R
FUEL HYDROCARBONS	GC/FID	EPA 8015 MODIFIED	R
MOISTURE	GRAVIMETRIC	METHOD 7-2.2	R

R = ATI - Renton
SD = ATI - San Diego
T = ATI - Tempe
PNR = ATI - Pensacola
FC = ATI - Fort Collins
SUB = Subcontract

Analytical Technologies, Inc.

ATI I.D. # 9108-255

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: N/A
PROJECT #	: 0161-236-B04	DATE RECEIVED	: N/A
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/23/91
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 08/23/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

RESULTS BASED ON DRY WEIGHT

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	<0.025

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	82

Analytical Technologies, Inc.

ATI I.D. # 9108-255-1

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/22/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/23/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/23/91
CLIENT I.D.	: MW-7, 2.5'	DATE ANALYZED	: 08/24/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1
RESULTS BASED ON DRY WEIGHT		% MOISTURE	: 10

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	<0.025

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	96

Analytical Technologies, Inc.

ATI I.D. # 9108-255-2

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/22/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/23/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/23/91
CLIENT I.D.	: MW-7, 10'	DATE ANALYZED	: 08/24/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1
RESULTS BASED ON DRY WEIGHT		% MOISTURE	: 10

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	<0.025

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	97

Analytical Technologies, Inc.

ATI I.D. # 9108-255-3

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/22/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/23/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/23/91
CLIENT I.D.	: MW-8, 2.5'	DATE ANALYZED	: 08/24/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1
RESULTS BASED ON DRY WEIGHT		% MOISTURE	: 10

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	<0.025

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	102

AnalyticalTechnologies,Inc.

ATI I.D. # 9108-255

VOLATILE ORGANIC COMPOUNDS
QUALITY CONTROL DATA

CLIENT	: GEOENGINEERS, INC.	SAMPLE I.D. #	: 9108-257-1
PROJECT #	: 0161-236-B04	DATE EXTRACTED	: 08/23/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE ANALYZED	: 08/24/91
EPA METHOD	: 8020 (BETX)	UNITS	: mg/Kg
SAMPLE MATRIX	: SOIL		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	<0.025	1.00	0.784	78	0.820	82	4
TOLUENE	<0.025	1.00	0.826	83	0.865	87	5
TOTAL XYLENES	<0.025	2.00	1.68	84	1.71	86	2

$$\%\text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{|(\text{Spike Result} - \text{Duplicate Result})|}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ATI I.D. # 9108-255

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: N/A
PROJECT #	: 0161-236-B04	DATE RECEIVED	: N/A
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/23/91
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 08/23/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-255-1

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/22/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/23/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/23/91
CLIENT I.D.	: MW-7, 2.5'	DATE ANALYZED	: 08/24/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-255-2

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/22/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/23/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/23/91
CLIENT I.D.	: MW-7, 10'	DATE ANALYZED	: 08/24/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-255-3

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/22/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/23/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/23/91
CLIENT I.D.	: MW-8, 2.5'	DATE ANALYZED	: 08/24/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-255

FUEL HYDROCARBONS
QUALITY CONTROL DATA

CLIENT	: GEOENGINEERS, INC.	SAMPLE I.D. #	: 9108-247-18
PROJECT #	: 0161-236-B04	DATE EXTRACTED	: 08/23/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE ANALYZED	: 08/26/91
EPA METHOD	: 8015 (MODIFIED)	UNITS	: mg/Kg
SAMPLE MATRIX	: SOIL		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
DIESEL	<5.0	500	426	85	439	88	3

$$\%\text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{|(\text{Spike Result} - \text{Duplicate Result})|}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ATI I.D. # 9108-255

GENERAL CHEMISTRY QUALITY CONTROL

CLIENT	: GEOENGINEERS, INC.	DATE ANALYZED	: 08/27/91
PROJECT #	: 0161-236-B04	MATRIX	: SOIL
PROJECT NAME	: UNOCAL - LYNNWOOD	UNITS	: %

PARAMETER	ATI I.D.	SAMPLE RESULT	DUP RESULT	RPD	SPIKED RESULT	SPIKE ADDED	% REC
MOISTURE	9108-255-2	10	10	0	N/A	N/A	N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

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DATE: 8/22 PAGE 1 OF 1

Analytical Technologies, Inc.
560 Naches Avenue SW, Suite 101 Renton, WA 98055 (206)228-8335

Chain of Custody

LABORATORY NUMBER: 91CE-255

PROJECT MANAGER: Deb Kristof
COMPANY: GEI
ADDRESS: Redmond, WA
PHONE: 861-6000 SAMPLED BY: C+H

SAMPLE DISPOSAL INSTRUCTIONS
☒ ATI Disposal @ $5.00 each ☐ Return

SAMPLE ID	DATE	TIME	MATRIX	LAB ID
mw-7, 2.5'	8/22/91	0930	Soil	-1
mw-7, 10'		1015		2
mw-8, 2.5'		1330		3

ANALYSIS REQUEST

SAMPLE ID	8010 Halogenated Volatiles	8020 Aromatic Volatiles	8020 BETX ONLY	8240 GCMS Volatiles	8270 GCMS BNA	8310 HPLC PNA	8080 Pesticides & PCB's	8080 PCB's ONLY	8140 Phosphate Pesticides	8150 Herbicides	WDOE PAH/HH (WAC 173)	418.1 (TPH)	413.2 Grease & Oil	8015 (Modified)	TOC 9060	TOX 9020	% Moisture	EP TOX Metals (8) EP EXT	Priority Pollutant Metals (13)	TCLP ONLY: 8080 Pesticide (4)	TCLP ONLY: 8240 ZH-EXT	TCLP ONLY: 8270	TCLP ONLY: 8150 Herbicides (2)	TCLP ONLY: Metals (8)			NUMBER OF CONTAINERS
mw-7, 2.5'			X											X													1
mw-7, 10'			X											X													1
mw-8, 2.5'			X											X													1

PROJECT INFORMATION
PROJECT NUMBER: 0161-236-B01P
PROJECT NAME: Unocal (Lynnwood)
PURCHASE ORDER NUMBER:
ONGOING PROJECT? YES ☒ NO ☐

SAMPLE RECEIPT
TOTAL NUMBER OF CONTAINERS: 3
COC SEALS/INTACT? Y/N/NA: NA
RECEIVED GOOD COND./COLD: Y/N
RECEIVED VIA: COURIER

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS
TAT: (NORMAL) ☐ 2WKS (RUSH) ☐ 24HR ☐ 48 HRS ☐ 72 HRS ☑ 1 WK
GREATER THAN 24 HR. NOTICE? YES ☐ NO ☐ (LAB USE ONLY)

SPECIAL INSTRUCTIONS:
Normal (1 week) TAT

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Time: 1730	Signature: Time:	Signature: Time:
Printed Name: Date: 8/22/91	Printed Name: Date:	Printed Name: Date:
Company: GEI	Company:	Company:
RECEIVED BY: 1.	RECEIVED BY: 2.	RECEIVED BY: (LAB) 3.
Signature: Time: Rowena Saturay 1037	Signature: Time:	Signature: Time:
Printed Name: Date: ROWENA SATURAY 8/23/91	Printed Name: Date:	Printed Name: Date:
Company: ATI-WA	Company:	Analytical Technologies, Inc.

ATI Labs: San Diego (619)458-9141 • Phoenix (602)438-1530 • Seattle (206)228-8335 • Pensacola (904)474-1001 DISTRIBUTION: White, Canary - ATI • Pink - ORIGINATOR

B - 53

Analytical Technologies, Inc. 560 Naches Avenue, S.W., Suite 101, Renton, WA 98055, (206) 228-8335

ATI I.D. # 9108-269

GeoEngineers

SEP 04 1991

Routing

File

August 29, 1991

GeoEngineers, Inc.
8410-154th Ave. N.E.
Redmond, WA 98052

Attention : Debbie Kristof

Project Number : 0161-236-B04

Project Name : Unocal - Lynnwood

On August 26, 1991, Analytical Technologies, Inc., received 5 soil samples for analysis. The samples were analyzed with EPA methodology or equivalent methods as specified in the attached analytical schedule. The results, sample cross reference, and quality control data are enclosed.

Bob A. Olsiewski
Project Manager

Frederick W. Grothkopp
Technical Manager

FWG/hal/cn

Analytical Technologies, Inc.

ATI I.D. # 9108-269

SAMPLE CROSS REFERENCE SHEET

CLIENT : GEOENGINEERS, INC.
PROJECT # : 0161-236-B04
PROJECT NAME : UNOCAL - LYNNWOOD

ATI #	CLIENT DESCRIPTION	DATE SAMPLED	MATRIX
9108-269-1	MW-9, 2.5'	08/22/91	SOIL
9108-269-2	MW-9, 10'	08/22/91	SOIL
9108-269-3	MW-10, 2.5'	08/23/91	SOIL
9108-269-4	MW-10, 7.5'	08/23/91	SOIL
9108-269-5	MW-10, 12.5'	08/23/91	SOIL

TOTALS

MATRIX	# SAMPLES
SOIL	5

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of the report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

ATI I.D. # 9108-269

ANALYTICAL SCHEDULE

CLIENT : GEOENGINEERS, INC.
PROJECT # : 0161-236-B04
PROJECT NAME : UNOCAL - LYNNWOOD

ANALYSIS	TECHNIQUE	REFERENCE	LAB
BETX	GC/PID	EPA 8020	R
FUEL HYDROCARBONS	GC/FID	EPA 8015 MODIFIED	R
MOISTURE	GRAVIMETRIC	METHOD 7-2.2	R

R = ATI - Renton
SD = ATI - San Diego
T = ATI - Tempe
PNR = ATI - Pensacola
FC = ATI - Fort Collins
SUB = Subcontract

Analytical Technologies, Inc.

ATI I.D. # 9108-269

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: N/A
PROJECT #	: 0161-236-B04	DATE RECEIVED	: N/A
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/26/91
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 08/26/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

RESULTS BASED ON DRY WEIGHT

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	<0.025

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	104

Analytical Technologies, Inc.

ATI I.D. # 9108-269-1

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/22/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/26/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/26/91
CLIENT I.D.	: MW-9, 2.5'	DATE ANALYZED	: 08/26/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1
RESULTS BASED ON DRY WEIGHT		% MOISTURE	: 12

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	<0.025

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	102

Analytical Technologies, Inc.

ATI I.D. # 9108-269-2

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/22/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/26/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/26/91
CLIENT I.D.	: MW-9, 10'	DATE ANALYZED	: 08/27/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1
RESULTS BASED ON DRY WEIGHT		% MOISTURE	: 10

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	<0.025

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	102

Analytical Technologies, Inc.

ATI I.D. # 9108-269-3

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/23/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/26/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/26/91
CLIENT I.D.	: MW-10, 2.5'	DATE ANALYZED	: 08/26/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1
RESULTS BASED ON DRY WEIGHT		% MOISTURE	: 10

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	<0.025

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	91

Analytical Technologies, Inc.

ATI I.D. # 9108-269-4

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/23/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/26/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/26/91
CLIENT I.D.	: MW-10, 7.5'	DATE ANALYZED	: 08/26/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1
RESULTS BASED ON DRY WEIGHT		% MOISTURE	: 9

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	<0.025

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	100

Analytical Technologies, Inc.

ATI I.D. # 9108-269

VOLATILE ORGANIC COMPOUNDS
QUALITY CONTROL DATA

CLIENT	: GEOENGINEERS, INC.	SAMPLE I.D. #	: BLANK SPIKE
PROJECT #	: 0161-236-B04	DATE EXTRACTED	: 08/26/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE ANALYZED	: 08/26/91
EPA METHOD	: 8020 (BETX)	UNITS	: mg/Kg
SAMPLE MATRIX	: SOIL		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	<0.025	1.00	0.969	97	0.974	97	1
TOLUENE	<0.025	1.00	0.977	98	0.987	99	1
TOTAL XYLENES	<0.025	2.00	1.99	100	1.99	100	0

$$\%\text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{|(\text{Spike Result} - \text{Duplicate Result})|}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ATI I.D. # 9108-269

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: N/A
PROJECT #	: 0161-236-B04	DATE RECEIVED	: N/A
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/26/91
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 08/26/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-269-1

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/22/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/26/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/26/91
CLIENT I.D.	: MW-9, 2.5'	DATE ANALYZED	: 08/27/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-269-2

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/22/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/26/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/26/91
CLIENT I.D.	: MW-9, 10'	DATE ANALYZED	: 08/27/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-269-3

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/23/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/26/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/26/91
CLIENT I.D.	: MW-10, 2.5'	DATE ANALYZED	: 08/27/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-269-4

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/23/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/26/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/26/91
CLIENT I.D.	: MW-10, 7.5'	DATE ANALYZED	: 08/27/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-269

FUEL HYDROCARBONS
QUALITY CONTROL DATA

CLIENT	: GEOENGINEERS, INC.	SAMPLE I.D. #	: 9108-258-2
PROJECT #	: 0161-236-B04	DATE EXTRACTED	: 08/26/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE ANALYZED	: 08/26/91
EPA METHOD	: 8015 (MODIFIED)	UNITS	: mg/Kg
SAMPLE MATRIX	: SOIL		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
DIESEL	<5.0	500	465	93	471	94	1

$$\%\text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{|(\text{Spike Result} - \text{Duplicate Result})|}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ATI I.D. # 9108-269

GENERAL CHEMISTRY QUALITY CONTROL

CLIENT : GEOENGINEERS, INC.
PROJECT # : 0161-236-B04
PROJECT NAME : UNOCAL - LYNNWOOD

DATE ANALYZED : 08/28/91
MATRIX : SOIL
UNITS : %

PARAMETER	ATI I.D.	SAMPLE RESULT	DUP RESULT	RPD	SPIKED RESULT	SPIKE ADDED	% REC
MOISTURE	9108-279-4	15	15	0	N/A	N/A	N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

560 Naches Avenue SW, Suite 101 Renton, WA 98055 (206)228-8335

Chain of Custody

DATE 8/26/91 PAGE 1 OF 1

LABORATORY NUMBER: 9108-269

PROJECT MANAGER: Bob Knight

COMPANY: GEI

ADDRESS: Redmond, WA

PHONE: 861-6000 SAMPLED BY: CAH

SAMPLE DISPOSAL INSTRUCTIONS

☒ ATI Disposal @ $5.00 each ☐ Return

SAMPLE ID	DATE	TIME	MATRIX	LAB ID
MW-9, 2.5'	8/22/91	1515	Soil	1
MW-9, 10'	8/22/91	1600		2
MW-10, 2.5'	8/23/91	1130		3
MW-10, 7.5'		1200		4
MW-10, 12.5'		1230		5

ANALYSIS REQUEST

8010 Halogenated Volatiles	8020 Aromatic Volatiles	8020 BETX ONLY	8240 GCMS Volatiles	8270 GCMS BNA	8310 HPLC PNA	8080 Pesticides & PCB's	8080 PCB's ONLY	8140 Phosphate Pesticides	8150 Herbicides	WDOE PAH/HH (WAC 173)	418.1 (TPH)	413.2 Grease & Oil	8015 (Modified)	TOC 9060	TOX 9020	% Moisture	EP TOX Metals (8) EP EXT	Priority Pollutant Metals (13)	TCLP ONLY: 8080 Pesticide (4)	TCLP ONLY: 8240 ZH-EXT	TCLP ONLY: 8270	TCLP ONLY: 8150 Herbicides (2)	TCLP ONLY: Metals (8)			NUMBER OF CONTAINERS
		X											X													1
		X											X													1
		X											X													1
		X											X													1
		X											X			(Hold)										1

PROJECT INFORMATION

PROJECT NUMBER: 0161-276-804

PROJECT NAME: Unocal Lynnwood

PURCHASE ORDER NUMBER:

ONGOING PROJECT? YES ☒ NO ☐

SAMPLE RECEIPT

TOTAL NUMBER OF CONTAINERS

COC SEALS/INTACT? Y/N/NA

RECEIVED GOOD COND./COLD

RECEIVED VIA:

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TAT: (NORMAL) ☐ 2WKS (RUSH) ☐ 24HR ☐ 48 HRS ☐ 72 HRS ☒ 1 WK

GREATER THAN 24 HR. NOTICE? YES ☐ NO ☐ (LAB USE ONLY)

SPECIAL INSTRUCTIONS:

Please hold MW-10, 12.5'

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Time: 0800	Signature: Time:	Signature: Time:
Printed Name: Craig Hart Date: 8/26/91	Printed Name: Date:	Printed Name: Date:
Company: GEI	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time: 10:45	Signature: Time:	Signature: Time:
Printed Name: V. KENNICK Date: 8-26-91	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Analytical Technologies, Inc.

ATI Labs: San Diego (619)458-9141 • Phoenix (602)438-1520 • Seattle (206)228-8335 • Pensacola (904)474-1001 DISTRIBUTION: White, Canary, ATI - Pink TOP

B - 70

Analytical Technologies, Inc. 560 Naches Avenue, S.W., Suite 101, Renton, WA 98055, (206) 228-8335

ATI I.D. # 9108-279

August 30, 1991

GeoEngineers

SEP 04 1991

Routing

File

GeoEngineers, Inc.
8410-154th Ave. N.E.
Redmond, WA 98052

Attention : Debbie Kristof

Project Number : 0161-236-B04

Project Name : Unocal - Lynnwood

On August 27, 1991, Analytical Technologies, Inc., received 5 soil samples for analysis. The samples were analyzed with EPA methodology or equivalent methods as specified in the attached analytical schedule. The results, sample cross reference, and quality control data are enclosed.

Bob A. Olsiewski
Project Manager

Frederick W. Grothkopp
Technical Manager

FWG/hal/cn

Analytical Technologies, Inc.

ATI I.D. # 9108-279

SAMPLE CROSS REFERENCE SHEET

CLIENT : GEOENGINEERS, INC.
PROJECT # : 0161-236-B04
PROJECT NAME : UNOCAL - LYNNWOOD

ATI #	CLIENT DESCRIPTION	DATE SAMPLED	MATRIX
9108-279-1	MW-12, 5'	08/26/91	SOIL
9108-279-2	MW-12, 10'	08/26/91	SOIL
9108-279-3	MW-13, 5'	08/26/91	SOIL
9108-279-4	MW-14, 5'	08/26/91	SOIL
9108-279-5	MW-14, 10'	08/26/91	SOIL

TOTALS

MATRIX	# SAMPLES
SOIL	5

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of the report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

ATI I.D. # 9108-279

ANALYTICAL SCHEDULE

CLIENT : GEOENGINEERS, INC.
PROJECT # : 0161-236-B04
PROJECT NAME : UNOCAL - LYNNWOOD

ANALYSIS	TECHNIQUE	REFERENCE	LAB
BETX	GC/PID	EPA 8020	R
FUEL HYDROCARBONS	GC/FID	EPA 8015 MODIFIED	R
MOISTURE	GRAVIMETRIC	METHOD 7-2.2	R

R = ATI - Renton
SD = ATI - San Diego
T = ATI - Tempe
PNR = ATI - Pensacola
FC = ATI - Fort Collins
SUB = Subcontract

Analytical Technologies, Inc.

ATI I.D. # 9108-279

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: N/A
PROJECT #	: 0161-236-B04	DATE RECEIVED	: N/A
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/27/91
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 08/27/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

RESULTS BASED ON DRY WEIGHT

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	<0.025

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	108

AnalyticalTechnologies,Inc.

ATI I.D. # 9108-279-1

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/26/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/27/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/27/91
CLIENT I.D.	: MW-12, 5'	DATE ANALYZED	: 08/28/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 100
RESULTS BASED ON DRY WEIGHT		% MOISTURE	: 32

COMPOUNDS	RESULTS
BENZENE	11
ETHYLBENZENE	87
TOLUENE	250
TOTAL XYLENES	540

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	59

Analytical Technologies, Inc.

ATI I.D. # 9108-279-2

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/26/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/27/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/27/91
CLIENT I.D.	: MW-12, 10'	DATE ANALYZED	: 08/28/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1
RESULTS BASED ON DRY WEIGHT		% MOISTURE	: 14

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	0.034

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	96

Analytical Technologies, Inc.

ATI I.D. # 9108-279-3

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/26/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/27/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/27/91
CLIENT I.D.	: MW-13, 5'	DATE ANALYZED	: 08/28/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1
RESULTS BASED ON DRY WEIGHT		% MOISTURE	: 13

COMPOUNDS	RESULTS	
BENZENE	2.2	
ETHYLBENZENE	18	*
TOLUENE	47	*
TOTAL XYLENES	120	*

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	101

* - Value from a 100 fold diluted sample.

Analytical Technologies, Inc.

ATI I.D. # 9108-279-4

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/26/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/27/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/27/91
CLIENT I.D.	: MW-14, 5'	DATE ANALYZED	: 08/28/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1
RESULTS BASED ON DRY WEIGHT		% MOISTURE	: 15

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	0.032
TOTAL XYLENES	0.042

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	99

Analytical Technologies, Inc.

ATI I.D. # 9108-279-5

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/26/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/27/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/27/91
CLIENT I.D.	: MW-14, 10'	DATE ANALYZED	: 08/28/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1
RESULTS BASED ON DRY WEIGHT		% MOISTURE	: 13

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	<0.025

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	95

Analytical Technologies, Inc.

ATI I.D. # 9108-279

VOLATILE ORGANIC COMPOUNDS
QUALITY CONTROL DATA

CLIENT	: GEOENGINEERS, INC.	SAMPLE I.D. #	: 9108-278-1
PROJECT #	: 0161-236-B04	DATE EXTRACTED	: 08/27/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE ANALYZED	: 08/27/91
EPA METHOD	: 8020 (BETX)	UNITS	: mg/Kg
SAMPLE MATRIX	: SOIL		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	<0.025	1.00	0.614	61	0.660	66	7
TOLUENE	<0.025	1.00	0.666	67	0.695	70	4
TOTAL XYLENES	<0.025	2.00	1.48	74	1.55	78	5

$$\%\text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{|(\text{Spike Result} - \text{Duplicate Result})|}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ATI I.D. # 9108-279

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: N/A
PROJECT #	: 0161-236-B04	DATE RECEIVED	: N/A
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/27/91
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 08/27/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-279-1

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/26/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/27/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/27/91
CLIENT I.D.	: MW-12, 5'	DATE ANALYZED	: 08/28/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 10

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	4200
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	250 *
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

* - Sample chromatogram indicates a gasoline-like contamination.

Analytical Technologies, Inc.

ATI I.D. # 9108-279-2

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/26/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/27/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/27/91
CLIENT I.D.	: MW-12, 10'	DATE ANALYZED	: 08/28/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-279-3

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/26/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/27/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/27/91
CLIENT I.D.	: MW-13, 5'	DATE ANALYZED	: 08/28/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	1400
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	82 *
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

* - Sample chromatogram indicates a gasoline-like contamination.

Analytical Technologies, Inc.

ATI I.D. # 9108-279-4

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/26/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/27/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/27/91
CLIENT I.D.	: MW-14, 5'	DATE ANALYZED	: 08/28/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-279-5

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/26/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/27/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/27/91
CLIENT I.D.	: MW-14, 10'	DATE ANALYZED	: 08/27/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-279

FUEL HYDROCARBONS
QUALITY CONTROL DATA

CLIENT	: GEOENGINEERS, INC.	SAMPLE I.D. #	: 9108-279-5
PROJECT #	: 0161-236-B04	DATE EXTRACTED	: 08/27/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE ANALYZED	: 08/27/91
EPA METHOD	: 8015 (MODIFIED)	UNITS	: mg/Kg
SAMPLE MATRIX	: SOIL		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
DIESEL	<5.0	500	436	87	440	88	1

$$\%\text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{|(\text{Spike Result} - \text{Duplicate Result})|}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ATI I.D. # 9108-279

GENERAL CHEMISTRY QUALITY CONTROL

CLIENT	: GEOENGINEERS, INC.	DATE ANALYZED	: 08/28/91
PROJECT #	: 0161-236-B04	MATRIX	: SOIL
PROJECT NAME	: UNOCAL - LYNNWOOD	UNITS	: %

PARAMETER	ATI I.D.	SAMPLE RESULT	DUP RESULT	RPD	SPIKED RESULT	SPIKE ADDED	% REC
MOISTURE	9108-279-4	15	15	0	N/A	N/A	N/A

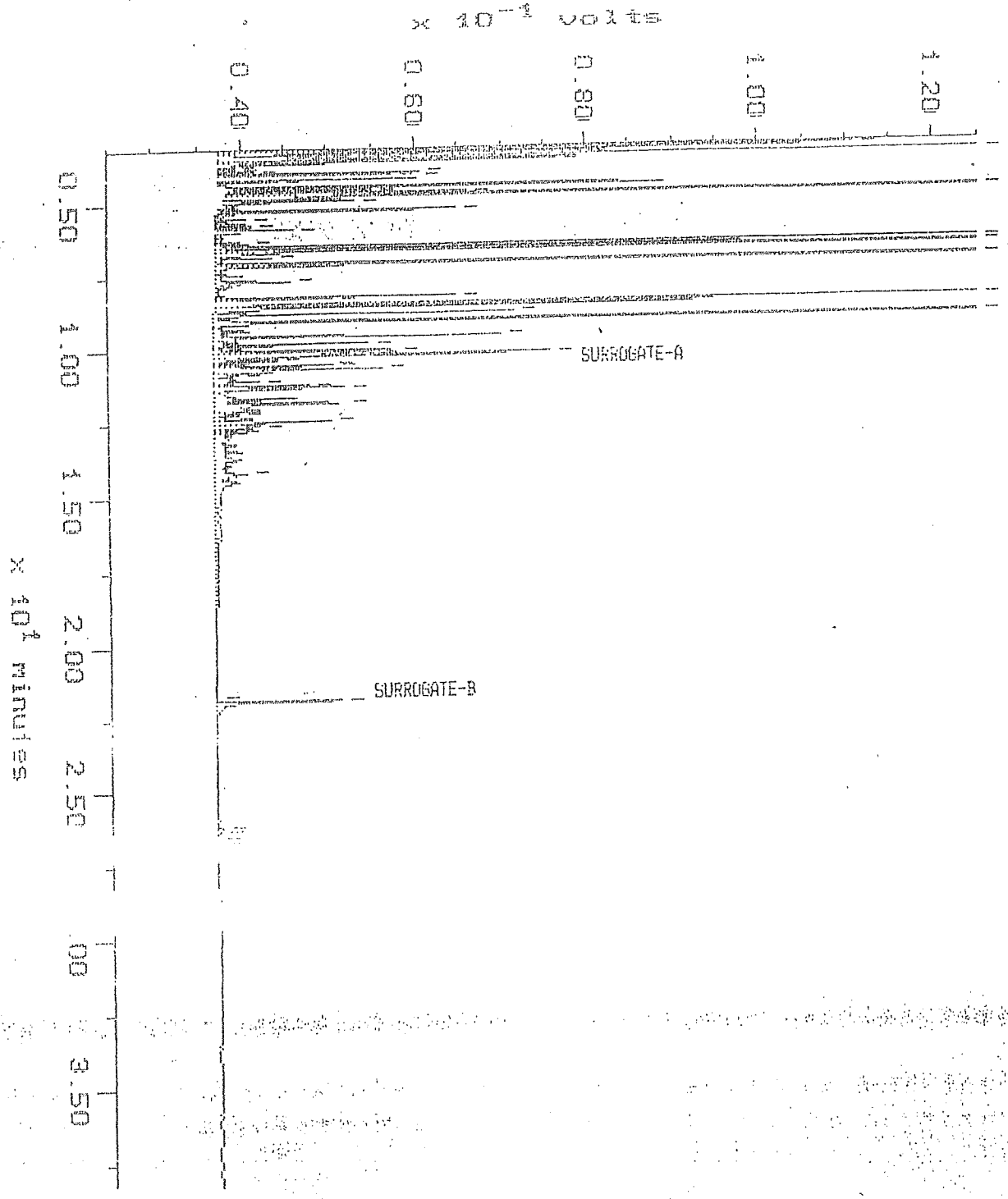
$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

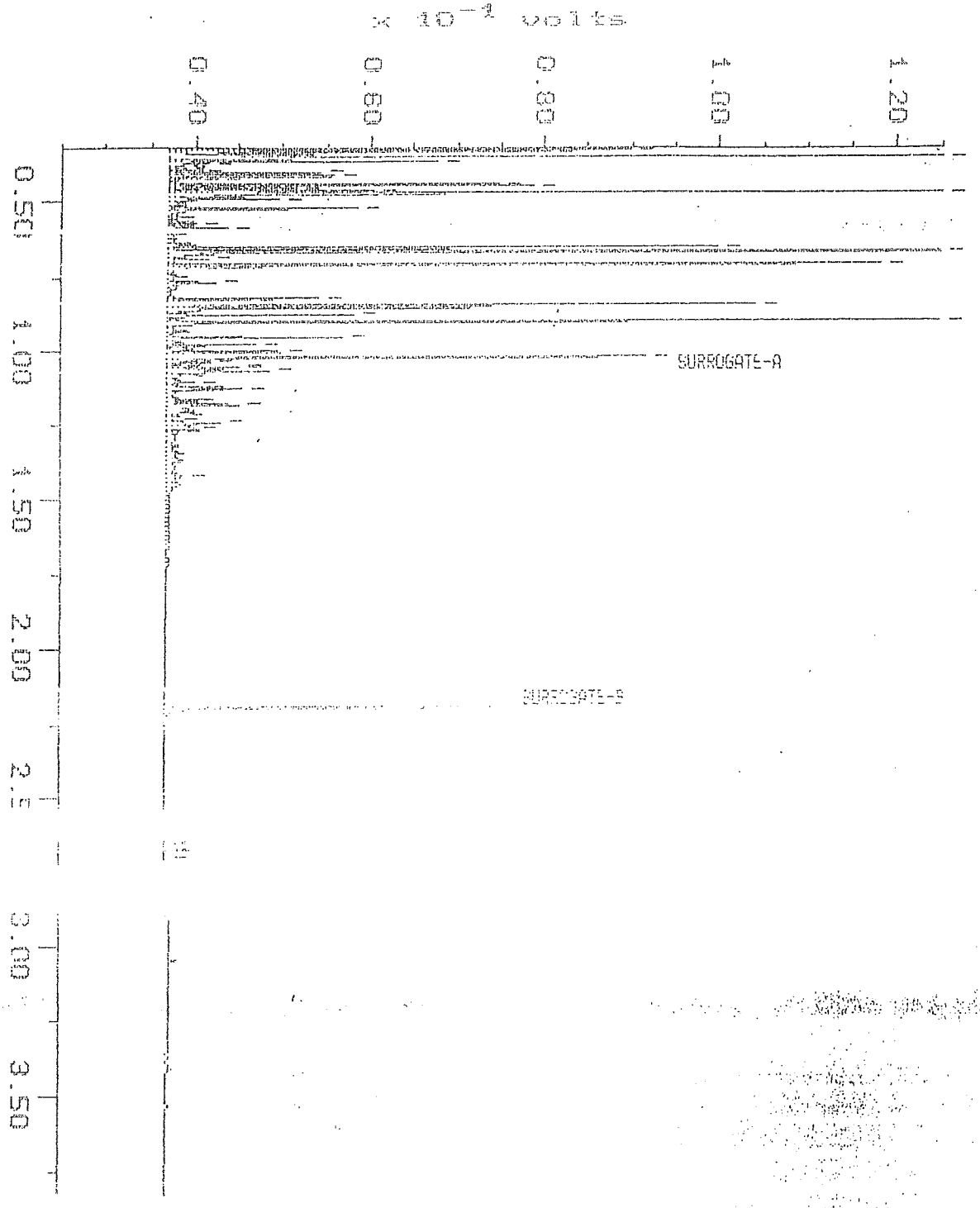
Sample: 9109-276-1 Dil
Acquired: 28-AUG-91 9:45
Dilution: 1 : 10.000

Channel: DEMIRI
Method: M:\SERGE\MAXDATA\SERGE-D\FUEL0827
Inj Vol: 1.00

Filename: 08275025
Operator:



Sample: 9108-279-3 DIL Channel: DEMITRI Filename: 0827SD26
Acquired: 28-AUG-91 10:33 Method: M:\BRD2\MAXDATA\SERGE-D\FUEL0827 Operator:
Dilution: 1 : 5.000 Inj Vol: 1.00



Analytical Technologies, Inc.

560 Naches Avenue SW, Suite 101 Renton, WA 98055 (206)228-8335

Chain of Custody

DATE 7-9-91 PAGE ___ OF ___

LABORATORY NUMBER: 9148-279

PROJECT MANAGER: [illegible]

COMPANY: [illegible]

ADDRESS: [illegible]

PHONE: [illegible] SAMPLED BY: [illegible]

SAMPLE DISPOSAL INSTRUCTIONS

☒ ATI Disposal @ $5.00 each ☐ Return

SAMPLE ID	DATE	TIME	MATRIX	LAB ID
HW-12, 5'	7-1-91	7:40	Soil	-1
HW-12, 10'	"	10:00	"	-2
HW-13, 5'	"	11:30	"	-3
HW-14, 5'	"	12:30	"	-4
HW-14, 10'	"	1:10	"	-5

ANALYSIS REQUEST

8010 Halogenated Volatiles	8020 Aromatic Volatiles	8020 BETX ONLY	8240 GCMS Volatiles	8270 GCMS BNA	8310 HPLC PNA	8080 Pesticides & PCB's	8080 PCB's ONLY	8140 Phosphate Pesticides	8150 Herbicides	WDOE PAH/HH (WAC 173)	418.1 (TPH)	413.2 Grease & Oil	8015 (Modified)	TOC 9060	TOX 9020	% Moisture	EP TOX Metals (8) EP EXT	Priority Pollutant Metals (13)	TCLP ONLY: 8080 Pesticide (4)	TCLP ONLY: 8240 ZH-EXT	TCLP ONLY: 8270	TCLP ONLY: 8150 Herbicides (2)	TCLP ONLY: Metals (8)			NUMBER OF CONTAINERS
		X											X													1
		X											X													1
		X											X													1
		X											X													1
		X											X													1
																										5

PROJECT INFORMATION	SAMPLE RECEIPT	
PROJECT NUMBER: [illegible]	TOTAL NUMBER OF CONTAINERS	5
PROJECT NAME: [illegible]	COC SEALS/INTACT? Y/N/NA	N/A
PURCHASE ORDER NUMBER:	RECEIVED GOOD COND./COLD	Y/Y
ONGOING PROJECT? YES ☒ NO ☐	RECEIVED VIA:	[illegible]

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TAT: (NORMAL) ☐ 2WKS (RUSH) ☐ 24HR ☐ 48 HRS ☐ 72 HRS ☒ 1 WK

GREATER THAN 24 HR. NOTICE? YES ☐ NO ☐ (LAB USE ONLY)

SPECIAL INSTRUCTIONS:

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Time: [illegible]	Signature: Time:	Signature: Time:
Printed Name: Date: [illegible]	Printed Name: Date:	Printed Name: Date:
Company: [illegible]	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time: [illegible]	Signature: Time: 10:51	Signature: Time:
Printed Name: Date: [illegible]	Printed Name: Date: 7/7/91	Printed Name: Date:
Company: ATI-WA	Company:	Analytical Technologies, Inc.

ATI Labs: San Diego (619)458-9141 • Phoenix (602)438-1530 • Seattle (206)228-8335 • Pensacola (904)474-1001 DISTRIBUTION: White, Canary - ATI • Pink - ORIGINATOR

Analytical Technologies, Inc.

ATI I.D. # 9108-285

GeoEngineers

SEP 0 9 1991

Routing

September 5, 1991

GeoEngineers, Inc.
8410-154th Ave. N.E.
Redmond, WA 98052

Attention : Deb Kristof

Project Number : 0161-236-B04

Project Name : Unocal/Lynnwood

On August 28, 1991, Analytical Technologies, Inc., received 4 soil samples for analysis. The samples were analyzed with EPA methodology or equivalent methods as specified in the attached analytical schedule. The results, sample cross reference, and quality control data are enclosed.

Bob A. Olsiewski
Project Manager

Frederick W. Grothkopp
Technical Manager

FWG/hal/cn

Analytical Technologies, Inc.

ATI I.D. # 9108-285

SAMPLE CROSS REFERENCE SHEET

CLIENT : GEOENGINEERS, INC.
PROJECT # : 0161-236-B04
PROJECT NAME : UNOCAL/LYNNWOOD

ATI #	CLIENT DESCRIPTION	DATE SAMPLED	MATRIX
9108-285-1	MW-15, 7.5'	08/27/91	SOIL
9108-285-2	MW-15, 10'	08/27/91	SOIL
9108-285-3	MW-16, 5'	08/27/91	SOIL
9108-285-4	MW-16, 10'	08/27/91	SOIL

TOTALS

MATRIX	# SAMPLES
SOIL	4

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of the report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

ATI I.D. # 9108-285

ANALYTICAL SCHEDULE

CLIENT : GEOENGINEERS, INC.
PROJECT # : 0161-236-B04
PROJECT NAME : UNOCAL/LYNNWOOD

ANALYSIS	TECHNIQUE	REFERENCE	LAB
BETX	GC/PID	EPA 8020	R
FUEL HYDROCARBONS	GC/FID	EPA 8015 MODIFIED	R
MOISTURE	GRAVIMETRIC	CLP SOW ILM01.0	R

R = ATI - Renton
SD = ATI - San Diego
T = ATI - Tempe
PNR = ATI - Pensacola
FC = ATI - Fort Collins
SUB = Subcontract

Analytical Technologies, Inc.

ATI I.D. # 9108-285

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: N/A
PROJECT #	: 0161-236-B04	DATE RECEIVED	: N/A
PROJECT NAME	: UNOCAL/LYNNWOOD	DATE EXTRACTED	: 08/28/91
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 08/28/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

RESULTS BASED ON DRY WEIGHT

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	<0.025

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	101

Analytical Technologies, Inc.

ATI I.D. # 9108-285-1

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/27/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/28/91
PROJECT NAME	: UNOCAL/LYNNWOOD	DATE EXTRACTED	: 08/28/91
CLIENT I.D.	: MW-15, 7.5'	DATE ANALYZED	: 08/28/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1
RESULTS BASED ON DRY WEIGHT		% MOISTURE	: 20

COMPOUNDS	RESULTS
BENZENE	0.042
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	0.094

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	91

Analytical Technologies, Inc.

ATI I.D. # 9108-285-2

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/27/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/28/91
PROJECT NAME	: UNOCAL/LYNNWOOD	DATE EXTRACTED	: 08/28/91
CLIENT I.D.	: MW-15, 10'	DATE ANALYZED	: 08/28/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1
RESULTS BASED ON DRY WEIGHT		% MOISTURE	: 11

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	<0.025

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	95

Analytical Technologies, Inc.

ATI I.D. # 9108-285-3

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/27/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/28/91
PROJECT NAME	: UNOCAL/LYNNWOOD	DATE EXTRACTED	: 08/28/91
CLIENT I.D.	: MW-16, 5'	DATE ANALYZED	: 08/29/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1
RESULTS BASED ON DRY WEIGHT		% MOISTURE	: 10

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	0.19

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	113

Analytical Technologies, Inc.

ATI I.D. # 9108-285-4

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/27/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/28/91
PROJECT NAME	: UNOCAL/LYNNWOOD	DATE EXTRACTED	: 08/28/91
CLIENT I.D.	: MW-16, 10'	DATE ANALYZED	: 08/28/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1
RESULTS BASED ON DRY WEIGHT		% MOISTURE	: 10

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	0.042
TOLUENE	<0.025
TOTAL XYLENES	0.16

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	100

Analytical Technologies, Inc.

ATI I.D. # 9108-285

VOLATILE ORGANIC COMPOUNDS
QUALITY CONTROL DATA

CLIENT	: GEOENGINEERS, INC.	SAMPLE I.D. #	: 9108-285-2
PROJECT #	: 0161-236-B04	DATE EXTRACTED	: 08/28/91
PROJECT NAME	: UNOCAL/LYNNWOOD	DATE ANALYZED	: 08/28/91
EPA METHOD	: 8020 (BETX)	UNITS	: mg/Kg
SAMPLE MATRIX	: SOIL		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	<0.025	1.00	0.645	65	0.718	72	11
TOLUENE	<0.025	1.00	0.655	66	0.721	72	10
TOTAL XYLENES	<0.025	2.00	1.41	71	1.57	79	11

$$\%\text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{|(\text{Spike Result} - \text{Duplicate Result})|}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ATI I.D. # 9108-285

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: N/A
PROJECT #	: 0161-236-B04	DATE RECEIVED	: N/A
PROJECT NAME	: UNOCAL/LYNNWOOD	DATE EXTRACTED	: 08/28/91
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 08/28/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-285-1

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/27/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/28/91
PROJECT NAME	: UNOCAL/LYNNWOOD	DATE EXTRACTED	: 08/28/91
CLIENT I.D.	: MW-15, 7.5'	DATE ANALYZED	: 08/28/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-285-2

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/27/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/28/91
PROJECT NAME	: UNOCAL/LYNNWOOD	DATE EXTRACTED	: 08/28/91
CLIENT I.D.	: MW-15, 10'	DATE ANALYZED	: 08/28/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-285-3

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/27/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/28/91
PROJECT NAME	: UNOCAL/LYNNWOOD	DATE EXTRACTED	: 08/28/91
CLIENT I.D.	: MW-16, 5'	DATE ANALYZED	: 08/29/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	200 *
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

* - Sample chromatogram indicates a stoddard-like contamination.

Analytical Technologies, Inc.

ATI I.D. # 9108-285-4

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/27/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/28/91
PROJECT NAME	: UNOCAL/LYNNWOOD	DATE EXTRACTED	: 08/28/91
CLIENT I.D.	: MW-16, 10'	DATE ANALYZED	: 08/29/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	22
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-285

FUEL HYDROCARBONS
QUALITY CONTROL DATA

CLIENT	: GEOENGINEERS, INC.	SAMPLE I.D. #	: 9108-285-2
PROJECT #	: 0161-236-B04	DATE EXTRACTED	: 08/28/91
PROJECT NAME	: UNOCAL/LYNNWOOD	DATE ANALYZED	: 08/28/91
EPA METHOD	: 8015 (MODIFIED)	UNITS	: mg/Kg
SAMPLE MATRIX	: SOIL		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
DIESEL	<5.0	500	540	108	517	103	4

$$\%\text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{|(\text{Spike Result} - \text{Duplicate Result})|}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ATI I.D. # 9108-285

GENERAL CHEMISTRY QUALITY CONTROL

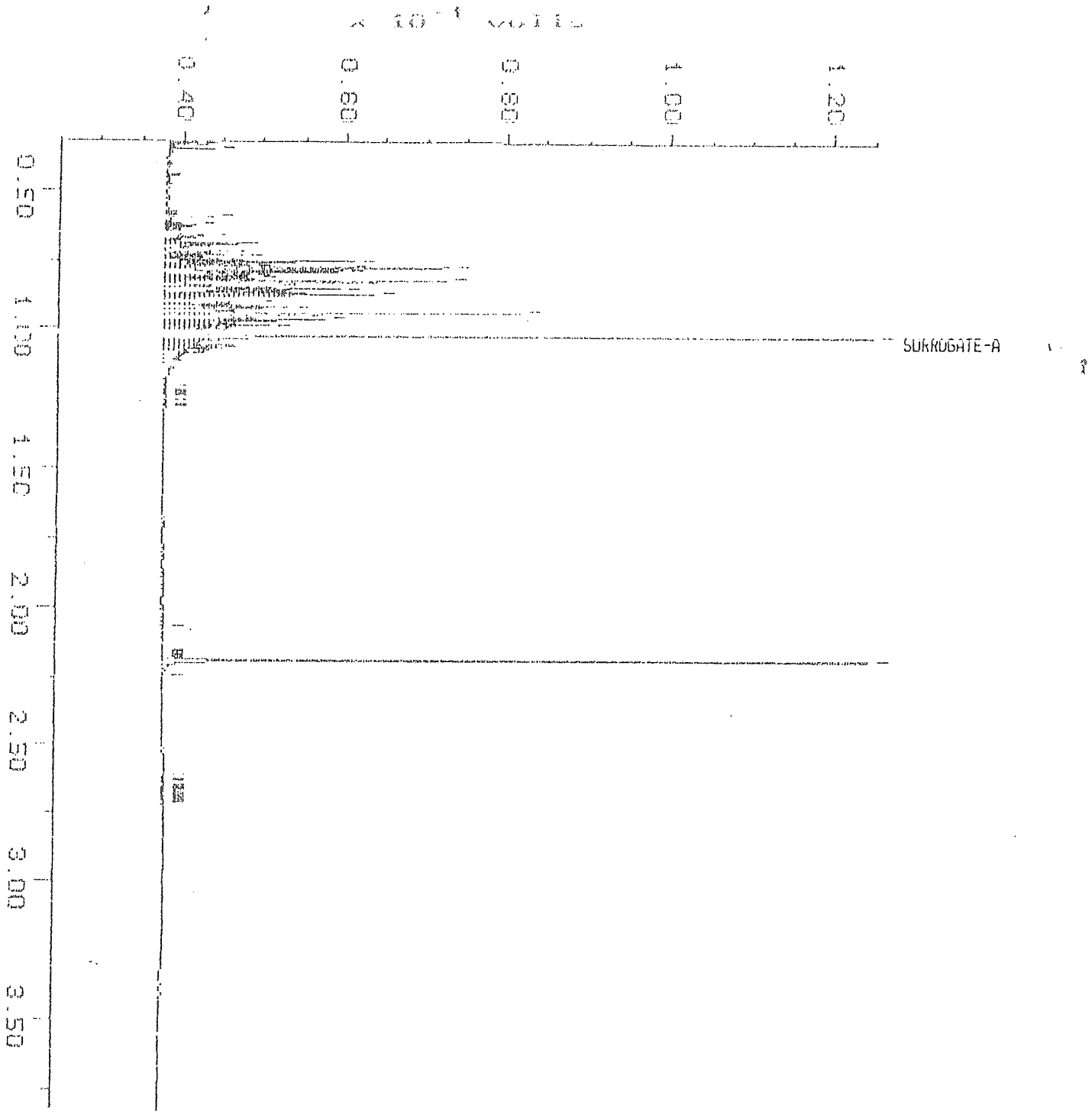
CLIENT	: GEOENGINEERS, INC.	DATE ANALYZED	: 09/04/91
PROJECT #	: 0161-236-B04	MATRIX	: SOIL
PROJECT NAME	: UNOCAL/LYNNWOOD	UNITS	: %

PARAMETER	ATI I.D.	SAMPLE RESULT	DUP RESULT	RPD	SPIKED RESULT	SPIKE ADDED	% REC
MOISTURE	9109-004-4	24	24	0	N/A	N/A	N/A

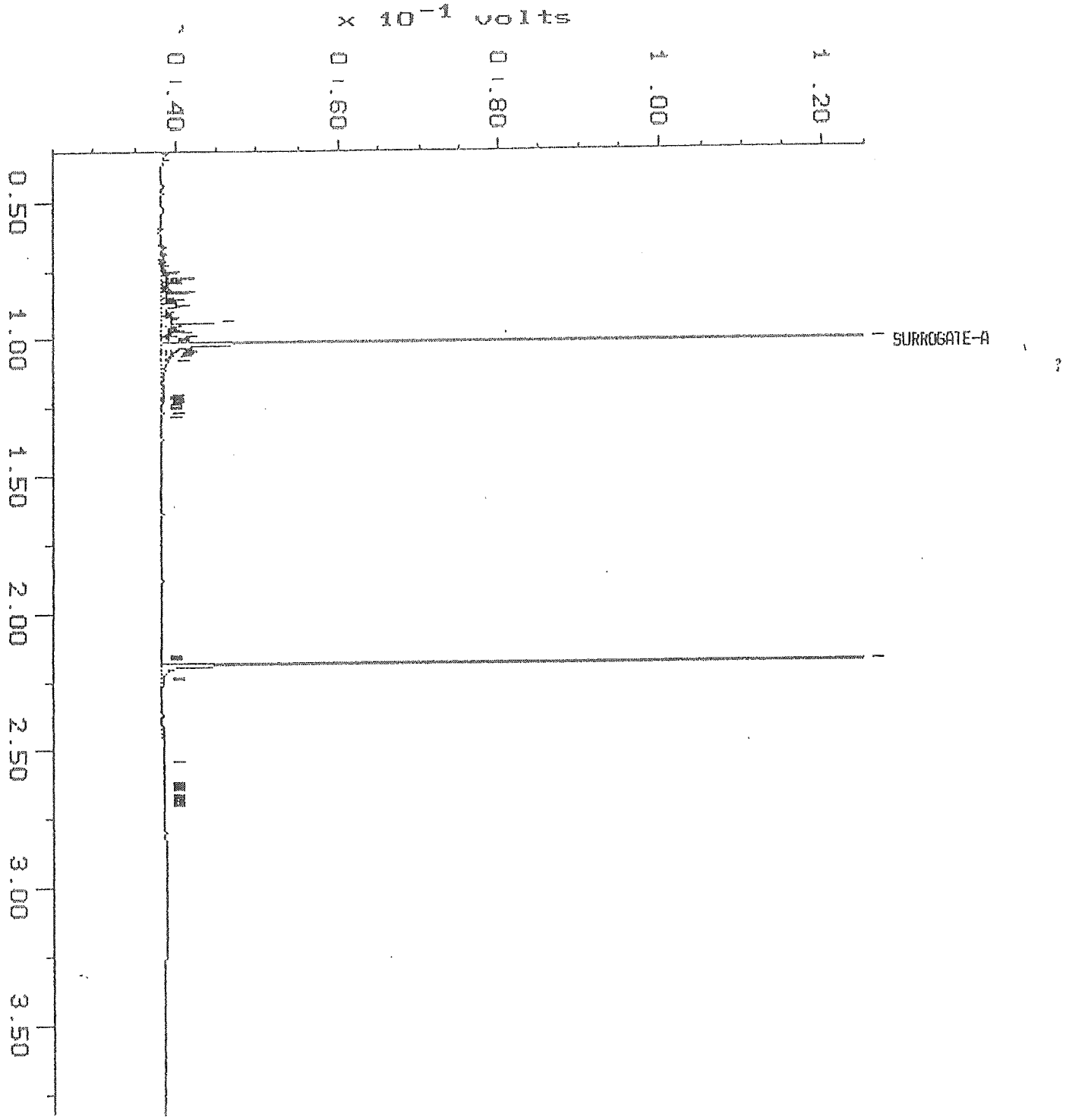
$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Sample: 9103-285-3 Channel: DEMITRI Filename: 06285D12
Acquired: 29-AUG-91 0:33 Method: M:\BRU2\MAXDATA\DERGE-D\FUEL0626 Operator:
Inj Vol: 1.00



Sample: 9108-28s-4 Channel: DEMITRI Filename: 0828SD13
Acquired: 29-AUG-91 1:20 Method: M:\BRO2\MAXDATA\SERGE-D\FUEL0828 Operator:
Inj Vol: 1.00



Analytical Technologies, Inc.
560 Naches Avenue SW, Suite 101 Renton, WA 98055 (206)228-8335

Chain of Custody

LABORATORY NUMBER: 9102-2215

PROJECT MANAGER: Deb Knisley
COMPANY: GEI
ADDRESS: Redmond
PHONE: 861-6000 SAMPLED BY: CAH

SAMPLE DISPOSAL INSTRUCTIONS
☑ ATI Disposal @ $5.00 each ☐ Return

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	8010 Halogenated Volatiles	8020 Aromatic Volatiles	8020 BETX ONLY	8240 GCMS Volatiles	8270 GCMS BNA	8310 HPLC PNA	8080 Pesticides & PCB's	8080 PCB's ONLY	8140 Phosphate Pesticides	8150 Herbicides	WDOE PAH/HH (WAC 173)	418.1 (TPH)	413.2 Grease & Oil	8015 (Modified)	TOC 9060	TOX 9020	% Moisture	EP TOX Metals (8) EP EXT	Priority Pollutant Metals (13)	TCLP ONLY: 8080 Pesticide (4)	TCLP ONLY: 8240 ZH-EXT	TCLP ONLY: 8270	TCLP ONLY: 8150 Herbicides (2)	TCLP ONLY: Metals (8)			NUMBER OF CONTAINERS
MW-15, 7.5'	8/27/91		Soil	-1			X											X													1
MW-15, 10'				2			X											X													1
MW-16, 5'				3			X											X													1
MW-16, 10'				4			X											X													1

PROJECT INFORMATION
PROJECT NUMBER: 0161-236-B04
PROJECT NAME: Unocal Lynnwood
PURCHASE ORDER NUMBER:
ONGOING PROJECT? YES ☑ NO ☐

SAMPLE RECEIPT
TOTAL NUMBER OF CONTAINERS: 4
COC SEALS/INTACT? Y/N/NA: Y/Y
RECEIVED GOOD COND./COLD: /
RECEIVED VIA: COURIER

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TAT (NORMAL) ☐ 2WKS (RUSH) ☐ 24HR ☐ 48 HRS ☐ 72 HRS ☑ 1 WK
GRATER THAN 24 HR. NOTICE? YES ☐ NO ☐ (LAB USE ONLY)

SPECIAL INSTRUCTIONS:

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Time: 1800	Signature: Time:	Signature: Time:
Printed Name: Craig Hurd Date: 8/27/91	Printed Name: Date:	Printed Name: Date:
Company: GEI	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time: Rowena Saturay 921	Signature: Time:	Signature: Time:
Printed Name: ROWENA SATURAY Date: 8/28/91	Printed Name: Date:	Printed Name: Date:
Company: ATI-WA	Company:	Analytical Technologies, Inc.

Analytical Technologies, Inc. 560 Naches Avenue, S.W., Suite 101, Renton, WA 98055, (206) 228-8335

ATI I.D. # 9108-298

September 4, 1991

GeoEngineers, Inc.
8410-154th Ave. N.E.
Redmond, WA 98052

Attention : Debbie Kristof

Project Number : 0161-236-B04

Project Name : Unocal - Lynnwood

On August 29, 1991, Analytical Technologies, Inc., received 2 soil samples for analysis. The samples were analyzed with EPA methodology or equivalent methods as specified in the attached analytical schedule. The results, sample cross reference, and quality control data are enclosed.

Bob A. Olsiewski
Project Manager

Frederick W. Grothkopp
Technical Manager

FWG/hal/cn

Analytical Technologies, Inc.

ATI I.D. # 9108-298

SAMPLE CROSS REFERENCE SHEET

CLIENT : GEOENGINEERS, INC.
PROJECT # : 0161-236-B04
PROJECT NAME : UNOCAL - LYNNWOOD

ATI #	CLIENT DESCRIPTION	DATE SAMPLED	MATRIX
9108-298-1	MW-11, 2.5'	08/28/91	SOIL
9108-298-2	MW-11, 5'	08/28/91	SOIL

TOTALS

MATRIX	# SAMPLES
SOIL	2

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of the report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

ATI I.D. # 9108-298

ANALYTICAL SCHEDULE

CLIENT : GEOENGINEERS, INC.
PROJECT # : 0161-236-B04
PROJECT NAME : UNOCAL - LYNNWOOD

ANALYSIS	TECHNIQUE	REFERENCE	LAB
BETX	GC/PID	EPA 8020	R
FUEL HYDROCARBONS	GC/FID	EPA 8015 MODIFIED	R
MOISTURE	GRAVIMETRIC	CLP SOW ILM01.0	R

R = ATI - Renton
SD = ATI - San Diego
T = ATI - Tempe
PNR = ATI - Pensacola
FC = ATI - Fort Collins
SUB = Subcontract

Analytical Technologies, Inc.

ATI I.D. # 9108-298

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: N/A
PROJECT #	: 0161-236-B04	DATE RECEIVED	: N/A
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/29/91
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 08/29/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

RESULTS BASED ON DRY WEIGHT

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	<0.025

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	93

Analytical Technologies, Inc.

ATI I.D. # 9108-298-1

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/28/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/29/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/29/91
CLIENT I.D.	: MW-11, 2.5'	DATE ANALYZED	: 08/29/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1
RESULTS BASED ON DRY WEIGHT		% MOISTURE	: 24

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	<0.025

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	84

Analytical Technologies, Inc.

ATI I.D. # 9108-298-2

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/28/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/29/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/29/91
CLIENT I.D.	: MW-11, 5'	DATE ANALYZED	: 08/29/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1
RESULTS BASED ON DRY WEIGHT		% MOISTURE	: 10

COMPOUNDS	RESULTS
BENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	<0.025

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	70

AnalyticalTechnologies,Inc.

ATI I.D. # 9108-298

VOLATILE ORGANIC COMPOUNDS
QUALITY CONTROL DATA

CLIENT	: GEOENGINEERS, INC.	SAMPLE I.D. #	: 9108-298-2
PROJECT #	: 0161-236-B04	DATE EXTRACTED	: 08/29/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE ANALYZED	: 08/29/91
EPA METHOD	: 8020 (BETX)	UNITS	: mg/Kg
SAMPLE MATRIX	: SOIL		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	<0.025	1.00	0.864	86	0.874	87	1
TOLUENE	<0.025	1.00	0.860	86	0.877	88	2
TOTAL XYLENES	<0.025	2.00	1.64	82	1.68	84	2

$$\%\text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{|(\text{Spike Result} - \text{Duplicate Result})|}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ATI I.D. # 9108-298

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: N/A
PROJECT #	: 0161-236-B04	DATE RECEIVED	: N/A
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/29/91
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 08/29/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-298-1

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/28/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/29/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/29/91
CLIENT I.D.	: MW-11, 2.5'	DATE ANALYZED	: 08/30/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	15 *
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

* - Sample chromatogram indicates a petroleum hydrocarbon-like contamination heavier than diesel.

Analytical Technologies, Inc.

ATI I.D. # 9108-298-2

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/28/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/29/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE EXTRACTED	: 08/29/91
CLIENT I.D.	: MW-11, 5'	DATE ANALYZED	: 08/30/91
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-298

FUEL HYDROCARBONS
QUALITY CONTROL DATA

CLIENT	: GEOENGINEERS, INC.	SAMPLE I.D. #	: 9108-296-15
PROJECT #	: 0161-236-B04	DATE EXTRACTED	: 08/29/91
PROJECT NAME	: UNOCAL - LYNNWOOD	DATE ANALYZED	: 08/29/91
EPA METHOD	: 8015 (MODIFIED)	UNITS	: mg/Kg
SAMPLE MATRIX	: SOIL		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
DIESEL	<5.0	500	458	92	468	94	2

$$\%\text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{|(\text{Spike Result} - \text{Duplicate Result})|}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ATI I.D. # 9108-298

GENERAL CHEMISTRY QUALITY CONTROL

CLIENT	: GEOENGINEERS, INC.	DATE ANALYZED	: 09/03/91
PROJECT #	: 0161-236-B04	MATRIX	: SOIL
PROJECT NAME	: UNOCAL - LYNNWOOD	UNITS	: %

PARAMETER	ATI I.D.	SAMPLE RESULT	DUP RESULT	RPD	SPIKED RESULT	SPIKE ADDED	% REC
MOISTURE	9108-319-1	4.6	4.6	0	N/A	N/A	N/A

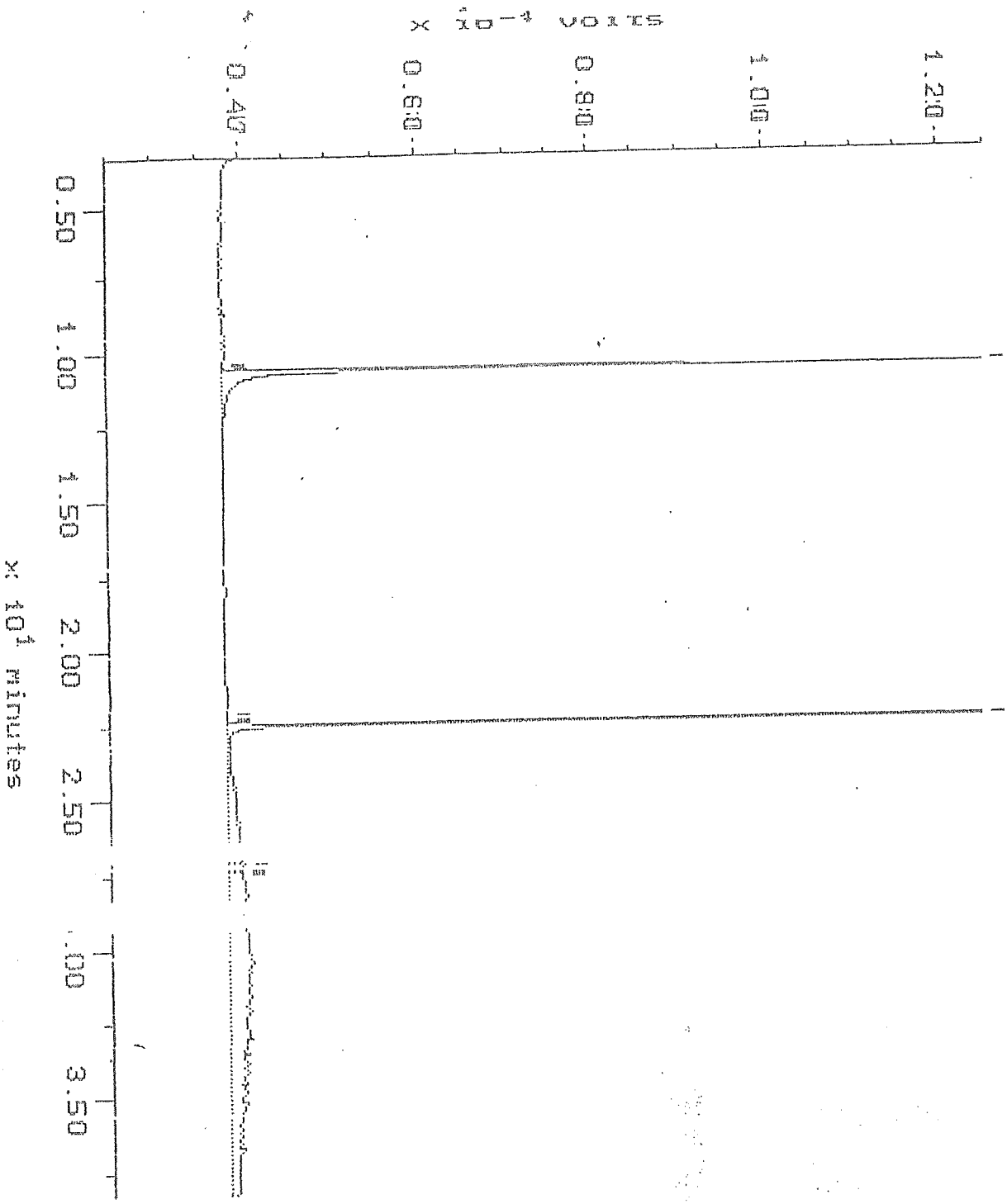
$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Sample: 9108~~299~~298-1
Acquired: 30-AUG-91 3:45
Inj Vol: 1.00

Channel: CLARENCE
Method: M:\BRO2\MAXDATA\SERGE-C\FUEL0829

Filename: 0829SC20
Operator: BRO



ZE3

AnalyticalTechnologies, Inc.

560 Naches Avenue SW, Suite 101 Renton, WA 98055 (206)228-8335

Chain of Custody

DATE 8/28/91 PAGE 1 OF 1

LABORATORY NUMBER: 9108-298

PROJECT MANAGER: Deb Kristof

COMPANY: GEI

ADDRESS: Redmond

PHONE: 861-6000 SAMPLED BY: CAH

SAMPLE DISPOSAL INSTRUCTIONS

☑ ATI Disposal @ $5.00 each ☐ Return

SAMPLE ID	DATE	TIME	MATRIX	LAB ID
MW-11, 2.5'	8/28/91	0930	Soil	-1
MW-11, 10' 5' RB	↓	1000	↓	2

ANALYSIS REQUEST

SAMPLE ID	8010 Halogenated Volatiles	8020 Aromatic Volatiles	8020 BETX ONLY	8240 GCMS Volatiles	8270 GCMS BNA	8310 HPLC PNA	8080 Pesticides & PCB's	8080 PCB's ONLY	8140 Phosphate Pesticides	8150 Herbicides	WDOE PAH/HH (WAC 173)	418.1 (TPH)	413.2 Grease & Oil	8015 (Modified)	TOC 9060	TOX 9020	% Moisture	EP TOX Metals (8) EP EXT	Priority Pollutant Metals (13)	TCLP ONLY: 8080 Pesticide (4)	TCLP ONLY: 8240 ZH-EXT	TCLP ONLY: 8270	TCLP ONLY: 8150 Herbicides (2)	TCLP ONLY: Metals (8)			NUMBER OF CONTAINERS
MW-11, 2.5'			X											X													1
MW-11, 10' 5' RB			X											X													1

PROJECT INFORMATION

PROJECT NUMBER: 0161-236-Bolt

PROJECT NAME: Unocal Lynnwood

PURCHASE ORDER NUMBER:

ONGOING PROJECT? YES ☒ NO ☐

SAMPLE RECEIPT

TOTAL NUMBER OF CONTAINERS	2
COC SEALS/INTACT? Y/N/NA	NA
RECEIVED GOOD COND./COLD	Y/N
RECEIVED VIA:	Courier

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TAT: (NORMAL) ☐ 2WKS (RUSH) ☐ 24HR ☐ 48 HRS ☐ 72 HRS ☒ 1 WK

GREATER THAN 24 HR. NOTICE? YES ☐ NO ☐ (LAB USE ONLY)

SPECIAL INSTRUCTIONS:

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Time: Craig Hart 1600	Signature: Time:	Signature: Time:
Printed Name: Date: Craig Hart 8/28/91	Printed Name: Date:	Printed Name: Date:
Company: GEI	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time: Rowena Saturay	Signature: Time: 1031	Signature: Time:
Printed Name: Date: ROWENA SATURAY 8/29/91	Printed Name: Date:	Printed Name: Date:
Company: ATI-WA	Company:	Analytical Technologies, Inc.

Analytical Technologies, Inc. 560 Naches Avenue, S.W., Suite 101, Renton, WA 98055, (206) 228-8335

ATI I.D. # 9108-313

GeoEngineers

SEP 0 9 1991

Routing DJK

File

September 4, 1991

GeoEngineers, Inc.
8410-154th Ave. N.E.
Redmond, WA 98052

Attention : Deb Kristof

Project Number : 0161-236-B04

Project Name : Unocal Lynnwood

On August 30, 1991, Analytical Technologies, Inc., received 10 water samples for analysis. The samples were analyzed with EPA methodology or equivalent methods as specified in the attached analytical schedule. The results, sample cross reference, and quality control data are enclosed.

Bob A. Olsiewski
Project Manager

Frederick W. Grothkopp
Technical Manager

FWG/hal/cn

Analytical Technologies, Inc.

ATI I.D. # 9108-313

SAMPLE CROSS REFERENCE SHEET

CLIENT : GEOENGINEERS, INC.
PROJECT # : 0161-236-B04
PROJECT NAME : UNOCAL LYNNWOOD

ATI #	CLIENT DESCRIPTION	DATE SAMPLED	MATRIX
9108-313-1	MW-7	08/30/91	WATER
9108-313-2	MW-8	08/30/91	WATER
9108-313-3	MW-9	08/30/91	WATER
9108-313-4	MW-10	08/30/91	WATER
9108-313-5	MW-11	08/30/91	WATER
9108-313-6	MW-12	08/30/91	WATER
9108-313-7	MW-13	08/30/91	WATER
9108-313-8	MW-14	08/30/91	WATER
9108-313-9	MW-15	08/30/91	WATER
9108-313-10	MW-16	08/30/91	WATER

TOTALS

MATRIX	# SAMPLES
WATER	10

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of the report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

ATI I.D. # 9108-313

ANALYTICAL SCHEDULE

CLIENT : GEOENGINEERS, INC.
PROJECT # : 0161-236-B04
PROJECT NAME : UNOCAL LYNNWOOD

ANALYSIS	TECHNIQUE	REFERENCE	LAB
BETX	GC/PID	EPA 8020	R
FUEL HYDROCARBONS	GC/FID	EPA 8015 MODIFIED	R

R = ATI - Renton
SD = ATI - San Diego
T = ATI - Tempe
PNR = ATI - Pensacola
FC = ATI - Fort Collins
SUB = Subcontract

Analytical Technologies, Inc.

ATI I.D. # 9108-313

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: N/A
PROJECT #	: 0161-236-B04	DATE RECEIVED	: N/A
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: N/A
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 09/02/91
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
ETHYLBENZENE	<0.5
TOLUENE	<0.5
TOTAL XYLENES	<0.5

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	94

Analytical Technologies, Inc.

ATI I.D. # 9108-313-1

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/30/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/30/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: N/A
CLIENT I.D.	: MW-7	DATE ANALYZED	: 09/02/91
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	1.3
ETHYLBENZENE	<0.5
TOLUENE	<0.5
TOTAL XYLENES	<0.5

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	102

Analytical Technologies, Inc.

ATI I.D. # 9108-313-2

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/30/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/30/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: N/A
CLIENT I.D.	: MW-8	DATE ANALYZED	: 09/02/91
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	1.2
ETHYLBENZENE	<0.5
TOLUENE	0.6
TOTAL XYLENES	<0.5

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	101

Analytical Technologies, Inc.

ATI I.D. # 9108-313-3

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/30/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/30/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: N/A
CLIENT I.D.	: MW-9	DATE ANALYZED	: 09/02/91
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
ETHYLBENZENE	<0.5
TOLUENE	<0.5
TOTAL XYLENES	<0.5

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	94

Analytical Technologies, Inc.

ATI I.D. # 9108-313-4

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/30/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/30/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: N/A
CLIENT I.D.	: MW-10	DATE ANALYZED	: 09/02/91
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
ETHYLBENZENE	<0.5
TOLUENE	<0.5
TOTAL XYLENES	<0.5

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	93

Analytical Technologies, Inc.

ATI I.D. # 9108-313-5

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/30/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/30/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: N/A
CLIENT I.D.	: MW-11	DATE ANALYZED	: 09/02/91
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
ETHYLBENZENE	<0.5
TOLUENE	<0.5
TOTAL XYLENES	<0.5

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	92

Analytical Technologies, Inc.

ATI I.D. # 9108-313-6

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/30/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/30/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: N/A
CLIENT I.D.	: MW-12	DATE ANALYZED	: 09/02/91
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1000

COMPOUNDS	RESULTS
BENZENE	2100
ETHYLBENZENE	1900
TOLUENE	2800
TOTAL XYLENES	10000

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	94

Analytical Technologies, Inc.

ATI I.D. # 9108-313-7

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/30/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/30/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: N/A
CLIENT I.D.	: MW-13	DATE ANALYZED	: 09/02/91
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1000

COMPOUNDS	RESULTS
BENZENE	2800
ETHYLBENZENE	1400
TOLUENE	12000
TOTAL XYLENES	8200

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	97

Analytical Technologies, Inc.

ATI I.D. # 9108-313-8

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/30/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/30/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: N/A
CLIENT I.D.	: MW-14	DATE ANALYZED	: 09/02/91
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	6.6
ETHYLBENZENE	2.6
TOLUENE	1.9
TOTAL XYLENES	8.7

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	103

Analytical Technologies, Inc.

ATI I.D. # 9108-313-9

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/30/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/30/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: N/A
CLIENT I.D.	: MW-15	DATE ANALYZED	: 09/02/91
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	9.4
ETHYLBENZENE	<0.5
TOLUENE	0.6
TOTAL XYLENES	2.9

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	95

Analytical Technologies, Inc.

ATI I.D. # 9108-313-10

VOLATILE ORGANIC COMPOUNDS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/30/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/30/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: N/A
CLIENT I.D.	: MW-16	DATE ANALYZED	: 09/02/91
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020 (BETX)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	35
ETHYLBENZENE	3.1
TOLUENE	1.3
TOTAL XYLENES	2.3

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE	102

Analytical Technologies, Inc.

ATI I.D. # 9108-313

VOLATILE ORGANIC COMPOUNDS
QUALITY CONTROL DATA

CLIENT	: GEOENGINEERS, INC.	SAMPLE I.D. #	: 9108-313-1
PROJECT #	: 0161-236-B04	DATE EXTRACTED	: N/A
PROJECT NAME	: UNOCAL LYNNWOOD	DATE ANALYZED	: 09/02/91
EPA METHOD	: 8020 (BETX)	UNITS	: ug/L
SAMPLE MATRIX	: WATER		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	1.3	20.0	21.3	100	21.1	99	1
TOLUENE	<0.5	20.0	20.1	101	20.0	100	0
TOTAL XYLENES	<0.5	40.0	38.8	97	40.3	101	4

$$\%\text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{|(\text{Spike Result} - \text{Duplicate Result})|}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

ATI I.D. # 9108-313

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: N/A
PROJECT #	: 0161-236-B04	DATE RECEIVED	: N/A
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: 09/02/91
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 09/03/91
SAMPLE MATRIX	: WATER	UNITS	: mg/L
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<1
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<1
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-313-1

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/30/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/30/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: 09/02/91
CLIENT I.D.	: MW-7	DATE ANALYZED	: 09/03/91
SAMPLE MATRIX	: WATER	UNITS	: mg/L
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<1
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<1
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-313-2

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/30/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/30/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: 09/02/91
CLIENT I.D.	: MW-8	DATE ANALYZED	: 09/03/91
SAMPLE MATRIX	: WATER	UNITS	: mg/L
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<1
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<1
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-313-3

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/30/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/30/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: 09/02/91
CLIENT I.D.	: MW-9	DATE ANALYZED	: 09/03/91
SAMPLE MATRIX	: WATER	UNITS	: mg/L
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<1
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<1
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-313-4

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/30/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/30/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: 09/02/91
CLIENT I.D.	: MW-10	DATE ANALYZED	: 09/03/91
SAMPLE MATRIX	: WATER	UNITS	: mg/L
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<1
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<1
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-313-5

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/30/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/30/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: 09/02/91
CLIENT I.D.	: MW-11	DATE ANALYZED	: 09/03/91
SAMPLE MATRIX	: WATER	UNITS	: mg/L
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<1
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<1
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-313-6

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/30/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/30/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: 09/02/91
CLIENT I.D.	: MW-12	DATE ANALYZED	: 09/03/91
SAMPLE MATRIX	: WATER	UNITS	: mg/L
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	49
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<1
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-313-7

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/30/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/30/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: 09/02/91
CLIENT I.D.	: MW-13	DATE ANALYZED	: 09/03/91
SAMPLE MATRIX	: WATER	UNITS	: mg/L
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	130
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	6 *
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

* - Sample chromatogram indicates a gasoline-like contamination.

Analytical Technologies, Inc.

ATI I.D. # 9108-313-8

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/30/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/30/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: 09/02/91
CLIENT I.D.	: MW-14	DATE ANALYZED	: 09/03/91
SAMPLE MATRIX	: WATER	UNITS	: mg/L
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<1
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<1
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-313-9

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/30/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/30/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: 09/02/91
CLIENT I.D.	: MW-15	DATE ANALYZED	: 09/03/91
SAMPLE MATRIX	: WATER	UNITS	: mg/L
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<1
HYDROCARBON RANGE	C7 - C12
HYDROCARBON QUANTITATION USING	GASOLINE
FUEL HYDROCARBONS	<1
HYDROCARBON RANGE	C12 - C24
HYDROCARBON QUANTITATION USING	DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-313-10

FUEL HYDROCARBONS
DATA SUMMARY

CLIENT	: GEOENGINEERS, INC.	DATE SAMPLED	: 08/30/91
PROJECT #	: 0161-236-B04	DATE RECEIVED	: 08/30/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE EXTRACTED	: 09/02/91
CLIENT I.D.	: MW-16	DATE ANALYZED	: 09/03/91
SAMPLE MATRIX	: WATER	UNITS	: mg/L
METHOD	: 8015 (MODIFIED)	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	
HYDROCARBON RANGE	<1
HYDROCARBON QUANTITATION USING	C7 - C12 GASOLINE
FUEL HYDROCARBONS	
HYDROCARBON RANGE	<1
HYDROCARBON QUANTITATION USING	C12 - C24 DIESEL

Analytical Technologies, Inc.

ATI I.D. # 9108-313

FUEL HYDROCARBONS
QUALITY CONTROL DATA

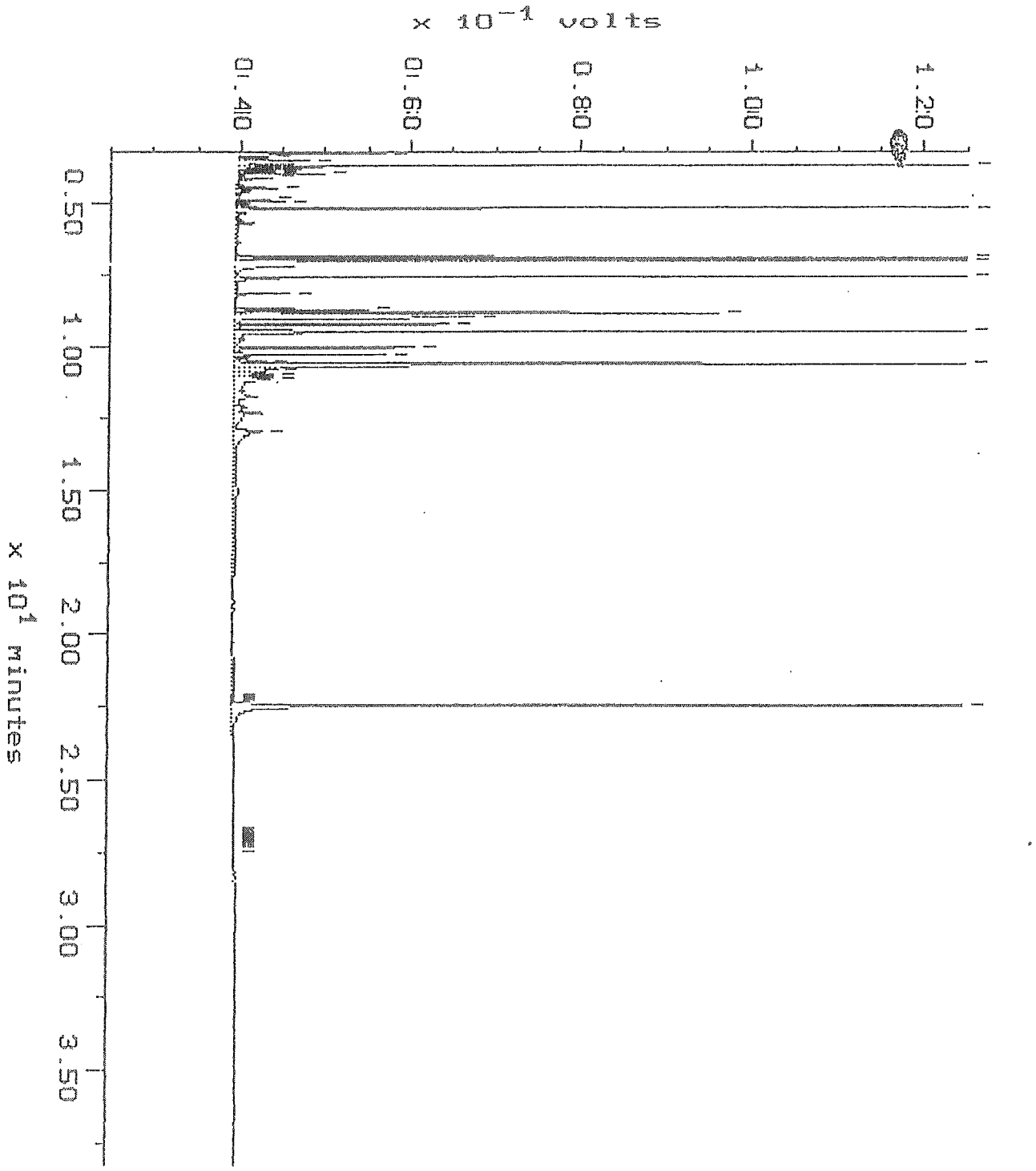
CLIENT	: GEOENGINEERS, INC.	SAMPLE I.D. #	: 9108-313-10
PROJECT #	: 0161-236-B04	DATE EXTRACTED	: 09/02/91
PROJECT NAME	: UNOCAL LYNNWOOD	DATE ANALYZED	: 09/03/91
EPA METHOD	: 8015 (MODIFIED)	UNITS	: mg/L
SAMPLE MATRIX	: WATER		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
GASOLINE	<1.0	100	87.8	88	87.6	88	0

$$\%\text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{|(\text{Spike Result} - \text{Duplicate Result})|}{\text{Average Result}} \times 100$$

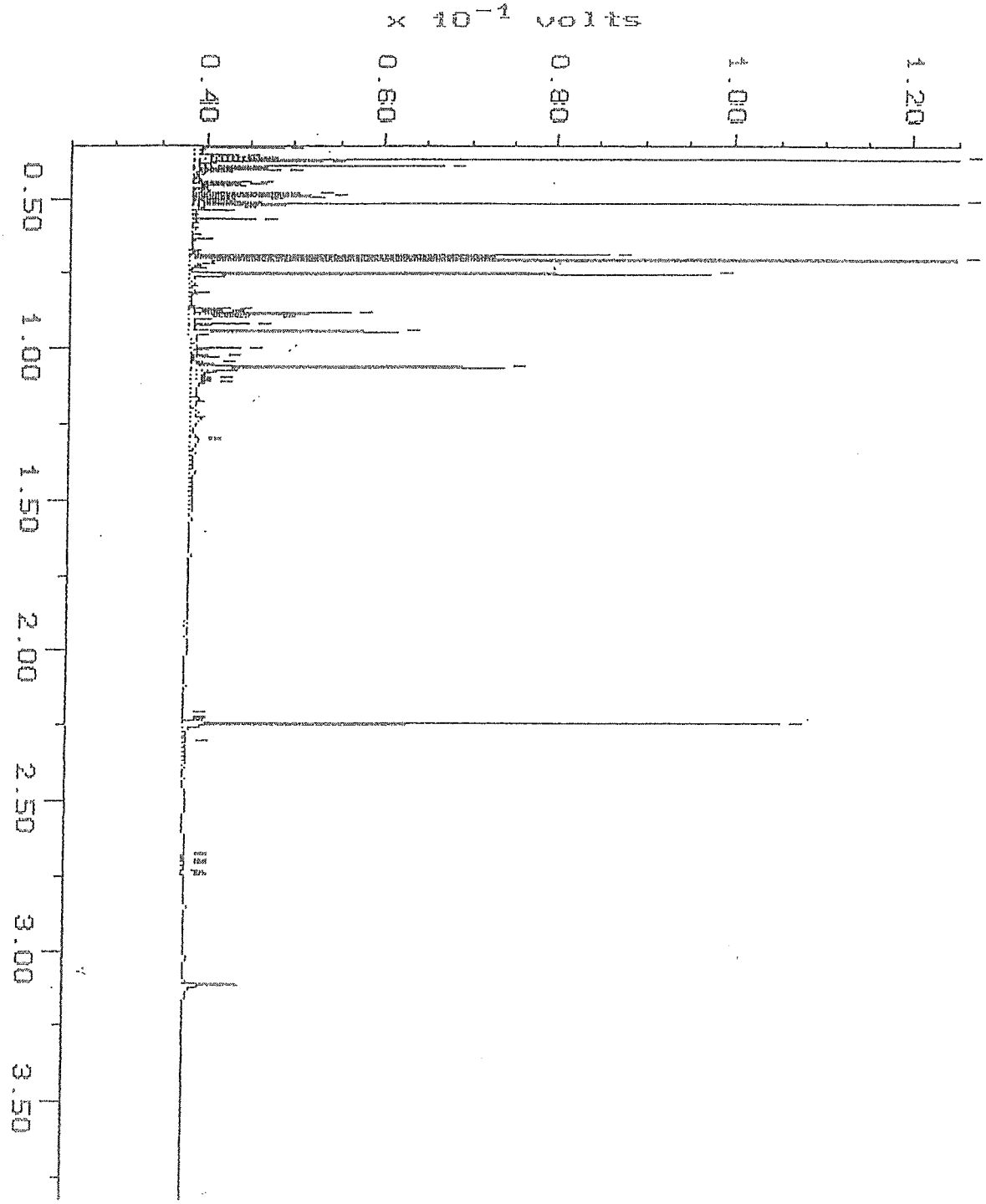
Sample: 9108-313-6 Channel: CLARENCE Filename: 09025C15
Acquired: 03-SEP-91 4:47 Method: M:\BRO2\MAXDATA\SERGE-C\FUEL0902 Operator: BRO
Inj Vol: 1.00



Sample: 9108-313-7 DIL
Acquired: 03-SEP-91 18:38
Dilution: 1 : 5.000

Channel: CLARENCE
Method: M:\BRO2\MAXDATA\SERGE-C\FUEL0903
Inj Vol: 1.00

Filename: 0903SC03
Operator: BRO



Analytical Technologies, Inc.

560 Naches Avenue SW, Suite 101 Renton, WA 98055 (206)228-8335

Chain of Custody

LABORATORY NUMBER: 9108-313

PROJECT MANAGER: Deb Kristof

COMPANY: GEI

ADDRESS: Redmond

PHONE: 861-6000 SAMPLED BY: CAH

SAMPLE DISPOSAL INSTRUCTIONS

☒ ATI Disposal @ $5.00 each ☐ Return

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	8010 Halogenated Volatiles	8020 Aromatic Volatiles	8020 BETX ONLY	8240 GCMS Volatiles	8270 GCMS BNA	8310 HPLC PNA	8080 Pesticides & PCB's	8080 PCB's ONLY	8140 Phosphate Pesticides	8150 Herbicides	WDOE PAH/HH (WAC 173)	418.1 (TPH)	413.2 Grease & Oil	8015 (Modified)	TOC 9060	TOX 9020	% Moisture	EP TOX Metals (8) EP EXT	Priority Pollutant Metals (13)	TCLP ONLY: 8080 Pesticide (4)	TCLP ONLY: 8240 ZH-EXT	TCLP ONLY: 8270	TCLP ONLY: 8150 Herbicides (2)	TCLP ONLY: Metals (8)			NUMBER OF CONTAINERS
MW-7	8/30/91	1100	H_2O	1			X											X													3
MW-8		1130		2			X											X													3
MW-9		1145		3			X											X													3
MW-10		1200		4			X											X													3
MW-11		1230		5			X											X													3
MW-12		1300		6			X											X													3
MW-13		1500		7			X											X													3
MW-14		1315		8			X											X													3
MW-15		1400		9			X											X													3
MW-16		1400		10			X											X													3

PROJECT INFORMATION

PROJECT NUMBER: 0161-236-304

PROJECT NAME: Vasona Lyons

PURCHASE ORDER NUMBER:

ONGOING PROJECT? YES ☒ NO ☐

SAMPLE RECEIPT

TOTAL NUMBER OF CONTAINERS: 30

COC SEALS/INTACT? Y/N/NA: Y

RECEIVED GOOD COND./COLD: Y

RECEIVED VIA: Courier

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TAT: (NORMAL) ☐ 2WKS (RUSH) ☐ 24HR ☐ 48 HRS ☐ 72 HRS ☒ 1 WK

GREATER THAN 24 HR. NOTICE? YES ☐ NO ☐ (LAB USE ONLY)

SPECIAL INSTRUCTIONS:

Standard (1 week) TAT

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Time: 0845	Signature: Time:	Signature: Time:
Printed Name: Craig Hanks Date: 8/30/91	Printed Name: Date:	Printed Name: Date:
Company: GEI	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Roger Fuller Time: 1220	Signature: Time:	Signature: Time:
Printed Name: Roger Fuller Date: 8/30/91	Printed Name: Date:	Printed Name: Date:
Company: ATI	Company:	Analytical Technologies, Inc.

ATI Labs: San Diego (619)458-9141 • Phoenix (602)438-1530 • Seattle (206)228-8335 • Pensacola (904)474-1001 DISTRIBUTION: White, Canary - ATI • Pink - ORIGINATOR

Hanks

Analytical Technologies, Inc. 2950 Airway Avenue, Suite A-1 Costa Mesa, CA 92626 (714) 435-9180 (714) 435-9184 (FAX)

ATI I.D. : 91-255-001

September 24, 1991

Geo Engineers

SEP 27 1991

Geo Engineers, Inc.
8410 154th Avenue N.E.
Redmond, WA 98052

Project Name: Unocal #5533/Lynwood
Project # : 161-236-B04

Attention: Debbie Kristoff

Analytical Technologies, Inc. has received the following sample(s):

Date Received	Quantity	Matrix
September 12, 1991	9	Air

The sample(s) were analyzed with EPA methodology or equivalent methods as specified in the enclosed analytical schedule. The symbol for "less than" indicates a value below the reportable detection limit. Please see the attached sheet for the sample cross reference table.

The results of these analyses and the quality control data are enclosed. If you have any questions please do not hesitate to call.

Bill Wuhrman
Chemist

Leon Levan
Laboratory Manager

SAMPLE CROSS REFERENCE

lient : Geo Engineers, Inc.
roject# : 161-236-B04
roject Name : Unocal #5533/Lynwood

Report Date: September 24, 1991
ATI I.D. # : 91-255-001

TI #	Client Description	Matrix	Date Collected
1-A		Air	10-SEP-91
1-B		Air	10-SEP-91
1-C		Air	10-SEP-91
2-A		Air	10-SEP-91
2-B		Air	10-SEP-91
2-C		Air	10-SEP-91
3-A		Air	10-SEP-91
3-B		Air	10-SEP-91
3-C		Air	10-SEP-91

---TOTALS---

Matrix	# Samples
Air	9

ANALYTICAL SCHEDULE

Client : Geo Engineers, Inc.
Project # : 161-236-B04
Project Name : Unocal #5533/Lynwood

ATI I.D. # : 91-255-001

Analysis	Technique/Description
TPH as Gasoline (8015 mod.)	GC/FID
8020 CONSTITUENTS (EPA 410.A)	GC/MS

GAS CHROMATOGRAPHY RESULTS

'lient : Geo Engineers, Inc.
'roject # : 161-236-B04
'roject Name : Unocal #5533/Lynwood

ATI I.D. #: 91-255-001

ATI #	Sample Client ID #	Matrix	Date Sampled	Date Received	Date Analyzed
1-A		Air/Canister	10-SEP-91	12-SEP-91	13-SEP-91
1-B		Air/Canister	10-SEP-91	12-SEP-91	13-SEP-91
1-C		Air/Canister	10-SEP-91	12-SEP-91	13-SEP-91
2-A		Air/Canister	10-SEP-91	12-SEP-91	13-SEP-91
2-B		Air/Canister	10-SEP-91	12-SEP-91	13-SEP-91
2-C		Air/Canister	10-SEP-91	12-SEP-91	13-SEP-91

'arameter	Units	1	2	3	4	5	6
'PH as Gasoline	PPM(V)	5	7	7	3	6	ND<2
'ENZENE	PPB(V)	6	4	4	4	4	4
'OLUENE	PPB(V)	21	6	7	10	ND<3	6
:THYLBENZENE	PPB(V)	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2
'OTAL XYLENES	PPB(V)	4	ND<2	ND<2	ND<2	ND<2	ND<2
,3-DICHLOROBENZENE	PPB(V)	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2
,4-DICHLOROBENZENE	PPB(V)	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2
.2-DICHLOROBENZENE	PPB(V)	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2

ND = Not Detected

GAS CHROMATOGRAPHY RESULTS

Client : Geo Engineers, Inc.
Project # : 161-236-B04
Project Name : Unocal #5533/Lynwood

ATI I.D. #: 91-255-001

ATI #	Sample Client ID #	Matrix	Date Sampled	Date Received	Date Analyzed
7	3-A	Air/Canister	10-SEP-91	12-SEP-91	13-SEP-91
8	3-B	Air/Canister	10-SEP-91	12-SEP-91	13-SEP-91
9	3-C	Air/Canister	10-SEP-91	12-SEP-91	13-SEP-91
Method Blank		Air/Tedlar	NA	NA	13-SEP-91

Parameter	Units	7	8	9	Method Blank
TPH as Gasoline	PPM(V)	5	4	5	ND<2
BENZENE	PPB(V)	4	7	7	ND<3
TOLUENE	PPB(V)	11	20	14	ND<3
ETHYLBENZENE	PPB(V)	ND<2	3	ND<2	ND<2
TOTAL XYLENES	PPB(V)	ND<2	9	4	ND<2
1,3-DICHLOROBENZENE	PPB(V)	ND<2	ND<2	ND<2	ND<2
1,4-DICHLOROBENZENE	PPB(V)	ND<2	ND<2	ND<2	ND<2
1,2-DICHLOROBENZENE	PPB(V)	ND<2	ND<2	ND<2	ND<2

* ND=Not Detected

GAS CHROMATOGRAPHY - QUALITY CONTROL

DUP/GC

Client : Geo Engineers, Inc.
Project # : 161-236-B04
Project Name : Unocal #5533/Lynwood ATI I.D. #: 91-255-001

Parameter	REF I.D.	UNITS	SAMPLE RESULT	DUP RESULT	RPD
TPH as Gasoline	91-255-001-09	PPM(V)	5	5	0
BENZENE	91-255-001-03	PPB(V)	4	4	0
TOLUENE	91-255-001-03	PPB(V)	7	8	13
ETHYLBENZENE	91-255-001-03	PPB(V)	ND<2	ND<2	-
TOTAL XYLENES	91-255-001-03	PPB(V)	ND<2	ND<2	-
1,3-DICHLOROBENZENE	91-255-001-03	PPB(V)	ND<2	ND<2	-
1,4-DICHLOROBENZENE	91-255-001-03	PPB(V)	ND<2	ND<2	-
1,2-DICHLOROBENZENE	91-255-001-03	PPB(V)	ND<2	ND<2	-

RPD (Relative Percent Difference) = (Sample Result - Duplicate Result) * 100/average result

Analytical Technologies, Inc.
560 Naches Avenue SW, Suite 101 Renton, WA 98055 (206)228-8335

Chain of Custody

DATE 9-10-91 PAGE 1 OF 1

LABORATORY NUMBER: 91-255001

PROJECT MANAGER: Debbie Kristoff
COMPANY: GEO ENGINEERS, INC
ADDRESS: 8410 154TH AVE NE
REDMOND, WA 98052
PHONE: 206-861-6000 SAMPLED BY: DEH

SAMPLE DISPOSAL INSTRUCTIONS

☒ ATI Disposal @ $5.00 each ☐ Return

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	8010 Halogenated Volatiles	8020 Aromatic Volatiles	8020 BETX ONLY	8240 GCMS Volatiles	8270 GCMS BNA	8310 HPLC PNA	8080 Pesticides & PCB's	8080 PCB's ONLY	8140 Phosphate Pesticides	8150 Herbicides	WDOE PAH/HH (WAC 173)	418.1 (TPH)	413.2 Grease & Oil	8015 (Modified)	TOC 9060	TOX 9020	% Moisture	EP TOX Metals (8) EP EXT	Priority Pollutant Metals (13)	TCLP ONLY: 8080 Pesticide (4)	TCLP ONLY: 8240 ZH-EXT	8270	TCLP ONLY: 8150 Herbicides (2)	TCLP ONLY: Metals (8)			NUMBER OF CONTAINERS
1-A	9-10 91	1000	AIR	01		X	X											X													1
1-B	"	1005	"	02		X	X											X													1
1-C	"	1010	"	03		X												X													1
2-A	"	1600	"	04		X												X													1

PROJECT INFORMATION

PROJECT NUMBER: 1d-236-B04
PROJECT NAME: Unocal Lynnwood, WA
PURCHASE ORDER NUMBER:
ONGOING PROJECT? YES ☒ NO ☐

SAMPLE RECEIPT

TOTAL NUMBER OF CONTAINERS: 4
COC SEALS/INTACT? Y/N/NA: Y
RECEIVED GOOD COND./COLD: Y
RECEIVED VIA: Fed-X

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TAT: (NORMAL) ☐ 2WKS (RUSH) ☐ 24HR ☐ 48 HRS ☒ 72 HRS ☐ 1 WK (LAB USE ONLY)

GREATER THAN 24 HR. NOTICE? YES ☐ NO ☐

SPECIAL INSTRUCTIONS: Unocal Service station # 5533

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Time: Donald E Hanson 0800	Signature: Time:	Signature: Time:
Printed Name: Date: DONALD E. HANSON 9-11-91	Printed Name: Date:	Printed Name: Date:
Company: GEI	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time:	Signature: Time:	Signature: Time: 0850
Printed Name: Date:	Printed Name: Date:	Printed Name: Date: 9-12-91 T. Rommelfanger
Company:	Company:	Analytical Technologies, Inc.

ATI Labs: San Diego (619)458-9141 • Phoenix (602)438-1530 • Seattle (206)228-8335 • Pensacola (904)474-1001 DISTRIBUTION: White, Canary - ATI • Pink - ORIGINATOR

Analytical Technologies, Inc.

560 Naches Avenue SW, Suite 101 Renton, WA 98055 (206)228-8335

Chain of Custody

LABORATORY NUMBER: 91255001

PROJECT MANAGER: Debbie Kristeff
COMPANY: GEO ENGINEERS, INC.
ADDRESS: 6410 154th AVE NE.
REDMOND, WA 98052
PHONE: 206-861-6000 SAMPLED BY: DEH

SAMPLE DISPOSAL INSTRUCTIONS
(X) ATI Disposal @ $5.00 each ☐ Return

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	8010 Halogenated Volatiles	8020 Aromatic Volatiles	8020 BETX ONLY	8240 GCMS Volatiles	8270 GCMS BNA	8310 HPLC PNA	8080 Pesticides & PCB's	8080 PCB's ONLY	8140 Phosphate Pesticides	8150 Herbicides	WDOE PAH/H (WAC 173)	418.1 (TPH)	413.2 Grease & Oil	8015 (Modified)	TOC 9060	TOX 9020	% Moisture	EP TOX Metals (8) EP EXT	Priority Pollutant Metals (13)	TCLP ONLY: 8080 Pesticide (4)	TCLP ONLY: 8240 ZH-EXT	TCLP ONLY: 8270	TCLP ONLY: 8150 Herbicides (2)	TCLP ONLY: Metals (8)			NUMBER OF CONTAINERS
2-B	9-10-91	1635	AIR	05		X												X													1
2-C		1640		06		X												X													1
3-A				07		X												X													1
3-B				08		X												X													1

PROJECT INFORMATION
PROJECT NUMBER: 64-234-B04
PROJECT NAME: Unocal Lynnwood, WA
PURCHASE ORDER NUMBER:
ONGOING PROJECT? YES (X) NO ☐

SAMPLE RECEIPT
TOTAL NUMBER OF CONTAINERS: 4
COC SEALS/INTACT? Y/N/NA: Y
RECEIVED GOOD COND./COLD: Y
RECEIVED VIA: Fed-X

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS
TAT: (NORMAL) ☐ 2WKS (RUSH) ☐ 24HR ☐ 48 HRS (X) 72 HRS ☐ 1 WK
GREATER THAN 24 HR. NOTICE? YES ☐ NO ☐ (LAB USE ONLY)

SPECIAL INSTRUCTIONS: Unocal Service Station #5533

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Time: Donald E. Hanson 0800	Signature: Time:	Signature: Time:
Printed Name: Date: DONALD E. HANSON 9-11-91	Printed Name: Date:	Printed Name: Date:
Company: GEI	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time:	Signature: Time:	Signature: Time: Jay Kyle 0850
Printed Name: Date:	Printed Name: Date:	Printed Name: Date: T. Rommelhagen 9-12-91
Company:	Company:	Analytical Technologies, Inc.

ATI Labs: San Diego (619)458-9141 • Phoenix (602)438-1530 • Seattle (206)228-8335 • Pensacola (904)474-1001 DISTRIBUTION: White, Canary - ATI • Pink - ORIGINATOR

R - 162

DATE 9/10/91 PAGE 1 OF 1

AnalyticalTechnologies, Inc.

560 Naches Avenue SW, Suite 101 Renton, WA 98055 (206)228-8335

Chain of Custody LABORATORY NUMBER: 91255001

PROJECT MANAGER: Debbie Kristoff
COMPANY: GEO ENGINEERS, INC.
ADDRESS: 8410 154TH AVE NE
REDMOND, WA 98052
PHONE: 206 861-6000 SAMPLED BY: DEH

SAMPLE DISPOSAL INSTRUCTIONS

☒ ATI Disposal @ $5.00 each ☐ Return

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	8010 Halogenated Volatiles	8020 Aromatic Volatiles	8020 BETX ONLY	8240 GCMS Volatiles	8270 GCMS BNA	8310 HPLC PNA	8080 Pesticides & PCB's	8080 PCB's ONLY	8140 Phosphate Pesticides	8150 Herbicides	WDOE PAH/HH (WAC 173)	418.1 (TPH)	413.2 Grease & Oil	8015 (Modified)	TOC 9060	TOX 9020	% Moisture	EP TOX Metals (8) EP EXT	Priority Pollutant Metals (13)	TCLP ONLY: 8080 Pesticide (4)	TCLP ONLY: 8240 ZH-EXT	TCLP ONLY: 8270	TCLP ONLY: 8150 Herbicides (2)	TCLP ONLY: Metals (8)			NUMBER OF CONTAINERS
3-C	9-10-91		AIR	09		X												X													1
						X												X													
						X												X													
						X												X													
						X												X													

PROJECT INFORMATION	SAMPLE RECEIPT
PROJECT NUMBER: 161-236-804	TOTAL NUMBER OF CONTAINERS: 1
PROJECT NAME: Unocal Lynnwood, WA	COC SEALS/INTACT? Y/N/NA: Y
PURCHASE ORDER NUMBER:	RECEIVED GOOD COND./COLD: Y
ONGOING PROJECT? YES ☒ NO ☐	RECEIVED VIA: Fed-X

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TAT: (NORMAL) ☐ 2WKS (RUSH) ☐ 24HR ☐ 48 HRS ☒ 72 HRS ☐ 1 WK (LAB USE ONLY)

GREATER THAN 24 HR. NOTICE? YES ☐ NO ☐

SPECIAL INSTRUCTIONS:
Unocal service station #5533
One sample only

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Time: Donald E. Hanson 0800	Signature: Time:	Signature: Time:
Printed Name: Date: DONALD E. HANSON 9-11-91	Printed Name: Date:	Printed Name: Date:
Company: GEI	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time:	Signature: Time:	Signature: Time: Joy Rodgers 0850
Printed Name: Date:	Printed Name: Date:	Printed Name: Date: J. Rommelfanger 9-12-91
Company:	Company:	Analytical Technologies, Inc.

ATI Labs: San Diego (619)458-9141 • Phoenix (602)438-1530 • Seattle (206)228-8335 • Pensacola (904)474-1001 DISTRIBUTION: White, Canary - ATI • Pink - ORIGINATOR

Analytical Technologies, Inc. 2950 Airway Avenue, Suite A-1 Costa Mesa, CA 92626 (714) 435-9180 (714) 435-9184 (FAX)

ATI I.D. : 91-267-003

September 25, 1991

GeoEngineers

OCT 23 1991

Routing DRC

File

Geo Engineers, Inc.
8410 154th Avenue N.E.
Redmond, WA 98052

Project Name: Unocal/Lynwood
Project # : 0161-236-R04

Attention: Debbie Kristoff

Analytical Technologies, Inc. has received the following sample(s):

Date Received	Quantity	Matrix
September 24, 1991	4	Air

The sample(s) were analyzed with EPA methodology or equivalent methods as specified in the enclosed analytical schedule. The symbol for "less than" indicates a value below the reportable detection limit. Please see the attached sheet for the sample cross reference table.

The results of these analyses and the quality control data are enclosed. If you have any questions please do not hesitate to call.

Leon Levan
Laboratory Manager

SAMPLE CROSS REFERENCE

Client : Geo Engineers, Inc.
Project# : 0161-236-R04
Project Name : Unocal/Lynwood

Report Date: September 25, 1991
ATI I.D. # : 91-267-003

ATI #	Client Description	Matrix	Date Collected
1	910923-1	Air	23-SEP-91
2	910923-2	Air	23-SEP-91
3	910923-3	Air	23-SEP-91
4	910923-4	Air	23-SEP-91

---TOTALS---

Matrix	# Samples
Air	4

ANALYTICAL SCHEDULE

Client : Geo Engineers, Inc.
Project # : 0161-236-R04
Project Name : Unocal/Lynwood

ATI I.D. # : 91-267-003

Analysis	Technique/Description
METHANE (ASTM-D1946)	GC/FID
TPH as Gasoline (8015 mod.)	GC/FID
BTEX (ARB-ADDL004)	GC/PID

GAS CHROMATOGRAPHY RESULTS

Client : Geo Engineers, Inc.
Project # : 0161-236-R04
Project Name : Unocal/Lynwood

ATI I.D. #: 91-267-003

ATI #	Sample Client ID #	Matrix	Date Sampled	Date Received	Date Analyzed
1	910923-1	Air/Canister	23-SEP-91	24-SEP-91	25-SEP-91
2	910923-2	Air/Canister	23-SEP-91	24-SEP-91	25-SEP-91
3	910923-3	Air/Canister	23-SEP-91	24-SEP-91	25-SEP-91
4	910923-4	Air/Canister	23-SEP-91	24-SEP-91	25-SEP-91
Method Blank		Air/Tedlar	NA	NA	25-SEP-91

Parameter	Units	1	2	3	4	Method Blank
METHANE	PPM(V)	10	4400	2300	190	ND < 5
TPH as Gasoline	PPM(V)	4	3000	ND < 2	ND < 2	ND < 2
BENZENE	PPM(V)		43			ND < 1
TOLUENE	PPM(V)		45			ND < 1
ETHYLBENZENE	PPM(V)		3			ND < 1
M,P-XYLENE	PPM(V)		38			ND < 1
O-XYLENE	PPM(V)		10			ND < 1

* ND = Not Detected

* See Appendix for ppm(v) calculation formulas.

GAS CHROMATOGRAPHY RESULTS

Client : Geo Engineers, Inc.
Project # : 0161-236-R04
Project Name : Unocal/Lynwood

ATI I.D. #: 91-267-003

ATI #	Sample Client ID #	Matrix	Date Sampled	Date Received	Date Analyzed
3	910923-3	Air/Canister	23-SEP-91	24-SEP-91	25-SEP-91
Method Blank		Air/Tedlar	NA	NA	25-SEP-91

Parameter	Units	3	Method Blank
BENZENE	PPM(V)	0.005	ND < .003
TOLUENE	PPM(V)	0.017	ND < .003
ETHYLBENZENE	PPM(V)	0.002	ND < .002
M,P-XYLENE	PPM(V)	0.01	ND < .002
O-XYLENE	PPM(V)	0.005	ND < .002
1,3-DICHLOROBENZENE	PPM(V)	ND < .002	ND < .002
1,4-DICHLOROBENZENE	PPM(V)	ND < .002	ND < .002
1,2-DICHLOROBENZENE	PPM(V)	ND < .002	ND < .002

* ND = Not Detected

GAS CHROMATOGRAPHY - QUALITY CONTROL

DUP/GC

Client : Geo Engineers, Inc.
Project # : 0161-236-R04
Project Name : Unocal/Lynwood

ATI I.D. #: 91-267-003

Parameter	REF I.D.	UNITS	SAMPLE RESULT	DUP RESULT	RPD
METHANE	91-267-003-02	PPM(V)	4400	4400	0
TPH as Gasoline	91-267-003-02	PPM(V)	3000	2900	3
BENZENE	91-267-003-02	PPM(V)	43	45	4
TOLUENE	91-267-003-02	PPM(V)	45	44	2
ETHYLBENZENE	91-267-003-02	PPM(V)	3	3	0
M,P-XYLENE	91-267-003-02	PPM(V)	38	37	3
O-XYLENE	91-267-003-02	PPM(V)	10	9	11

* RPD (Relative Percent Difference) = (Sample Result - Duplicate Result) * 100/average result

APPENDIX
PPM(V) CALCULATION FORMULAS

The following condensed formula was used to calculate sample results in ppm(v).

$$\text{concentration ppm(v)} = \frac{(m)(10E3)(24.45)}{(V)(MW)}$$

where: m = mg of constituent detected in the air sample
v = volume in liters of sample injected
MW = molecular weight of constituent detected

The ppm(v) results are dependent on the molecular weight used in the above equation. To compare ppm(v) results that have different reference molecular weights the following relationship is used:

$$\text{ppm(v)} \propto 1/\text{MW}$$

Using this basic relationship the following equation can be derived:

$$\frac{ppm(v)a}{ppm(v)b} = \frac{MWb}{MWa}$$

The above equation can be used to compare the ppm(v) results of different constituents.

Notes:

1. The molecular weight of octane, 114 g/mole was used in calculating the TPH results in ppm(v).

Analytical Technologies, Inc.

560 Naches Avenue SW, Suite 101 Renton, WA 98055 (206)228-8335

DATE 9-23-91 PAGE 1 OF 1

Chain of Custody

LABORATORY NUMBER: 91-267-003

PROJECT MANAGER: Debbie Kristoff
COMPANY: GeoEngineers
ADDRESS: 8410 154th Ave NE
Redmond, WA 98052
PHONE: 206-861-6000 SAMPLED BY: DEH

SAMPLE DISPOSAL INSTRUCTIONS

☒ ATI Disposal @ $5.00 each ☐ Return

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID
910923-1	9-23-91		Air	01
910923-2	"		"	02
910923-3	"		"	03
910923-4	"		"	04

	8010 Halogenated Volatiles	8020 Aromatic Volatiles	8020 (BETX ONLY)	8240 GCMS Volatiles	8270 GCMS BNA	8310 HPLC PNA	8080 Pesticides & PCB's	8080 PCB's ONLY	8140 Phosphate Pesticides	8150 Herbicides	WDOE PAH/HH (WAC 173)	418.1 (TPH)	413.2 Grease & Oil	8015 (Modified)	TOC 9060	TOX 9020	% Moisture	EP TOX Metals (8) EP EXT	Priority Pollutant Metals (13)	TCLP ONLY: 8080 Pesticide (4)	TCLP ONLY: 8240 ZH-EXT	TCLP ONLY: 8270	TCLP ONLY: 8150 Herbicides (2)	TCLP ONLY: Metals (8)	Methane		NUMBER OF CONTAINERS
910923-1														X											X		1
910923-2			X											X											X		1
910923-3			X											X											X		1
910923-4														X											X		1

PROJECT INFORMATION

PROJECT NUMBER: 0116-226-R04
PROJECT NAME: Oneal Lynnwood
PURCHASE ORDER NUMBER:
ONGOING PROJECT? YES ☒ NO ☐

SAMPLE RECEIPT

TOTAL NUMBER OF CONTAINERS	1
COC SEALS/INTACT? Y/N/NA	Y
RECEIVED GOOD COND./COLD	Y
RECEIVED VIA:	Fed X

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TAT: (NORMAL) ☐ 2WKS (RUSH) ☒ 24HR ☐ 48 HRS ☐ 72 HRS ☐ 1 WK

GREATER THAN 24 HR. NOTICE? YES ☐ NO ☐ (LAB USE ONLY)

SPECIAL INSTRUCTIONS:
FAX results to Debbie Kristoff
Thank You!

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Time: 1530	Signature: Time:	Signature: Time:
Printed Name: Donald E Hanson Date: 9-23-91	Printed Name: Date:	Printed Name: Date:
Company: GEI	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time:	Signature: Time:	Signature: Time: 9:40
Printed Name: Date:	Printed Name: Date:	Printed Name: Date: 9-24
Company:	Company:	Analytical Technologies, Inc.

ATI Labs: San Diego (619)458-9141 • Phoenix (602)438-1530 • Seattle (206)228-8335 • Pensacola (904)474-1001 DISTRIBUTION: White, Canary - ATI • Pink - ORIGINATOR

APPENDIX C

GeoEngineers

SEP 12 1991

Routing DJK

File

ICF KAISER ENGINEERS

ICF KAISER ENGINEERS, INC.
11808 NORTHUP WAY, SUITE 104
BELLEVUE, WASHINGTON 98005
206/889-1000

September 10, 1991

Ms. Debbie Kristof
GeoEngineers
8410 154th Avenue N.E.
Redmond, Washington 98052

Subject: Review of Indoor Monitoring Data from Residence
Near Unocal Service Station 5533

Dear Ms. Kristof:

This letter provides a summary of our review of monitoring data from the Pennock residence located east of Unocal Service Station 5533. The enclosed information indicates that the measured concentration values for benzene could conservatively result in an excess cancer risk of approximately 3×10^{-4}, or 3 in 10,000 if the residents of this house were exposed for 24 hours/day, 365 days/year for 70 years. Using somewhat more realistic but still quite conservative exposure assumptions of 18 hours/day, 350 days/year, for a duration of 30 years yields an estimated excess cancer risk of 8×10^{-5}, or 8 in 100,000.

We recommend that sampling be undertaken to identify the source of hydrocarbon vapors in the residence. If the values measured in the residence represent background conditions in the area, specific measures to reduce indoor vapors may be ineffective. If the concentrations measured in the residence are determined to represent conditions resulting from a gasoline leak in the area, measures to reduce indoor vapors may be considered and venting of the building crawlspace may be an easy action to implement.

Please feel free to call me at (206) 828-7960 if you have any questions regarding the enclosed material.

Sincerely,

Tom McKeon
Project Manager

Enclosure

Summary - The concentrations of benzene and other aromatic hydrocarbon compounds that were detected in this home would be equivalent to the concentrations that are likely to be found in the average home in the United States. The estimated health risks due to the presence of these compounds is similar to that of the average home owner. The source of the measured concentrations levels cannot be discerned from the available data. It is possible that the measured values are the result of indoor sources (e.g, smoking, home heating system, petroleum products in a garage, etc.), general ambient air conditions resulting from automobile traffic at a busy intersection, or gasoline vapors from an underground spill migrating into the residence. A recommended modification to the existing sampling protocol is to include some background measurements of ambient air to determine if the measured values in the residence are the result of ambient conditions in the area or are confined to the residence.

Risk Evaluation - The documents that were forwarded regarding indoor air levels of petroleum hydrocarbons found at the Pennock residence have been reviewed. The summary of available information is shown in Table 1. With the exception of benzene, at the levels reported, none of the compounds listed present any increased risk for human health problems.

The U.S. Environmental Protection Agency (EPA) has published "Reference Concentrations" (RfC) for noncarcinogenic chemicals which are conservative estimates of permissible long term exposures to the general population (HEAST, 1991). A comparison between the permissible exposure levels and the concentrations of the noncarcinogenic chemicals measured in the indoor air at the Pennock residence are presented in Table 2.

Benzene is commonly found in both indoor as well as outdoor air. Rural background concentrations of benzene have been reported to range between 0.1 - 17 ppb. The average concentration of benzene in urban air has been reported to be 20 ppb (IARC, 1982) with a range of less than 1 ppb to several hundred ppbs (Wathne, 1983). Indoor air concentrations of benzene are typically higher than outdoor air due to human activity and furnishings (Seifert and Abraham, 1982). Benzene has been identified in cigarette smoke (IARC, 1982) and as a product of the home heating system whether it was wood, coal or oil (Hawthorne et al., 1983). The measured concentrations for benzene at the Pennock residence are in the range which may possibly be attributed to background conditions near a busy intersection.

EPA has published cancer slope factors to aid in assessing the potential risks associated with exposures to carcinogenic chemicals such as benzene. Using the slope factor for benzene, EPA has calculated that the risk of cancer (leukemia) due to exposure to 0.3 ppb is 8.3×10^{-6} or almost 1 in 100,000. Since 10 ppb was the maximum concentration of benzene detected, the calculated risk of health problems corresponding to this maximum value is 2.7×10^{-4}, or approximately 3 in 10,000. It is important to emphasize that this is a very conservative estimate of cancer risk corresponding to continuous exposure over a 70 year lifetime (24 hours/day, 365 days/year) where an individual never leaves the house. The actual risk is smaller when site specific considerations are used instead of the default values used for exposure duration. Site specific data includes age of the exposed individual, length of daily exposures, duration of total exposure, and activities on site. Using somewhat more realistic, but still quite conservative, exposure assumptions of 18 hours/day, 350 days/year, for 30

Table 1. Summary of Analytical Results from Air Sampling In Residence Near Unocal Service Station

DATE	LOCATION	COMPOUND	CONCENTRATION	UNITS	METHOD
7/25	Bedroom	TPH as gasoline	3	ppm(v)	Air canister Gas chromatography
7/25	Bedroom	Benzene	ND<5	ppb(v)	Air canister Gas chromatography
7/25	Bedroom	Toluene	13	ppb(v)	Air canister Gas chromatography
7/25	Bedroom	Ethylbenzene	ND<4	ppb(v)	Air canister Gas chromatography
7/25	Bedroom	Total Xylenes	ND<4	ppb(v)	Air canister Gas chromatography
7/25	Bedroom	1,3&1,4 dichlorobenzene	12	ppb(v)	Air canister Gas chromatography
7/25	Bedroom	1,2 dichlorobenzene	ND<3	ppb(v)	Air canister Gas chromatography
7/31	Crawlspace	TPH as gasoline	ND<2	ppm(v)	Air canister Gas chromatography
7/31	Crawlspace	Benzene	3	ppb(v)	Air canister Gas chromatography
7/31	Crawlspace	Toluene	23	ppb(v)	Air canister Gas chromatography
7/31	Crawlspace	Ethylbenzene	32	ppb(v)	Air canister Gas chromatography
7/31	Crawlspace	Total Xylenes	16	ppb(v)	Air canister Gas chromatography
7/31	Crawlspace	1,3&1,4 dichlorobenzene	ND<6	ppb(v)	Air canister Gas chromatography
7/31	Crawlspace	1,2 dichlorobenzene	ND<6	ppb(v)	Air canister Gas chromatography
8/15	Livingroom	TPH as gasoline	ND<2	ppm(v)	Air canister Gas chromatography
8/15	Livingroom	Benzene	ND<3	ppb(v)	Air canister Gas chromatography
8/15	Livingroom	Toluene	ND<3	ppb(v)	Air canister Gas chromatography
8/15	Livingroom	Ethylbenzene	ND<2	ppb(v)	Air canister Gas chromatography
8/15	Livingroom	Total Xylenes	2	ppb(v)	Air canister Gas chromatography
8/15	Livingroom	1,3&1,4 dichlorobenzene	ND<2	ppb(v)	Air canister Gas chromatography
8/15	Livingroom	1,2 dichlorobenzene	ND<2	ppb(v)	Air canister Gas chromatography
8/15	Bedroom 1'level	TPH as gasoline	ND<2	ppm(v)	Air canister Gas chromatography
8/15	Bedroom 1'level	Benzene	10	ppb(v)	Air canister Gas chromatography
8/15	Bedroom 1'level	Toluene	14	ppb(v)	Air canister Gas chromatography
8/15	Bedroom 1'level	Ethylbenzene	4	ppb(v)	Air canister Gas chromatography
8/15	Bedroom 1'level	Total Xylenes	12	ppb(v)	Air canister Gas chromatography
8/15	Bedroom 1'level	1,3&1,4 dichlorobenzene	ND<2	ppb(v)	Air canister Gas chromatography
8/15	Bedroom 1'level	1,2 dichlorobenzene	ND<2	ppb(v)	Air canister Gas chromatography
8/15	Bedroom 4'level	TPH as gasoline	ND<2	ppm(v)	Air canister Gas chromatography
8/15	Bedroom 4'level	Benzene	8	ppb(v)	Air canister Gas chromatography
8/15	Bedroom 4'level	Toluene	13	ppb(v)	Air canister Gas chromatography
8/15	Bedroom 4'level	Ethylbenzene	2	ppb(v)	Air canister Gas chromatography
8/15	Bedroom 4'level	Total Xylenes	10	ppb(v)	Air canister Gas chromatography
8/15	Bedroom 4'level	1,3&1,4 dichlorobenzene	ND<2	ppb(v)	Air canister Gas chromatography
8/15	Bedroom 4'level	1,2 dichlorobenzene	ND<2	ppb(v)	Air canister Gas chromatography
8/15	Crawlspace	TPH as gasoline	ND<2	ppm(v)	Air canister Gas chromatography
8/15	Crawlspace	Benzene	9	ppb(v)	Air canister Gas chromatography
8/15	Crawlspace	Toluene	11	ppb(v)	Air canister Gas chromatography
8/15	Crawlspace	Ethylbenzene	10	ppb(v)	Air canister Gas chromatography
8/15	Crawlspace	Total Xylenes	14	ppb(v)	Air canister Gas chromatography
8/15	Crawlspace	1,3&1,4 dichlorobenzene	ND<2	ppb(v)	Air canister Gas chromatography
8/15	Crawlspace	1,2 dichlorobenzene	ND<2	ppb(v)	Air canister Gas chromatography

Table 2. Comparison of Permissible Levels of Exposure with Actual Maximal Concentrations Measured.

Compound	Reference Concentration (mg/m^3)	Reference Concentration (ppb)	Maximum Measured Level
Toluene	2 mg/m^3	530 ppb	23 ppb
Ethylbenzene	1 mg/m^3	230 ppb	32 ppb
Total xylenes	0.3 mg/m^3	70 ppb	16 ppb
Dichloro-benzenes	0.7 mg/m^3	116 ppb	12 ppb

years yields an estimated cancer risk of 8.3×10^{-5} , or 8 in 100,000. This estimated value corresponds with the maximum benzene level detected, using average values over the exposure period would decrease the estimated cancer risk.

The presence of other aromatic hydrocarbons such as toluene, xylenes, and ethylbenzene in ambient air is also commonly reported in the literature. This is due to their commonality in U.S. fuels. The concentrations detected at the Pennock residence all fall within the reported ranges by many researchers (see references).

Review of Sampling Protocol - The historic approach to sampling the air in various places in and around the Pennock residence has been to analyze a grab sample by gas chromatography (GC), augmented by field screening with a PhotoVac TIP photoionization detector. These sampling methods provide reliable data that can be used to quantitatively assess the site conditions and potential for human health impacts.

The measured concentration levels for BTEX compounds in the samples obtained from the Pennock residence are in the range which may possibly be attributed to background conditions near a busy intersection. Therefore, it is recommended that the monitoring include testing some samples of outdoor air in the vicinity of the Pennock residence. Three background samples collected with an evacuated canister analyzed using gas chromatography should provide sufficient information to define background conditions. It may be useful to collect background samples at different time intervals (maybe one sample at 11:00 am, 5:00 pm, and 6:00 pm) to identify any fluctuations associated with traffic in the area.

At this time, we recommend that air quality measurements be obtained once per week, focussing on the bedroom where the highest concentrations have been measured and the crawlspace. A weekly sampling program is recommended to identify the range of random fluctuations at the residence and determine if any trends in concentration levels (increasing or decreasing) are occurring. The weekly sampling program coupled with the results of testing the ambient air in the vicinity may be used to identify the source of hydrocarbon vapors in the residence and determine the need for continued monitoring of air quality in the residence.

An organic vapor analyzer (OVA) may be considered as a substitute for the PhotoVac TIP photoionization detector (PID) because it is more reliable in conditions of high humidity. The criticism of the OVA, which is a flame ionization detector (FID), is that it detects methane along with other organic vapors, however, a filter can be used to remove methane. The purpose of the recommended sampling program is to identify fluctuations and trends in indoor vapor concentrations, therefore the potential impacts of changing humidity conditions should be carefully considered if a PID meter is used for monitoring. The meter should be used on a weekly basis, and correlated once every 4th week with a grab sample analyzed by GC.

Weekly sampling should be sufficient both to build systematically on the existing data base and to identify any trends or significant fluctuations in concentrations resulting from any changing conditions. The weekly sampling can be used to develop a baseline data set to determine the range of random fluctuations. The weekly sampling should continue for a period of approximately two months. After a baseline data set has been developed and evaluated, a longer term monitoring program of sampling once a month should be considered to identify any seasonal fluctuations or trends in the observed conditions at the residence. If the results of the background and baseline sampling indicate that vapors in the residence are the result of a gasoline leak in the area, a longer term monitoring program should continue for a period of one year to identify trends. After one year of data have been collected (if necessary) the results should be evaluated to determine the need for continued monitoring.

The measured benzene concentrations in samples from the Pennock residence and the corresponding risk levels are within a range that may be commonly encountered in urban areas. If the ongoing sampling program indicates that vapors from the ground are the source of measured benzene levels detected in the residence, you may wish implement actions to lessen the vapor concentrations observed in the Pennock residence. Installing blowers to introduce fresh air in the crawlspace may be an easy solution which should be effective in reducing the potential for vapor migration from soils into the residence and eliminating any potential for increased exposure.

REFERENCES

IARC, 1982. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. Volume 29. Some Industrial Chemicals and Dyestuffs. International Agency for Research on Cancer. World Health Organization. Lyon, France.

HEAST, 1991. Health Effects Summary Tables. U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Washington, D.C. OERR 9200.6-303(91-1).

Wathne, B.M., 1983. Measurement of Benzene, Toluene and Xylenes in Urban Air. Atmospheric Environ. 17:1713-1722.

Hawthorne, A.R., R.B. Gammage, C.S. Dudney, et al., 1983. Preliminary Results of a Forty-Home Indoor Air Pollutant Monitoring Study. Conference on Measuring and Monitoring non-Criteria (Toxic) Contaminated Air.

UNOCAL #5533/PENNOCK
LYNNWOOD
LUST 1696

1640 | 36TH AVE W FILE 4 OF 4

1696/8450

SEE ALSO: TEXACO #8450
LUST 3880
UST 8450

RECEIVED
JAN 10 2008
DEPT. OF ECOLOGY
TCP-NWRO

UNOCAL 5533
Lynnwood
ENSR | AECOM
LUST 1696

ENSR
9521 Willows Road, Redmond, Washington
T 425.881.7700 F 425.883.4473
www.ensr.aecom.com

Letter of Transmittal

Attention: ☑ Joe Hickey
Washington State Department of Ecology
3190 – 160th Avenue SE
Bellevue, WA 98008

☐ Mr. Sung S. Yang
16405 – 35th Avenue West
Lynnwood, WA 98037

cc: Olivia Skance – Chevron EMC

Date: 1/9/08

Project Reference: Chevron Site # 306535
Former Unocal Service Station No.5533
16405 35th Avenue West
Lynnwood, Washington
DOE Facility No. 74865183

Project number: 01231-217

We are sending you the following:

Number of originals:	Number of copies:	Description:
	1	Well Decommissioning Report

Remarks

Art Cowburn
Sr. Project Manager
acowburn@ensr.aecom.com

ENTERED
JAN 14 2008

J:\Projects\Unocal\01231-217 Lynnwood 306535\06940-367 Lynnwood\2007\Well Decommissioning\306535 Lynnwood, WA Well Decommissioning Report Transmittal Letter.doc

Please call us should you have questions about the well decommissioning activities.

Sincerely,

Art Cowburn
Senior Project Manager
acowburn@ensr.aecom.com

Donald Lance, LG/LHG
Senior Geologist
dlance@ensr.aecom.com

Attachments

Figure 1 – Site Plan
Copy of State of Washington Resource Protection Monitoring Well Reports - Decommissioning

Distribution

Joe Hickey, Washington State Department of Ecology
Sung S. Yang, property owner

Quality Assurance/Technical Review By:

Kinga Kozlowska
Staff Specialist I

ENSR
9521 Willows Road NE, Redmond, Washington 98052-3422
T 425.881.7700 F 425.883.4473 www.ensr.aecom.com

ENSR | AECOM

January 9, 2008

Ms. Olivia Skance
Chevron Environmental Management Company
6001 Bollinger Canyon Road, Room K2196
San Ramon, California 94583-2324

Subject: **Well Decommissioning Report**
Former Unocal Service Station No. 5533
16405 - 36th Avenue West
Lynnwood, Washington

Chevron Site No.: 306535
DOE Facility No.: 74865183
Work Dates: October 1, December 10, and December 21, 2007

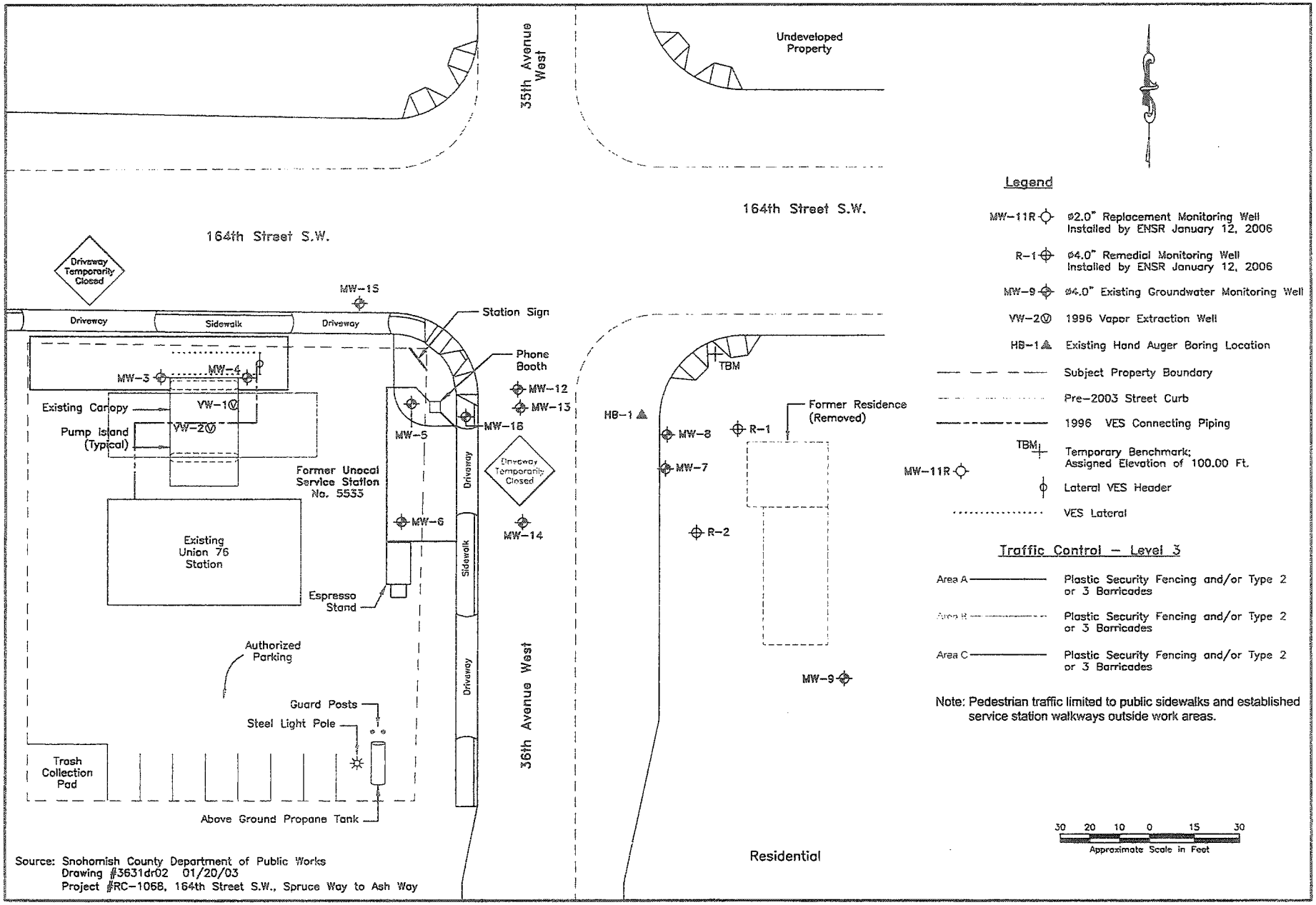
Dear Ms. Skance:

This report was prepared to document the decommissioning of all groundwater monitoring wells at Chevron Site No. 306535 (former Unocal Service Station No. 5533) located at 16405 - 36th Avenue West in Lynnwood, Washington (Figure 1). Included in this report is documentation required by the Washington Department of Ecology (Ecology) for the removal of groundwater monitoring wells.

Cascade Drilling, of Woodinville, Washington, provided all well decommissioning field services. On October 1, 2007, groundwater monitoring wells MW-3, MW-4, MW-5, MW-6; vapor extraction system (VES) wells VW-1, VW-2; and the lateral VES header located north of well MW-4 were decommissioned. On December 10, 2007, groundwater monitoring wells MW-7, MW-8, MW-9, MW-12, MW-13, MW-14, MW-15, HB-1, R-1, R-2, and MW-11R were decommissioned. On December 21, 2007, well MW-18 was decommissioned. The well locations are shown on Figure 1 (attached).

Prior to well decommissioning, ENSR verified that the wells met the State of Washington minimum standards for resource protection wells (i.e., groundwater monitoring wells) per Washington Administrative Code Chapter 173-160. As a result, per Ecology guidance, the wells could be decommissioned in place, rather than requiring overdrilling and complete physical removal. Consequently, all the monitoring and VES wells were opened, filled with bentonite chips, and then the chips were hydrated using clean tap water. The monuments, or well covers, were removed and backfilled with a 12-inch-thick concrete surface seal, finished flush with the ground surface. Copies of the monitoring well decommissioning reports prepared by Cascade Drilling are attached.

Site Plan



Source: Snohomish County Department of Public Works
Drawing #3631dr02 01/20/03
Project #RC-1068, 164th Street S.W., Spruce Way to Ash Way

REVISIONS			
NO:	DESCRIPTION:	DATE:	BY:

DESIGNED BY:	AC
DRAWN BY:	KM
CHECKED BY:	AC
APPROVED BY:	DL

ENSR AECOM
ENSR CORPORATION
9521 WILLOWS ROAD NE
REDMOND, WASHINGTON 98052
PHONE: (425) 881-7700
FAX: (425) 883-4473
WEB: HTTP://WWW.ENSR.AECOM.COM

SERVICE STATION TRAFFIC CONTROL PLAN

Chevron Site No. 306535
Former Unocal Service Station No. 5533
16405 36th Avenue West, Lynnwood, Washington

SCALE:	DATE:	PROJECT NUMBER:
1" = 30'	09/20/07	01231-217-OM1

FIGURE NUMBER: 1

FILENAME: 01231217P20C

Well Decommissioning Reports

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. A130947

Construction/Decommission

[ ] Construction

[X] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well

[X] Resource Protection

[ ] Geotechnical Soil Boring

Property Owner Chevron 306535

Site Address 16405 36th Ave W

Consulting Firm ENSR

City Lynnwood County Snohomish

EWM

Unique Ecology Well ID

Tag No. _____

Location 1/4 NW 1/4 NE Sec 10 TWN 27N R 4E or WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief

Lat/Long (s,t,r still Required) Lat Deg n/a Lat Min/Sec n/a Long Deg n/a Long Min/Sec n/a

Tax Parcel No. _____

[X] Driller [ ] Trainee Name (Print) [illegible]

Driller/Trainee Signature X [signature]

Driller/Trainee License No. 2745

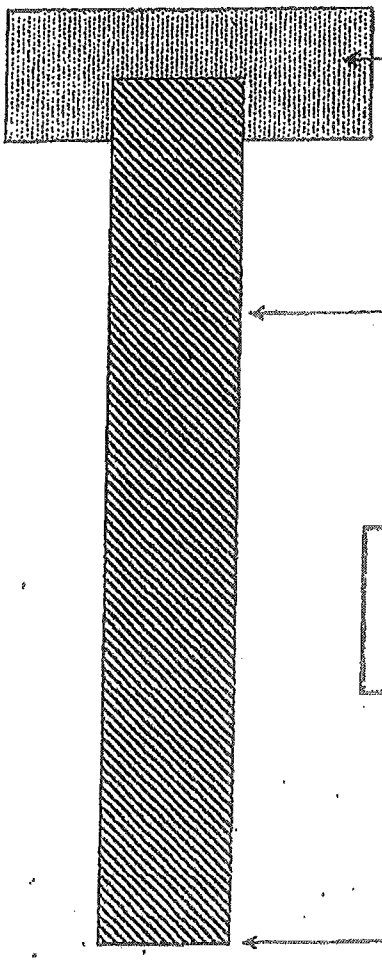
Cased or Uncased Diameter _____ Static Level _____

Work/Decommission Start Date 10/1/2007

If trainee, licesned drillers' Signature and License No. _____

Work/Decommision Completed Date 10/2/2007

Construction/Design W07-679 Formation Description



CONCRETE SURFACE SEAL 1 FT — 0 - 4'2" FT Bentonite chips

BACKFILL 3'-2" FT — 0 - FT Bent chips

REQUIRED INFORMATION
(Must get one or both if available)

DEPT OF ECOLOGY WELL TAG #: _____

CLIENT WELL ID #: MES Header

DEPTH OF BORING 4'-2" FT

Scale 1" = _____ Page _____ of _____

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. A130947

Construction/Decommission

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well

☒ Resource Protection

☐ Geotechnical Soil Boring

Property Owner Chevron 306535

Site Address 16405 36th Ave W

City Lynnwood County Snohomish EWM

Consulting Firm ENSR

Unique Ecology Well ID
Tag No. N/

Location 1/4 NW 1/4 NE Sec 10 TWN 27N R 4E or WWM

Lat/Long (s,t,r still Required) Lat Deg n/a Lat Min/Sec n/a
Long Deg n/a Long Min/Sec n/a

Tax Parcel No. _____

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Trainee Name (Print) Jayson Lewis

Driller/Trainee Signature X

Driller/Trainee License No. 2745

Cased or Uncased Diameter _____ Static Level _____

Work/Decommision Start Date 10/1/2007

If trainee, licesned drillers' Signature and License No. _____

Work/Decommision Completed Date 10/2/2007

W07-679

Construction/Design		Formation Description
CONCRETE SURFACE SEAL	1 FT	0 - 4.7' FT Bark chips
BACKFILL	3' 7" FT	0 - FT Bark chips
DEPTH OF BORING	4' 8" FT	

REQUIRED INFORMATION
(Must get one or both if available)

DEPT OF ECOLOGY WELL TAG # : _____

CLIENT WELL ID #: MW-1

Scale 1" = _____

Page _____ of _____

ECY 050-12 (Rev 2/01)

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT

Notice of Intent No. A130947

Construction/Decommission

[ ] Construction

[x] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well

[x] Resource Protection

[ ] Geotechnical Soil Boring

Property Owner Chevron 306535

Site Address 16405 36th Ave W

Consulting Firm ENSR

City Lynnwood County Snohomish

EWM

Unique Ecology Well ID

Tag No. _____

Location 1/4 NW 1/4 NE Sec 10 TWN 27N R 4E or WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief

Lat/Long (s,t,r still Required) Lat Deg n/a Lat Min/Sec n/a

Long Deg n/a Long Min/Sec n/a

Tax Parcel No. _____

[ ] Driller [ ] Trainee Name (Print)

Driller/Trainee Signature x _____

Driller/Trainee License No. _____

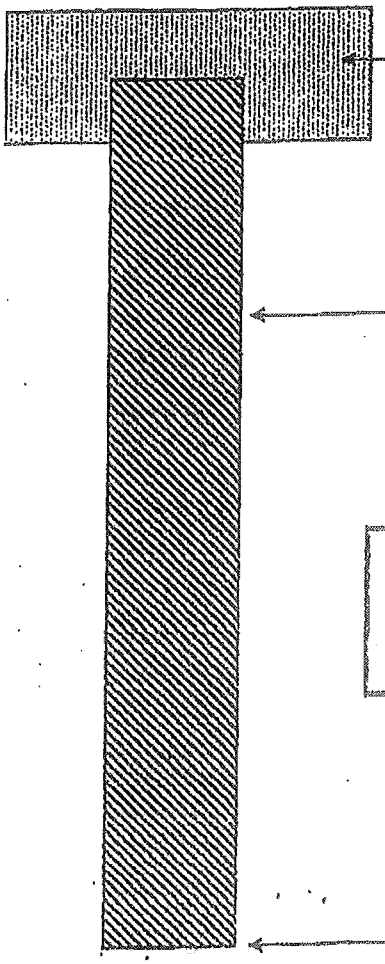
Cased or Uncased Diameter _____ Static Level _____

Work/Decommision Start Date 10/1/2007

If trainee, licesned drillers' Signature and License No. _____

Work/Decommision Completed Date 10/2/2007

Construction/Design W07-679 Formation Description



CONCRETE SURFACE SEAL 1 FT — 0 - 4' 9" FT — Bark chips

BACKFILL 2' 9" FT — 0 - FT — Bent chips

DEPT OF ECOLOGY WELL TAG #: _____

CLIENT WELL ID #: VW-2

DEPTH OF BORING 4' - 9" FT

REQUIRED INFORMATION

(Must get one or both if available)

Scale 1" = _____

Page _____ of _____

ECY 050-12 (Rev 2/01)

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. A130947

Construction/Decommission

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well

☒ Resource Protection

☐ Geotechnical Soil Boring

Property Owner: Chevron 306535

Site Address: 16405 36th Ave W

Consulting Firm: ENSR

City: Lynnwood County: Snohomish

EWM

Unique Ecology Well ID Tag No. _____

Location 1/4 NW 1/4 NE Sec 10 TWN 27N R 4E or _____ WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief

Lat/Long (s,t,r still Required) Lat Deg n/a Lat Min/Sec n/a Long Deg n/a Long Min/Sec n/a

Tax Parcel No. _____

☐ Driller ☐ Trainee Name (Print) RAYMOND LAUER

Driller/Trainee Signature X _____

Driller/Trainee License No. 2765

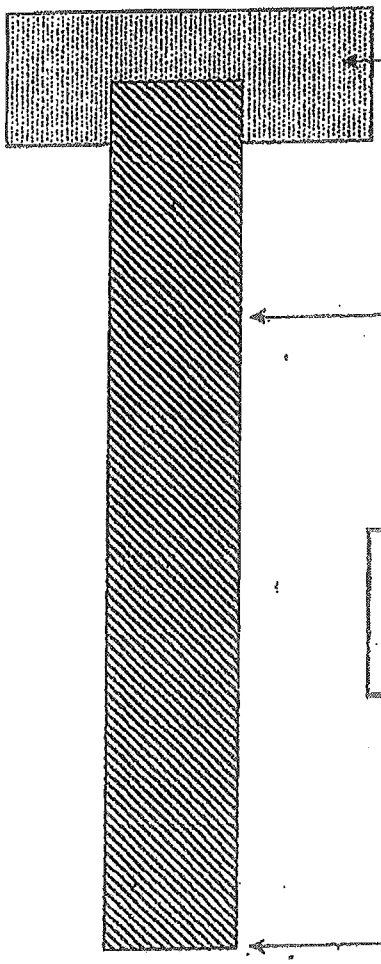
Cased or Uncased Diameter _____ Static Level _____

Work/Decommission Start Date 10/1/2007

If trainee, licensed drillers' Signature and License No. _____

Work/Decommission Completed Date 10/2/2007

Construction/Design — W07-679 — Formation Description



CONCRETE SURFACE SEAL 1 FT — 0 - 1.5 FT Bent chips

BACKFILL 16.5' FT — 0 - FT Bent chips

REQUIRED INFORMATION
(Must get one or both if available)

DEPT OF ECOLOGY WELL TAG #: _____

CLIENT WELL ID #: MW-3

DEPTH OF BORING 19.5' FT

Scale 1" = _____

ECY 050-12 (Rev 2/01)

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. A130947

Construction/Decommission

[ ] Construction

[x] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well

[x] Resource Protection

[ ] Geotechnical Soil Boring

Property Owner Chevron 306535

Site Address 16405 36th Ave W

Consulting Firm ENSR

City Lynnwood County Snohomish

EWM

Unique Ecology Well ID

Tag No. _____

Location 1/4 NW 1/4 NE Sec 10 TWN 27N R 4E or _____ WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief

Lat/Long (s,t,r still Required) Lat Deg n/a Lat Min/Sec n/a

Long Deg n/a Long Min/Sec n/a

[ ] Driller [ ] Trainee Name (Print) Bryan W Lauer

Driller/Trainee Signature X

Driller/Trainee License No. 2745

Tax Parcel No. _____

Cased or Uncased Diameter _____ Static Level _____

Work/Decommision Start Date 10/1/2007

If trainee, licesned drillers' Signature and License No. _____

Work/Decommision Completed Date 10/2/2007

W07-679

Construction/Design		Formation Description
CONCRETE SURFACE SEAL	1 FT	0 - 18'5" FT
BACKFILL	17'-5" FT	0 - _____ FT
	Bent chips	

REQUIRED INFORMATION
(Must get one or both if available)

DEPT OF ECOLOGY WELL TAG # : _____

CLIENT WELL ID #: MW-4

DEPTH OF BORING 18'5" FT

Scale 1" = _____

ECY 050-12 (Rev 2/01)

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. A130947

Construction/Decommission

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well

☒ Resource Protection

☐ Geotechnical Soil Boring

Property Owner Chevron 306535

Site Address 16405 36th Ave W

Consulting Firm ENSR

City Lynnwood County Snohomish

EWM

Unique Ecology Well ID

Tag No. _____

Location 1/4 NW 1/4 NE Sec 10 TWN 27N R 4E or _____ WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Lat/Long (s,t,r still Required) Lat Deg n/a Lat Min/Sec n/a

Long Deg n/a Long Min/Sec n/a

Tax Parcel No. _____

☐ Driller ☐ Trainee Name (Print) Laurent Lauer

Driller/Trainee Signature X

Driller/Trainee License No. 2745

Cased or Uncased Diameter _____ Static Level _____

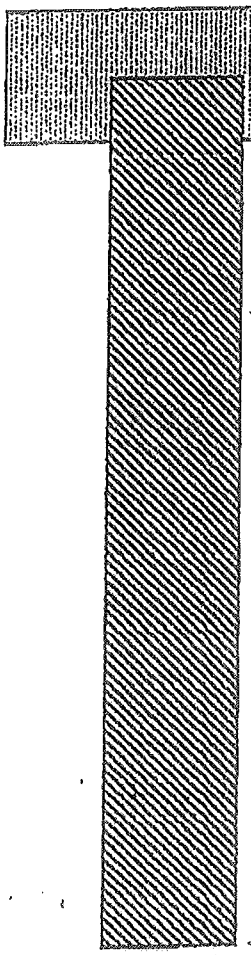
Work/Decommission Start Date 10/1/2007

If trainee, licesned drillers' Signature and License No. _____

Work/Decommission Completed Date 10/2/2007

W07-679

Construction/Design		Formation Description
CONCRETE SURFACE SEAL	1 FT	0 - 12.2" FT Bentonite
BACKFILL	12.2" FT	0 - _____ FT Bent chips
DEPTH OF BORING	13'0" FT	



REQUIRED INFORMATION
(Must get one or both if available)

DEPT OF ECOLOGY WELL TAG #: _____

CLIENT WELL ID #: MW-5

Scale 1" = _____

ECY 050-12 (Rev 3/01)

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. A130947

Construction/Decommission

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well

☒ Resource Protection

☐ Geotechnical Soil Boring

Property Owner: Chevron 306535

Site Address: 16405 36th Ave W

Consulting Firm: ENSR

City: Lynnwood County: Snohomish

EWM

Unique Ecology Well ID

Tag No. _____

Location 1/4 NW 1/4 NE Sec 10 TWN 27N R 4E or _____ WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Lat/Long (s,t,r still Required) Lat Deg n/a Lat Min/Sec n/a Long Deg n/a Long Min/Sec n/a

☒ Driller ☐ Trainee Name (Print) [illegible]

Driller/Trainee Signature [illegible]

Driller/Trainee License No. [illegible]

Tax Parcel No. _____

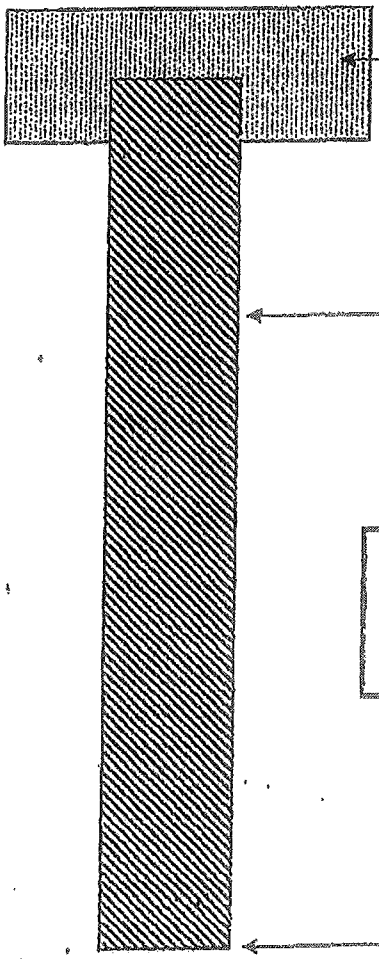
Cased or Uncased Diameter _____ Static Level _____

Work/Decommission Start Date 10/1/2007

If trainee, licensed drillers' Signature and License No. _____

Work/Decommission Completed Date 10/2/2007

Construction/Design — W07-679 — Formation Description



CONCRETE SURFACE SEAL — 1 FT — 0 - 17'4" FT — Bentonite chips

BACKFILL — 16' 4" FT — 0 - _____ FT — Bent chips

DEPTH OF BORING — 17' 4" FT

REQUIRED INFORMATION
(Must get one or both if available)

DEPT OF ECOLOGY WELL TAG # : _____

CLIENT WELL ID #: MW-10

Scale 1" = _____ Page _____ of _____

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. A 131027

Construction/Decommission
- [ ] Construction
- [x] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well
- [x] Resource Protection
- [ ] Geotechnical Soil Boring

Property Owner: Chevron 30-6535
Site Address: 16405 36th Ave. W
Consulting Firm: ENSR
City: Lynnwood County: Snohomish

EWM

Unique Ecology Well ID
Tag No. _____

Location 1/4 NW 1/4 NE Sec 10 Twn 27N R 4E or WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Lat/Long (s,t,r still Required) Lat Deg n/a Lat Min/Sec n/a
Long Deg n/a Long Min/Sec n/a

Tax Parcel No. _____

- [x] Driller [ ] Trainee Name (Print) David Gose
- Driller/Trainee Signature x _____
- Driller/Trainee License No. 2744

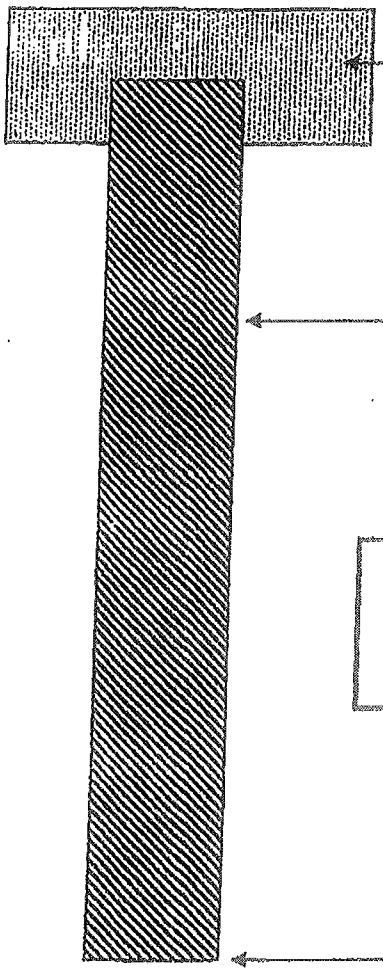
Cased or Uncased Diameter 2" Static Level _____

Work/Decommission Start Date 12/7/2007

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Completed Date 12/7/2007

Construction/Design — Well Data W07-859 — Formation Description



CONCRETE SURFACE SEAL 1 FT — 0 - FT

BACKFILL 10' FT — 0 - FT

BENTONITE

DEPTH OF BORING 11' FT

REQUIRED INFORMATION
(Must get one or both if available)

DEPT OF ECOLOGY WELL TAG # : _____

CLIENT WELL ID #: HB-1

Scale 1" = _____ Page _____ of _____ ECY 050-12 (Rev 2/01)

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. A 131027

Construction/Decommission

[ ] Construction

[x] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well

[x] Resource Protection

[ ] Geotechnical Soil Boring

Property Owner: Chevron 30-6535

Site Address: 16405 36th Ave. W

Consulting Firm: ENSR

City: Lynnwood County: Snohomish

EWM

Unique Ecology Well ID

Tag No. _____

Location 1/4 NW 1/4 NE Sec 10 Twn 27N R 4E or _____ WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Lat/Long (s,t,r still Required) Lat Deg n/a Lat Min/Sec n/a Long Deg n/a Long Min/Sec n/a

Tax Parcel No. _____

[x] Driller [ ] Trainee Name (Print) David Gose

Driller/Trainee Signature x _____

Driller/Trainee License No. 2744

Cased or Uncased Diameter 2" Static Level _____

Work/Decommission Start Date 12/7/2007

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Completed Date 12/7/2007

Construction/Design — Well Data W07-859 — Formation Description

CONCRETE SURFACE SEAL 1 FT — 0 - FT

BACKFILL 17 FT — 0 - FT

BENTONITE

DEPTH OF BORING 19 FT

REQUIRED INFORMATION
(Must get one or both if available)

DEPT OF ECOLOGY WELL TAG # : _____

CLIENT WELL ID #: MW 12

Scale 1" = _____

ECY 050-12 (Rev 2/01)

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. A 131027

Construction/Decommission

[ ] Construction

[x] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well

[x] Resource Protection

[ ] Geotechnical Soil Boring

Property Owner Chevron 30-6535

Site Address 16405 36th Ave. W

Consulting Firm ENSR

City Lynnwood County Snohomish

EWM

Unique Ecology Well ID

Tag No. _____

Location 1/4 NW 1/4 NE Sec 10 Twn 27N R 4E or WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief

Lat/Long (s,t,r still Required) Lat Deg n/a Lat Min/Sec n/a

Long Deg n/a Long Min/Sec n/a

Tax Parcel No. _____

[x] Driller [ ] Trainee Name (Print) David Gose

Driller/Trainee Signature x _____

Driller/Trainee License No. 2744

Cased or Uncased Diameter 2"

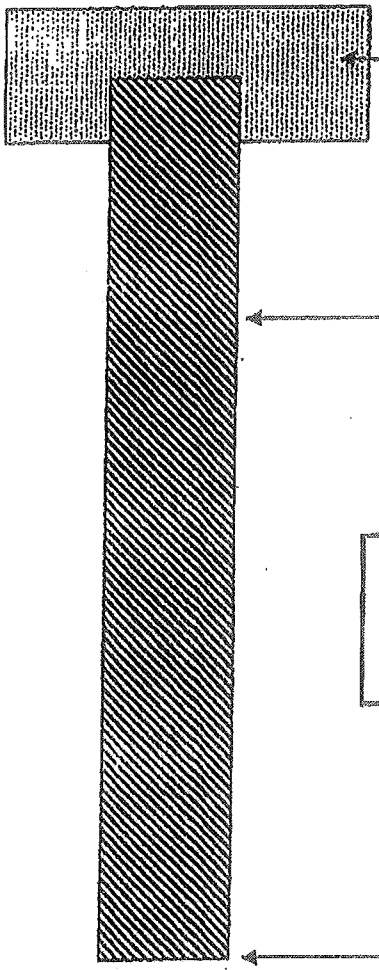
Static Level _____

Work/Decommission Start Date 12/7/2007

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Completed Date 12/7/2007

Construction/Design — Well Data W07-859 — Formation Description



CONCRETE SURFACE SEAL 1 FT — 0 - FT

BACKFILL 6 FT — 0 - FT

BENTONITE

DEPTH OF BORING 7 FT

REQUIRED INFORMATION
(Must get one or both if available)

DEPT OF ECOLOGY WELL TAG #: _____

CLIENT WELL ID #: MW 13

Scale 1" =

ECY 050-12 (Rev 2/01)

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT

Notice of Intent No. A 131027

Construction/Decommission

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well

☒ Resource Protection

☐ Geotechnical Soil Boring

Property Owner: Chevron 30-6535

Site Address: 16405 36th Ave. W

Consulting Firm: ENSR

City: Lynnwood County: Snohomish

EWM

Unique Ecology Well ID

Tag No. _____

Location 1/4 NW 1/4 NE Sec 10 Twn 27N R 4E or WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief

Lat/Long (s,t,r still Required) Lat Deg n/a Lat Min/Sec n/a Long Deg n/a Long Min/Sec n/a

Tax Parcel No. _____

☒ Driller ☐ Trainee Name (Print) David Gose

Driller/Trainee Signature x _____

Driller/Trainee License No. 2744

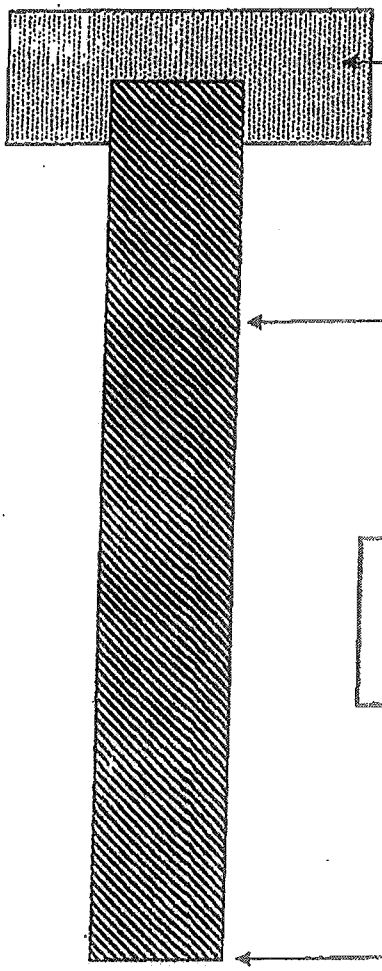
Cased or Uncased Diameter 2" Static Level _____

Work/Decommission Start Date 12/7/2007

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Completed Date 12/7/2007

Construction/Design — Well Data W07-859 — Formation Description



CONCRETE SURFACE SEAL 1' FT — 0 - FT

BACKFILL 16' 6" FT — 0 - FT

BENTONITE

DEPTH OF BORING 17' 6" FT

REQUIRED INFORMATION

(Must get one or both if available)

DEPT OF ECOLOGY WELL TAG # : _____

CLIENT WELL ID #: MW-14

Scale 1" = _____ Page _____ of _____

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT

Notice of Intent No. A 131027

Construction/Decommission

[ ] Construction

[x] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well

[x] Resource Protection

[ ] Geotechnical Soil Boring

Property Owner: Chevron 30-6535

Site Address: 16405 36th Ave. W

Consulting Firm: ENSR

City: Lynnwood County: Snohomish

EWM

Unique Ecology Well ID

Tag No. N/A

Location 1/4 NW 1/4 NE Sec 10 Twn 27N R 4E or WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Lat/Long (s,t,r still Required) Lat Deg n/a Lat Min/Sec n/a

Long Deg n/a Long Min/Sec n/a

Tax Parcel No.

[x] Driller [ ] Trainee Name (Print) David Gose

Driller/Trainee Signature x

Driller/Trainee License No. 2744

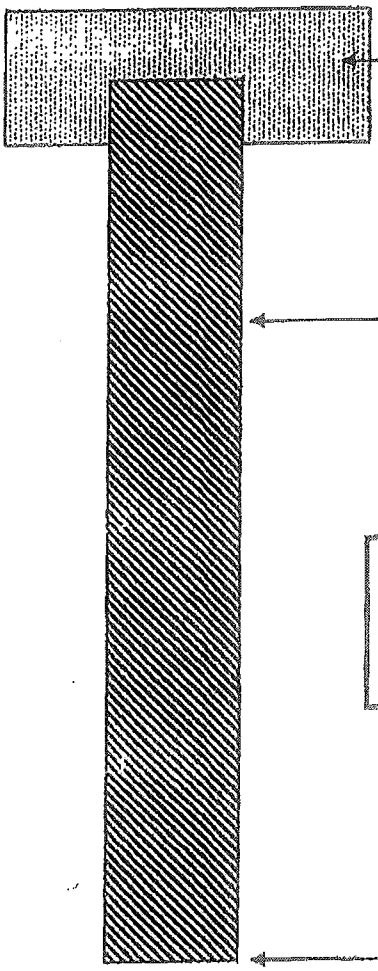
Cased or Uncased Diameter 2" Static Level

Start/Decommission Start Date 12/7/2007

If trainee, licensed driller's Signature and License No.

Start/Decommission Completed Date 12/7/2007

Construction/Design — Well Data W07-859 — Formation Description



CONCRETE SURFACE SEAL 1' FT — 0 - FT

BACKFILL BENTONITE FT — 0 - FT

17'

REQUIRED INFORMATION

(Must get one or both if available)

DEPT OF ECOLOGY WELL TAG # :

CLIENT WELL ID #: MW 17

DEPTH OF BORING 18' FT

Scale 1" = _____

ECY 050-12 (Rev. 2/01)

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. A 131027

Construction/Decommission
☐ Construction
☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well
☒ Resource Protection
☐ Geotechnical Soil Boring

Property Owner: Chevron 30-6535
Site Address: 16405 36th Ave. W
Consulting Firm: ENSR
City: Lynnwood County: Snohomish

EWM

Unique Ecology Well ID
Tag No. _____

Location 1/4 NW 1/4 NE Sec 10 Twn 27N R 4E or WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Lat/Long (s,t,r still Required) Lat Deg n/a Lat Min/Sec n/a
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Tax Parcel No. _____

☒ Driller ☐ Trainee Name (Print) David Gose
Driller/Trainee Signature x
Driller/Trainee License No. 2744

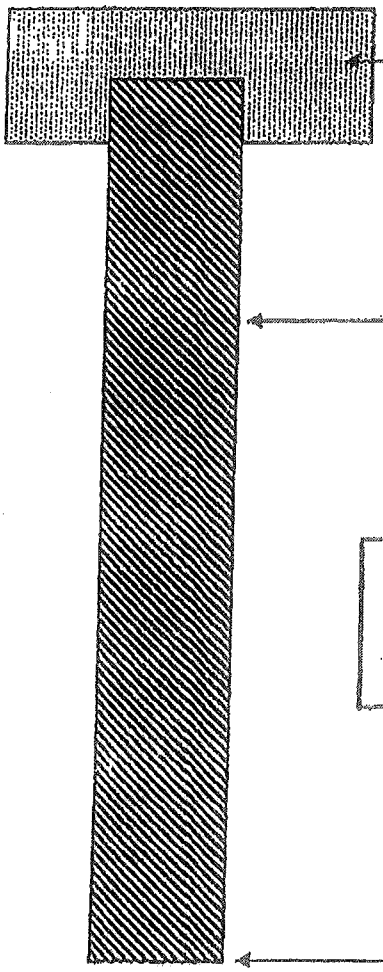
Cased or Uncased Diameter 2" Static Level _____

Work/Decommission Start Date 12/7/2007

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Completed Date 12/7/2007

Construction/Design — Well Data W07-859 — Formation Description



CONCRETE SURFACE SEAL 1 FT — 0 - FT

BACKFILL 18' FT — 0 - FT
BENTONITE

DEPTH OF BORING 19 FT

REQUIRED INFORMATION
(Must get one or both if available)

DEPT OF ECOLOGY WELL TAG # : _____

CLIENT WELL ID #: MW 8

Scale 1" = _____ Page _____ of _____ ECY 050-12 (Rev 2/01)

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. A 131027

Construction/Decommission

[ ] Construction

[x] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well

[x] Resource Protection

[ ] Geotechnical Soil Boring

Property Owner: Chevron 30-6535

Site Address: 16405 36th Ave. W

Consulting Firm: ENSR

City: Lynnwood County: Snohomish

EWM

Unique Ecology Well ID

Tag No. _____

Location 1/4 NW 1/4 NE Sec 10 Twn 27N R 4E or WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Lat/Long (s,t,r still Required) Lat Deg n/a Lat Min/Sec n/a

Long Deg n/a Long Min/Sec n/a

Tax Parcel No. _____

[x] Driller [ ] Trainee Name (Print) David Gose

Driller/Trainee Signature x

Driller/Trainee License No. 2744

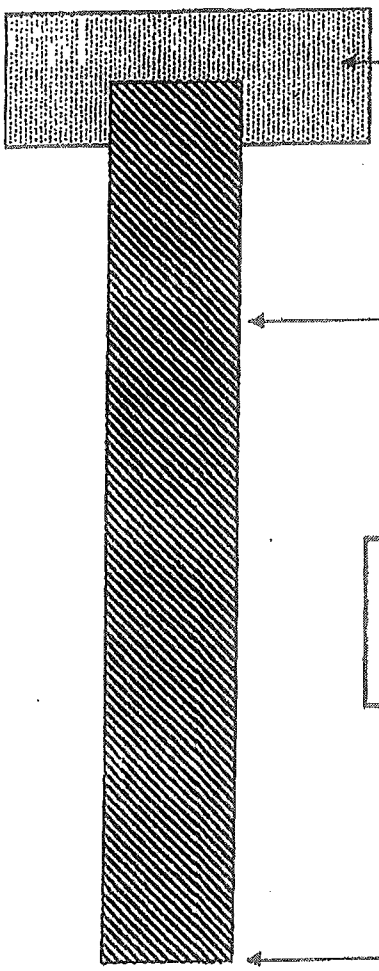
Cased or Uncased Diameter 2" Static Level _____

Work/Decommission Start Date 12/7/2007

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Completed Date 12/7/2007

Construction/Design — Well Data W07-859 — Formation Description



CONCRETE SURFACE SEAL 1 FT — 0 - FT

BACKFILL 23' FT — 0 - FT

BENTONITE

REQUIRED INFORMATION
(Must get one or both if available)

DEPT OF ECOLOGY WELL TAG # : _____

CLIENT WELL ID #: MW7

DEPTH OF BORING 24' FT

ECY 050-12 (Rev 2/01)

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. A 131027

Construction/Decommission

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well

☒ Resource Protection

☐ Geotechnical Soil Boring

Property Owner: Chevron 30-6535

Site Address: 16405 36th Ave. W

Consulting Firm: ENSR

City: Lynnwood County: Snohomish

EWM

Unique Ecology Well ID Tag No. _____

Location 1/4 NW 1/4 NE Sec 10 Twn 27N R 4E or WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Lat/Long (s,t,r still Required) Lat Deg n/a Lat Min/Sec n/a Long Deg n/a Long Min/Sec n/a

Tax Parcel No. _____

☒ Driller ☐ Trainee Name (Print) David Gose

Driller/Trainee Signature x _____

Driller/Trainee License No. 2744

Cased or Uncased Diameter 2"

Static Level _____

Work/Decommission Start Date 12/7/2007

Work/Decommission Completed Date 12/7/2007

If trainee, licensed driller's Signature and License No. _____

Well Data W07-859

Construction/Design		Formation Description
CONCRETE SURFACE SEAL	1 FT	0 - FT
BACKFILL	13' FT	0 - FT
	BENTONITE	

REQUIRED INFORMATION
(Must get one or both if available)

DEPT OF ECOLOGY WELL TAG # : _____

CLIENT WELL ID #: MW9

DEPTH OF BORING 14' FT

Scale 1" = _____ Page _____ of _____ ECY 050-12 (Rev 2/01)

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. A 131027

Construction/Decommission

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well

☒ Resource Protection

☐ Geotechnical Soil Boring

Property Owner: Chevron 30-6535

Site Address: 16405 36th Ave. W

Consulting Firm: ENSR

City: Lynnwood County: Snohomish

EWM

Unique Ecology Well ID

Tag No. _____

Location 1/4 NW 1/4 NE Sec 10 Twn 27N R 4E or WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief

Lat/Long (s,t,r still Required) Lat Deg n/a Lat Min/Sec n/a Long Deg n/a Long Min/Sec n/a

Tax Parcel No. _____

☒ Driller ☐ Trainee Name (Print) David Gose

Driller/Trainee Signature x _____

Driller/Trainee License No. 2744

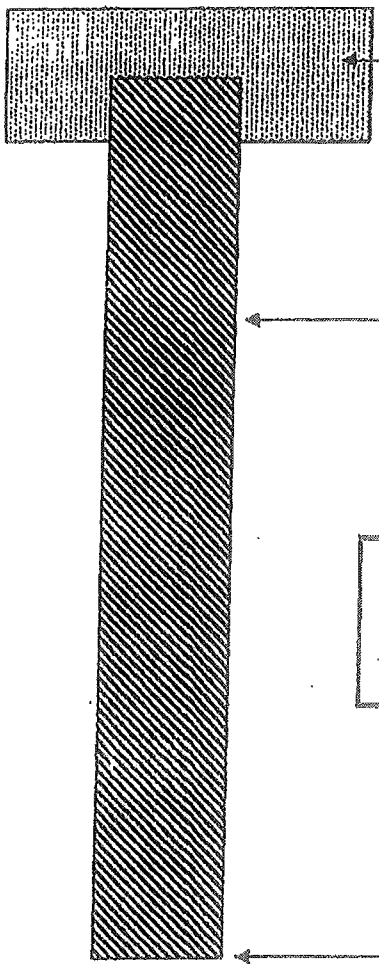
Cased or Uncased Diameter 4 in. Static Level _____

Work/Decommission Start Date 12/7/2007

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Completed Date 12/7/2007

Construction/Design — **Well Data W07-859** — **Formation Description**



CONCRETE SURFACE SEAL 1 FT — 0 - FT

BACKFILL 12 1/2 FT — 0 - FT

BENTONITE

REQUIRED INFORMATION
(Must get one or both if available)

DEPT OF ECOLOGY WELL TAG # : _____

CLIENT WELL ID #: RT1

DEPTH OF BORING 14 FT

Scale 1" = _____

Page _____ of _____

ECY 050-12 (Rev 2/01)

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. A 131027

Construction/Decommission

[ ] Construction

[x] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well

[x] Resource Protection

[ ] Geotechnical Soil Boring

Property Owner: Chevron 30-6535

Site Address: 16405 36th Ave. W

Consulting Firm: ENSR

City: Lynnwood County: Snohomish

EWM

Unique Ecology Well ID

Tag No. _____

Location 1/4 NW 1/4 NE Sec 10 Twn 27N R 4E or WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Lat/Long (s,t,r still Required) Lat Deg n/a Lat Min/Sec n/a

Long Deg n/a Long Min/Sec n/a

Tax Parcel No. _____

[x] Driller [ ] Trainee Name (Print) David Gose

Driller/Trainee Signature x _____

Driller/Trainee License No. 2744

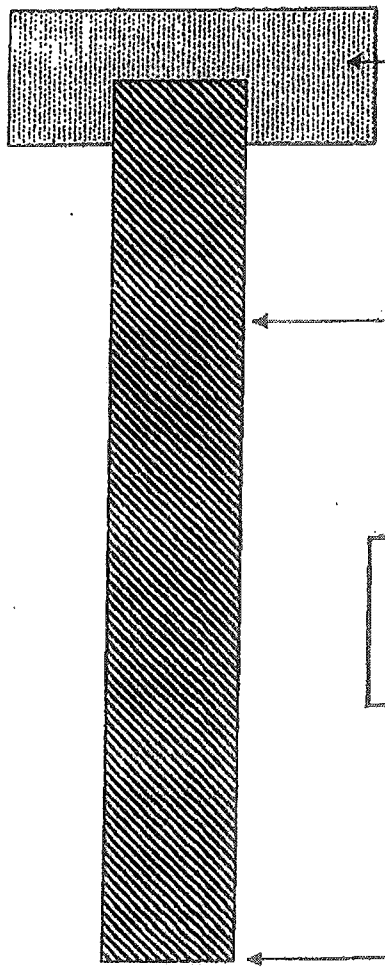
Cased or Uncased Diameter 4" Static Level _____

Work/Decommission Start Date 12/7/2007

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Completed Date 12/7/2007

Construction/Design — Well Data W07-859 — Formation Description



CONCRETE SURFACE SEAL 1 FT — 0 - _____ FT

BACKFILL 13' FT — 0 - _____ FT

BENTONITE

DEPTH OF BORING 14' FT

REQUIRED INFORMATION
(Must get one or both if available)

DEPT OF ECOLOGY WELL TAG # : _____

CLIENT WELL ID #: R-2

Scale 1" = _____

ECY 050-12 (Rev 2/01)

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. _____

Construction/Decommission

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well

☒ Resource Protection

☐ Geotechnical Soil Boring

Property Owner Chevron 30-6535

Site Address 16405 36th Ave W

Consulting Firm ENSR

City Lynnwood County Snohomish

Unique Ecology Well ID

Tag No. _____

Location 1/4 NW 1/4 NE Sec 10 Twn 27N R 46 (EWM) or WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief

Lat/Long (s,t,r still Required) Lat Deg N/A Lat Min/Sec N/A Long Deg N/A Long Min/Sec N/A

Tax Parcel No. _____

☒ Driller ☐ Trainee Name (Print) Frank Scott

Driller/Trainee Signature _____

Driller/Trainee License No. 2549

Cased or Uncased Diameter 2" Static Level 10'

Work/Decommision Start Date 12/21/07

If trainee, licesned drillers' Signature and License No. _____

Work/Decommision Completed Date 12/21/07

Construction/Design	Well Data	Formation Description
CONCRETE SURFACE SEAL	1 FT	0 - FT
BACKFILL	14 FT	0 - FT
	Bent. chips	
DEPTH OF BORING	15 FT	

REQUIRED INFORMATION
(Must get one or both if available)

DEPT OF ECOLOGY WELL TAG # : _____

CLIENT WELL ID #: MW 18

Scale 1" = _____

ECY 050-12 (Rev 2/01)

SOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT

Notice of Intent No. A 131027

Construction/Decommission

[ ] Construction

[x] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well

[x] Resource Protection

[ ] Geotechnical Soil Boring

Property Owner: Chevron 30-6535

Site Address: 16405 36th Ave. W

Consulting Firm: ENSR

City: Lynnwood County: Snohomish

EWM

Unique Ecology Well ID

Tag No. _____

Location 1/4 NW 1/4 NE Sec 10 Twn 27N R 4E or WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief

Lat/Long (s,t,r still Required) Lat Deg n/a Lat Min/Sec n/a Long Deg n/a Long Min/Sec n/a

Tax Parcel No. _____

[x] Driller [ ] Trainee Name (Print) David Gose

Driller/Trainee Signature x _____

Driller/Trainee License No. 2744

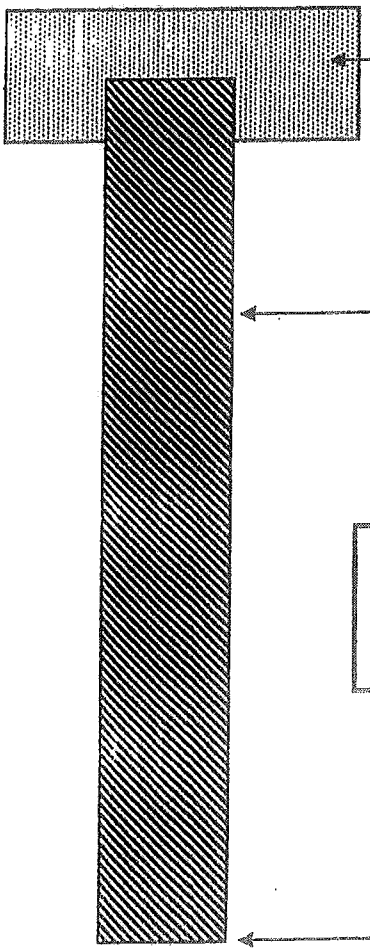
Cased or Uncased Diameter 4" Static Level _____

Work/Decommission Start Date 12/7/2007

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Completed Date 12/7/2007

Construction/Design — Well Data W07-859 — Formation Description



CONCRETE SURFACE SEAL 1' FT — 0 - FT

BACKFILL 13' FT — 0 - FT

BENTONITE

REQUIRED INFORMATION

(Must get one or both if available)

DEPT OF ECOLOGY WELL TAG # : _____

CLIENT WELL ID #: MW-11R

DEPTH OF BORING 14' FT

Scale 1" = _____

Page _____ of _____

ECY 050-12 (Rev 2/01)

3000 Rockefeller Ave., MS 604
Everett, WA 98201
1-800-562-4367
(425) 388-3311

Snohomish County Planning and Development Services

Right-of-Way Permit D6 - Minor Const.

Assessor Property Tax #: 003727-002-001-03 Permit # 07109706 D6 Ref # 07109706

Site Address: 16404 36TH AVE W LYNNWOOD 98037-7001
Closed out Nov 27, 2007 in error - permit reopened 12/7/07

Expires: December 7, 2009
Issued: August 27, 2007
By: scdset

Type: Groundwater Monitoring Wells

Work Proposed: R/W Construction

Permit Description: ENSR to decommission groundwater monitoring wells at intersection of 36th Ave W and 164th St SW (HB-1, MW-7, MW-8, MW-12, MW-13.

SNOHOMISH COUNTY PLANNING AND DEVELOPMENT SERVICES

FINAL APPROVAL

A FINAL INSPECTION OF YOUR PROJECT HAS BEEN PERFORMED BY THIS DEPARTMENT.
This is your notification that Snohomish County has given final approval to the following permits:

RIGHT-OF-WAY: 07-109706 (PERMIT NUMBER)

GRADING: _____ (PERMIT NUMBER)

DEMOLITION: _____ (PERMIT NUMBER)

VAULT: _____ (PERMIT NUMBER)

RETAINING WALL: _____ (PERMIT NUMBER)

OTHER: _____ (PERMIT NUMBER)

Steve Dellen
Inspector

12-26-07
Date

Applicant Name/Address: ENSR
9521 - Willows Road NE
Redmond, WA 98052

White - Applicant Canary - PDS Pink - Inspection 1033-181

THIS PERMIT IS GRANTED SUBJECT TO THE REQUIREMENTS AND CONDITIONS LISTED HEREIN.

ISSUED BY: Land Use Division, Planning and Development Services

PERMIT RENEWAL REQUIREMENTS:

Request permit renewal in writing 30 days prior to permit expiration.
Complete new right-of-way permit application.
Pay permit renewal fee of one-half the original permit fee.

R/W Inspector

UNOCAL STATION 5533
LYNNWOOD
LUST 1696
RELEASE # 1696

ENSR
9521 Willows Road NE, Redmond, Washington 98052-3422
T 425.881.7700 F 425.883.4473 www.ensr.aecom.com

May 31, 2007

Mr. Joe Hickey
Washington Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, Washington 98008-5452

Subject: Request to Decommission Groundwater Monitoring Wells
Former Unocal Service Station No. 5533
16404 - 36th Avenue West
Lynnwood, Washington

RECEIVED
JUN 04 2007
DEPT OF ECOLOGY

Dear Mr. Hickey:

ENSR Corporation (ENSR) on behalf of Chevron Environmental Management Company (Chevron) requests consideration by the Department of Ecology (Ecology) for decommissioning of nine groundwater monitoring wells at the subject location under the provisions of Washington Administrative Code (WAC) Chapter 173-1600-400 titled "Minimum Standards for Construction and Maintenance of Wells – Part Two: General Requirements for Resource Protection Well Construction and Geotechnical Soil Borings."

The site has three primary issues related to the existing groundwater monitoring wells:

1. Location;
2. Construction; and
3. Safety.

Groundwater monitoring wells MW-3 and MW-4 (Figure 1) are located on either side of the service station's north dispenser-island. The wells are positioned slightly below the level of the dispenser island's concrete pad, such that surface runoff from the fueling area flows directly toward the wells. These wells have shown petroleum contaminant levels below the MTCA Method A groundwater cleanup levels since the fall of 2005. We are concerned that these wells could be impacted by a significant fuel spill on the dispenser pad. Therefore, ENSR proposes to eliminate this potential exposure pathway as soon as practicable.

ENSR has concerns about the construction and integrity of seven offsite groundwater monitoring wells--MW-7, MW-8, MW-12, MW-13, MW-14, MW-18, and HB-1. In April of 2003, the Snohomish Country Public Works Department (SCPWD) began intersection expansion and subsurface utilities upgrades in and around the intersection of 164th Street SW and 36 Avenue W. Grading was completed by SCPWD in December of 2003. The seven monitoring wells in question were paved over and one was destroyed (MW-17) in the course of

ENTERED 6-26 2007

the road work. SCPWD's contractors were instructed to bring the existing wells flush with the final road and/or sidewalk grade.

ENSR's request to decommission these seven wells in the public right-of-way is based on the following findings:

1. At the point where the original Schedule 40 PVC pipe was attached to the Schedule 80 PVC pipe extension, it is not clear, nor can it be determined, what type of joint was used to attach the pipe segments. Joints that have been sealed to prevent soil, groundwater, and/or contaminant intrusion into the well joint are acceptable according to the WAC Chapter 173-160. However, solvent cement (PVC glue) must never be used to secure pipe segments for resource protection wells, because the solvent component of the solvent cement contains high concentrations of xylene and toluene.

2. ENSR recently determined that the Schedule 80 PVC pipe extensions are loose inside their casings. Therefore, the pipe extensions were not securely and impermeably sealed inside the steel casing per WAC 173-160-450. A lack of sealant may allow surface water and environmental contaminants to enter the well in addition to rendering the well vulnerable to collapse due to surface loads or pressure.

3. ENSR and Chevron place great emphasis on the safety of both the environment and people. The location of these monitoring wells in or near a busy street, coupled with possible well construction and integrity issues, is of great concern. Safety factors related to continued active well monitoring involve conducting activities in an active thoroughfare and along the public right-of-way, which requires traffic control, street lane closures, and activities considered high risk to personnel. This ongoing potential risk eliminates any desire on Chevron's behalf to repair or install new wells. This intersection is highly congested, both in terms of surface traffic and subsurface utilities, including high and low pressure gas lines, sanitary and storm sewers, water, fiber-optics, and traffic control device equipment.

ENSR recommends that Ecology grant permission to decommission these wells as soon as is practicable and that, due to well locations within the sensitive and highly-impacted utility corridors of this intersection, ENSR be authorized to close and seal these wells in place by splitting or perforating the casing, followed by pressure grouting with bentonite, and surface sealing with concrete.

Prior to any work being performed, ENSR will prepare a work plan, which must be approved by Chevron EMC, and forward that plan to your attention for review and work authorization.

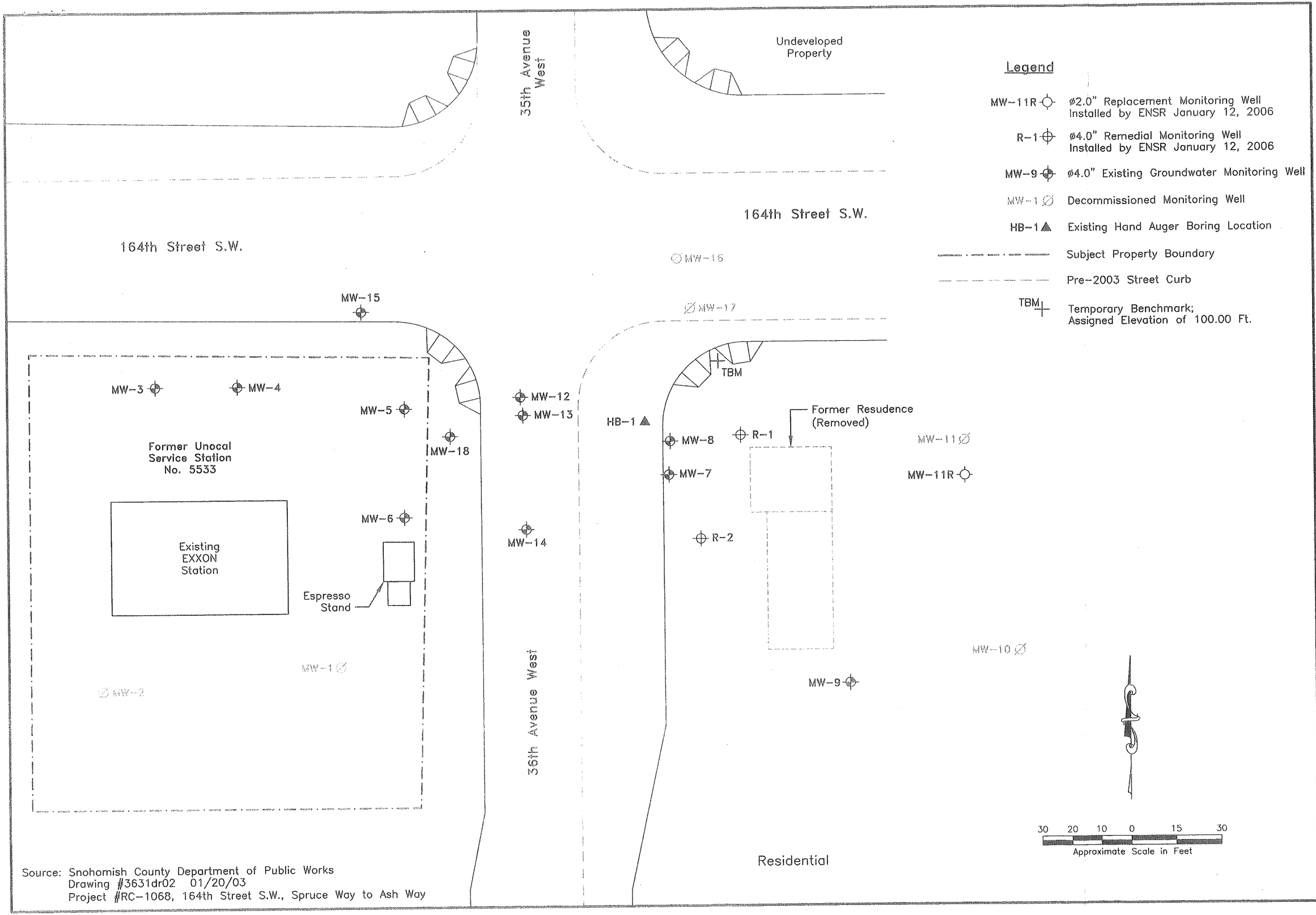
If you have any questions related to this request, please contact me directly at (425) 881-7700. I am available and welcome any opportunity to meet with you at Ecology's Bellevue office or at the site to review and discuss this request.

Regards,

Art Cowburn
Project Manager

Attachment:
Figure 1, Site Map

Cc: Mark Inglis, Chevron EMC
Don Lance, ENSR



Legend

MW-11R	ø2.0" Replacement Monitoring Well Installed by ENSR January 12, 2006
R-1	ø4.0" Remedial Monitoring Well Installed by ENSR January 12, 2006
MW-9	ø4.0" Existing Groundwater Monitoring Well
MW-1	Decommissioned Monitoring Well
HB-1	Existing Hand Auger Boring Location
	Subject Property Boundary
	Pre-2003 Street Curb
TBM	Temporary Benchmark; Assigned Elevation of 100.00 Ft.

Source: Snohomish County Department of Public Works
Drawing #3631dr02 01/20/03
Project #RC-1068, 164th Street S.W., Spruce Way to Ash Way

REVISIONS			
NO:	DESCRIPTION:	DATE:	BY:

DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED BY:
AC	KM	AC	DL

ENSR AECOM
ENSR CORPORATION
9521 WILLOWS ROAD NE
REDMOND, WASHINGTON 98052
PHONE: (425) 881-7700
FAX: (425) 883-4473
WEB: HTTP://WWW.ENSR.AECOM.COM

SITE PLAN

Chevron Site No. 306535
Former Unocal Service Station No. 5533
16405 36th Avenue West, Lynnwood, Washington

SCALE:	DATE:	PROJECT NUMBER:
1" = 30'	05/03/07	01231-217-OM1

FIGURE NUMBER:
1

FILENAME:
012312170M1B

UNOCAL STATION 5533
Lynnwood

LUST 1696

ENSR International
9521 Willows Road NE
Redmond, WA 98052
(425) 881-7700
Fax (425) 883-4473
www.ensr.com

ORIGINAL

Groundwater Monitoring Report
Fourth Quarter 2005

Site Name: Former Unocal Service Station #5533
Site Address: 16405 36th Avenue West
City, State, ZIP: Lynnwood, Washington, 98037

Report Date: December 2, 2005
ENSR Project No: 06940-367
DOE Facility No: 74865182
LUST No: 200441
DOE Contact Name: ~~Mr. Joe Hickey~~ NOT VCP
Client: Union Oil Company of California (Unocal)
276 Tank Farm Road, PO Box 1069
San Luis Obispo, CA 93406
Unocal Project Manager: Mr. John Frary
ENSR Project Manager: Art Cowburn
Sampling Date: November 5, 2005

ENTERED
JAN 1-4 2006

RECEIVED
DEC 28 2005
DEPT OF ECOLOGY

INTRODUCTION:

This groundwater monitoring report is prepared for former Unocal Service Station #5533 located at 16405 36th Avenue West, Lynnwood, Washington (Figure 1). Groundwater elevations and sample analytical results are presented in the attached tables. On November 5, 2005, nine groundwater monitoring wells (MW-3 MW-4, MW-5, MW-7, MW-8, MW-9, MW-12, MW-13, and MW-18) were gauged and sampled. A duplicate sample was taken from MW-9 (labeled as MW-20 in laboratory report). HB-1 and MW-14 were gauged but were not be sampled due to purging dry (HB-1) and dangerous road conditions (MW-14).

Two geologic units with different hydraulic conductivities are present at this location. The upper geologic unit is a silty-sand (higher hydraulic conductivity) that was used as fill to approximately eight feet below current ground surface. The water found in the fill appears to be surface infiltration which is slowly transmitted to the lower geologic unit. The deeper geologic unit is weathered till (lower hydraulic conductivity) and begins at a depth of approximately eight feet below ground surface (bgs). Two pairs of monitoring wells are screened at different intervals and distinguish between the geologic units. MW-12 and MW-7 are screened over groundwater (deeper) from approximately eight to eighteen feet and fourteen to twenty-four feet bgs, respectively. MW-13 and MW-8 are screened (shallower) from approximately two to seven and nine to fourteen feet bgs, respectively. The wells which are only screened in the fill include MW-

8, MW-13, and HB-1. These wells have slow recharge and are quickly purged dry during sampling.

SAMPLING METHODS:

The volume of water in each well was calculated using the known diameter, total well depth, and the depth to water measurements. A disposable polyethylene bailer was used to remove a minimum of three well volumes of water prior to sample collection.

Groundwater samples were collected from each monitoring well by slowly lowering the bailer into the well, thus minimizing the potential for volatilization of dissolved volatile organic compounds (if present). The bailer was retrieved from the well, and the water was slowly transferred into clean, laboratory-supplied containers. Each sample was labeled, placed into an iced cooler, and submitted by ENSR to North Creek Analytical (Bothell, WA) using standard chain-of-custody protocol. During this groundwater sampling event, a total of 59 gallons of purge water was generated. The purge water was stored in properly labeled 55 gallon drums for subsequent pickup by a disposal service contractor.

GROUNDWATER FLOW DIRECTION:

Each well was gauged using an electronic water-level meter with water depths measured relative to the top of well casing. In wells screened over the aquifer, the depths to groundwater ranged from 2.76 feet (MW-3) to 8.18 feet (MW-7) below ground surface (Table 1). Relative groundwater elevations ranged from 90.26 feet (MW-9) to 101.21 feet (MW-3) (Figure 2).

In the upper geologic unit (fill), the depths to groundwater ranged from to 4.76 feet (MW-13) to 7.25 feet (MW-8) below ground surface (Table 1). Relative groundwater elevations ranged from 94.08 feet (MW-8) to 97.37 feet (MW-13) (Figure 2).

Groundwater elevations are relative to a temporary benchmark onsite. The location of the temporary benchmark is a light pole numbered 164/36#2 on the southeast corner of the intersection of 164th Street SW and 36th Avenue West, top of bolt. According to measurements taken on November 5, 2005, groundwater beneath the site flows to the southeast (Figure 2).

ANALYTICAL METHODS:

Groundwater samples were analyzed for benzene, ethylbenzene, toluene, and total xylenes (BETX) by EPA Method 8021B, total petroleum hydrocarbons (TPH) as gasoline (TPH-G) by Northwest Method NWTPH-G, TPH as diesel (TPH-D), TPH as heavy oil (TPH-O) by Northwest Method NWTPH-Dx with acid/silica gel cleanup (Table 2).

In addition, the groundwater samples from MW-3, MW-4, MW-9, MW-12, and MW-13 were analyzed for sulfate (EPA 300.0), nitrate (EPA 353.2), alkalinity (EPA 310.0), and total organic carbon (EPA 415.1) (Table 3). Electrical conductivity, pH, oxidation-reduction potential, dissolved oxygen, temperature, and ferrous iron were measured in the field for MW-3, MW-7, MW-9, MW-12, and MW-13 (Table 3). These parameters were measured to evaluate the geochemistry of the aquifer to assist with the selection of a remedial method.

ANALYTICAL RESULTS

The groundwater analytical results were compared with the Washington Model Toxics Control Act (MTCA) Method A Cleanup Levels. Benzene was detected above the MTCA Method A cleanup level in samples from MW-5, MW-12, MW-13, and MW-18 (Table 2). Xylenes and ethylbenzene were detected above MTCA A cleanup levels in MW-12 and MW-13, as well as toluene in MW-13. TPH-G was detected above the MTCA Method A cleanup levels in samples from MW-5, MW-12, and MW-13 (Table 2). TPH-O was detected above MTCA Method A in MW-3 and MW-18, as well as TPH-D in MW-18.

DISCUSSION

Analytical results from fourth quarter 2005 groundwater monitoring, show petroleum constituents that exceed the MTCA Method A cleanup levels were present in groundwater samples from MW-3, MW-5, MW-12, MW-13, and MW-18.

Data indicates petroleum impacted groundwater exists in both geologic units under 36th Avenue West between groundwater monitoring wells MW-5 and HB-1 (Figure 3). Other impacted monitoring wells (MW-12, MW-13, and MW-18) are also located within this area. In third quarter 2005, LNAPL was observed in MW-12 for the first time.

All monitoring wells outside this area, with the exception of MW-3, do not contain constituents above the MTCA Method A cleanup levels (Figure 3). The TPH-O in MW-3 may be the result of incursion of contaminated surface water. Contaminated water has been observed accumulating in both of the well boxes of MW-3 and MW-4. They are located on either side of the service island. The PVC riser of both wells is damaged and does not form a complete seal with well caps. Drips and spills of petroleum products from automobiles have stained the asphalt in the area.

PRELIMINARY ACTION PLAN

During a road improvement project (April 2003 to June 2004), groundwater monitoring wells located in the street and sidewalk (MW-7, MW-8, MW-12, MW-13, MW-14, MW-18, and HB-1) were rendered ineffective by the Snohomish Country Public Works Department (SCPWD) contractor when the contractor brought the wells to the present street grade. Schedule 80 riser was added to the existing wells inside of 6-inch sewer pipe. In several of the wells, there is no seal from ground surface to at least 6 feet below ground surface (bgs). It is unknown if there is a seal in place at all in these wells. Due to the damage, these wells are not providing reliable information. However, monitoring of these wells will continue until they are decommissioned.

The damaged groundwater monitoring wells located in the Exxon service station and public right of way (MW-3, MW-4, MW-7, MW-8, MW-12, MW-13, MW-14, MW-18, and HB-1) will be decommissioned to ensure that they do not act as conduits for contamination to enter the groundwater.

Three draft work plans have been prepared for this site.

1. Work plan for the installation of two 4" remediation wells and one 2" monitoring well *on* the former Pennock property. Tentatively scheduled for January 2006.
2. Work plan for the decommissioning of two 2" damaged groundwater monitoring wells and the installation of two new 2" groundwater monitoring wells on the active Exxon (former Unocal) Service Station. Tentatively scheduled for February 2006.

3. Work plan for the decommissioning of seven groundwater monitoring wells in the street and sidewalk (public right of way) due to damages incurred during construction of new road. Pending permits, tentatively scheduled for March 2006.

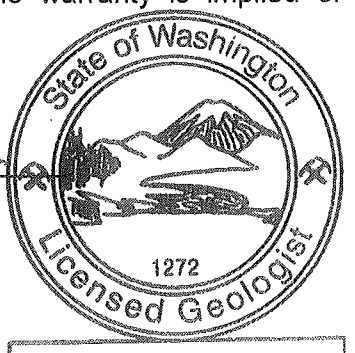
A monitoring well (MW-15) was inadvertently left out of the original permit and traffic control plan. This well will be added to the permit and sampling plan. New wells installed on the Exxon service station property and on the Pennock property will be used to assess groundwater flow direction and to delineate the impacted groundwater. They will be located out of the street to eliminate the safety hazards associated with sampling wells in a busy intersection and to avoid road construction, and in a configuration better suited for determining the groundwater flow direction. The wells may also be used for remediation.

LIMITATIONS

The interpretations in this report represent our professional opinions and are based, in part, on the information supplied by the client. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

Art Cowburn
Project Manager

Akos Fekete, LG
Senior Project Manager



Attachments

Table 1 – Summary of Groundwater Elevations
Table 2 – Summary of Groundwater Chemical Analytical Data
Figure 1 – Site Location
Figure 2 – Groundwater Elevations November 5, 2005
Figure 3 – Summary of Groundwater Analytical Data – April 4, 2005 to November 5, 2005
Laboratory Report/COC

Distribution

Mr. John Frary, Unocal Project Manager
Mr. Joe Hickey, Agency Project Manager, DOE

Quality Assurance/Technical Review By:

Barbara Orchard
Staff Engineer II

TABLE 1
SUMMARY OF GROUNDWATER ELEVATIONS
FORMER UNOCAL SERVICE STATION #5533
16405 36TH AVENUE WEST, LYNNWOOD, WA
06940-367

Monitoring Well (Casing Elevation in feet)	Date Measured	Depth to Groundwater[a] (feet)	Groundwater Elevation[b] (feet)
HB-1 (101.34)	04/23/05	6.77	94.57
	07/30/05	8.35	92.99
	11/05/05	7.32	94.02
MW-1	Well Abandoned		
MW-2	Well Abandoned		
MW-3 (103.97)	04/23/05	3.60	100.37
	07/30/05	3.99	99.98
	11/05/05	2.76	101.21
MW-4 (103.28)	04/23/05	4.80	98.48
	07/30/05	5.37	97.91
	11/05/05	4.71	98.57
MW-5 (102.08)	04/23/05	3.69	98.39
	07/30/05	4.61	97.47
	11/05/05	3.76	98.32
MW-6 (NS)	04/23/05	Well Not Found	
	07/30/05	5.57	--
	11/05/05	Not Sampled	
MW-7 (101.24)	04/23/05	8.41	92.83
	07/30/05	9.24	92.00
	11/05/05	8.18	93.06
MW-8 (101.33)	04/23/05	7.19	94.14
	07/30/05	8.97	92.36
	11/05/05	7.25	94.08
MW-9 (94.11)	04/23/05	3.55	90.56
	07/30/05	4.59	89.52
	11/05/05	3.85	90.26

TABLE 1
SUMMARY OF GROUNDWATER ELEVATIONS
FORMER UNOCAL SERVICE STATION #5533
16405 36TH AVENUE WEST, LYNNWOOD, WA
06940-367

Monitoring Well (Casing Elevation in feet)	Date Measured	Depth to Groundwater[a] (feet)	Groundwater Elevation[b] (feet)
MW-10	Well Abandoned		
MW-11	Well Abandoned		
MW-12 (102.27)	04/23/05	7.46	94.81
	07/30/05	7.41	94.86
	11/05/05	6.90	95.37
MW-13 (102.13)	04/23/05	4.48	97.65
	07/30/05	5.95	96.18
	11/05/05	4.76	97.37
MW-14 (103.05)	04/23/05	5.21	97.84
	07/30/05	6.53	96.52
	11/05/05	6.45	96.60
MW-15	04/23/05	Not Sampled	
	07/30/05	Not Sampled	
	11/05/05	Not Sampled	
MW-16	Well Abandoned		
MW-17	Well Abandoned		
MW-18 (102.71)	04/23/05	4.63	98.08
	07/30/05	5.77	96.94
	11/05/05	4.70	98.01

Notes:

[a] The depths to groundwater were measured from the top of the well casings.

[b] Groundwater elevations are relative to a temporary benchmark onsite, not mean sea level. The

NS = Well not surveyed.

TABLE 2
SUMMARY OF GROUNDWATER CHEMICAL ANALYTICAL DATA
BETX AND PETROLEUM HYDROCARBONS

FORMER UNOCAL SERVICE STATION #5533
16405 36TH AVE WEST, LYNNWOOD, WA
06940-367

Well Number	Date Sampled	BETX [1] (µg/L)				Gasoline-range Hydrocarbons [2] (µg/L)	Diesel-range Hydrocarbons [3] (µg/L)	Heavy Oil-range Hydrocarbons [3] (µg/L)
		B	E	T	NS			
MTCA Method A Cleanup Level		**5.0**	**700**	**1,000**	NS	**800**	**500**	**500**
HB-1	04/23/05	1,550	3,210	112	3,920	34,600	ND(250)	ND(500)
	07/30/05	1,530	3,050	66.3	2,480	28,100	ND(250)	ND(500)
	11/05/05	Not Sampled						
MW-1	Well Abandoned							
MW-2	Well Abandoned							
MW-03	04/23/05	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.00)	ND(50.0)	399	1,340
	07/30/05	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	313	1,140
	11/05/05	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	253	510
MW-04	04/23/05	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.00)	ND(50.0)	ND(250)	ND(500)
	07/30/05	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	715	ND(500)
	11/05/05	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	ND(248)	ND(495)
MW-05	04/23/05	147	155	14.4	135	3,660	ND(250)	ND(500)
	07/30/05	82.9	59.3	7.75	98.3	2,620	ND(250)	ND(500)
	11/05/05	71.2	32.4	5.26	3.15	2,080	ND(238)	ND(476)
	07/30/05	194	1.36	27.9	16.6	644	ND(250)	ND(500)
	11/05/05	Not Sampled						
MW-07	04/23/05	1.52	ND(0.50)	ND(0.50)	ND(1.00)	62.4	ND(250)	ND(500)
	07/30/05	0.710	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	ND(250)	ND(500)
	11/05/05	0.991	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	ND(281)	ND(562)
MW-08	04/23/05	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.00)	ND(50.0)	ND(250)	ND(500)
	07/30/05	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	ND(250)	ND(500
	11/05/05	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	ND(250)	ND(500)
MW-09	04/23/05	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.00)	ND(50.0)	ND(250)	ND(500)
	07/30/05	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	ND(250)	ND(500)
	11/05/05	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	ND(236)	ND(472)
Duplicate	11/05/05	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	ND(236)	ND(472)
MW-10	Well Abandoned							

TABLE 2
SUMMARY OF GROUNDWATER CHEMICAL ANALYTICAL DATA
BETX AND PETROLEUM HYDROCARBONS

FORMER UNOCAL SERVICE STATION #5533
16405 36TH AVE WEST, LYNNWOOD, WA
06940-367

Well Number	Date Sampled	BETX [1] (µg/L)				Gasoline-range Hydrocarbons [2] (µg/L)	Diesel-range Hydrocarbons [3] (µg/L)	Heavy Oil-range Hydrocarbons [3] (µg/L)
		B	E	T	Xylenes			
MTCA Method A Cleanup Level		**5.0**	**700**	**1,000**	NS	**800**	**500**	**500**
MW-11		Well Abandoned						
MW-12	04/23/05	296	1,890	42.5	1,210	18,500	266	ND(500)
	07/30/05[4]	--	--	--	--	--	--	--
	11/05/05	237	1,860	34.5	726	14,300	349	ND(485)
MW-13	04/23/05	2,680	3,040	7,640	15,600	81,600	804	781
	07/30/05	2,450	2,600	1,270	10,500	58,900	538	637
	11/05/05	651	1,300	1,030	3,160	24,300	317	ND(505)
MW-14	04/23/05	1.88	ND(0.500)	ND(0.500)	ND(1.00)	279	ND(250)	ND(500)
	07/30/05	0.592	ND(0.500)	ND(0.500)	ND(1.00)	75.4	ND(250)	ND(500)
	11/05/05	Not Sampled						
MW-15	04/23/05	Not Sampled						
	07/30/05	Not Sampled						
	11/05/05	Not Sampled						
MW-16		Well Abandoned						
MW-17		Well Abandoned						
MW-18	04/23/05	70.8	4.09	2.07	4.61	235	ND(250)	ND(500)
	07/30/05	107	8.67	1.61	27.6	440	ND(250)	768
	11/05/05	111	3.91	2.09	3.34	415	844	2,650

Notes:

[1] B = Benzene, E = Ethylbenzene, T = Toluene, X = Total Xylenes. Analyzed by EPA Method 8021B.

[2] Gasoline-range hydrocarbons analyzed by Northwest Method NWTPH-G or NWTPH-Gx.

[3] Diesel- and heavy oil-range hydrocarbons analyzed by Northwest Method NWTPH-D with acid/silica gel cleanup.

[4] MW-12 was not sampled due to the presence of phase-separated petroleum products.

µg/L = micrograms per liter

MTCA = Model Toxics Control Act

Laboratory chemical analyses were completed by North Creek Analytical (Bothell, WA).

TABLE 3
SUMMARY OF ADDITIONAL GROUNDWATER CHEMICAL ANALYTICAL DATA
FORMER UNOCAL SERVICE STATION #5533
16405 36TH AVE WEST, LYNNWOOD, WA
06940-367

Well Number	Date Sampled	pH[1]	Electrical Conductivity[2]	Oxidation Reduction Potential[3]	Dissolved Oxygen[4]	Temperature[5]	Ferrous Iron[6]	Total Alkalinity[7]	Nitrate-Nitrogen[8]	Total Organic Carbon[9]	Sulfate[10]
MW-3	11/5/2005	6.4	0.256	-9	3.76	16.9	2.7	33.8	0.018	11.30	2.63
MW-4	11/5/2005	-	-	-	-	-	-	313	ND(0.0100)	21.60	15.40
MW-7	11/5/2005	6.4	1.07	-7	4.53	14.2	3.4	-	-	-	-
MW-9	11/5/2005	6.2	1.03	35	NS	12.9	0.2	183	1.260	5.00	52.80
MW-9 dup	11/5/2005	-	-	-	-	-	-	184	1.060	4.90	50.20
MW-12	11/5/2005	5.9	1.21	5	NS	14.6	3.8	308	ND(0.0100)	39.80	ND(0.400)
MW-13	11/5/2005	6.0	0.94	16	NS	13.4	2.4	285	ND(0.0100)	41.60	0.92

Notes:

[1]pH measured in the field with the Horiba U-22.

[2]Electrical conductivity (mS) was measured in the field with the Horiba U-22.

[3]Oxidation reduction potential (mV) was measured in the field with the Horiba U-22.

[4]Dissolved oxygen (mg/L) was measured in the field with the Horiba U-22.

[5]Temperature (C) was measured in the field with the Horiba U-22.

[6]Ferrous iron (mg/L) was measured in the field using the Hach® Ferrous Iron Field kit.

[7]Total alkalinity (mg/L) as calcium carbonate analyzed by EPA Method 310.0.

[8]Nitrate-Nitrogen (mg/L) as nitrogen analyzed by EPA Method 353.2.

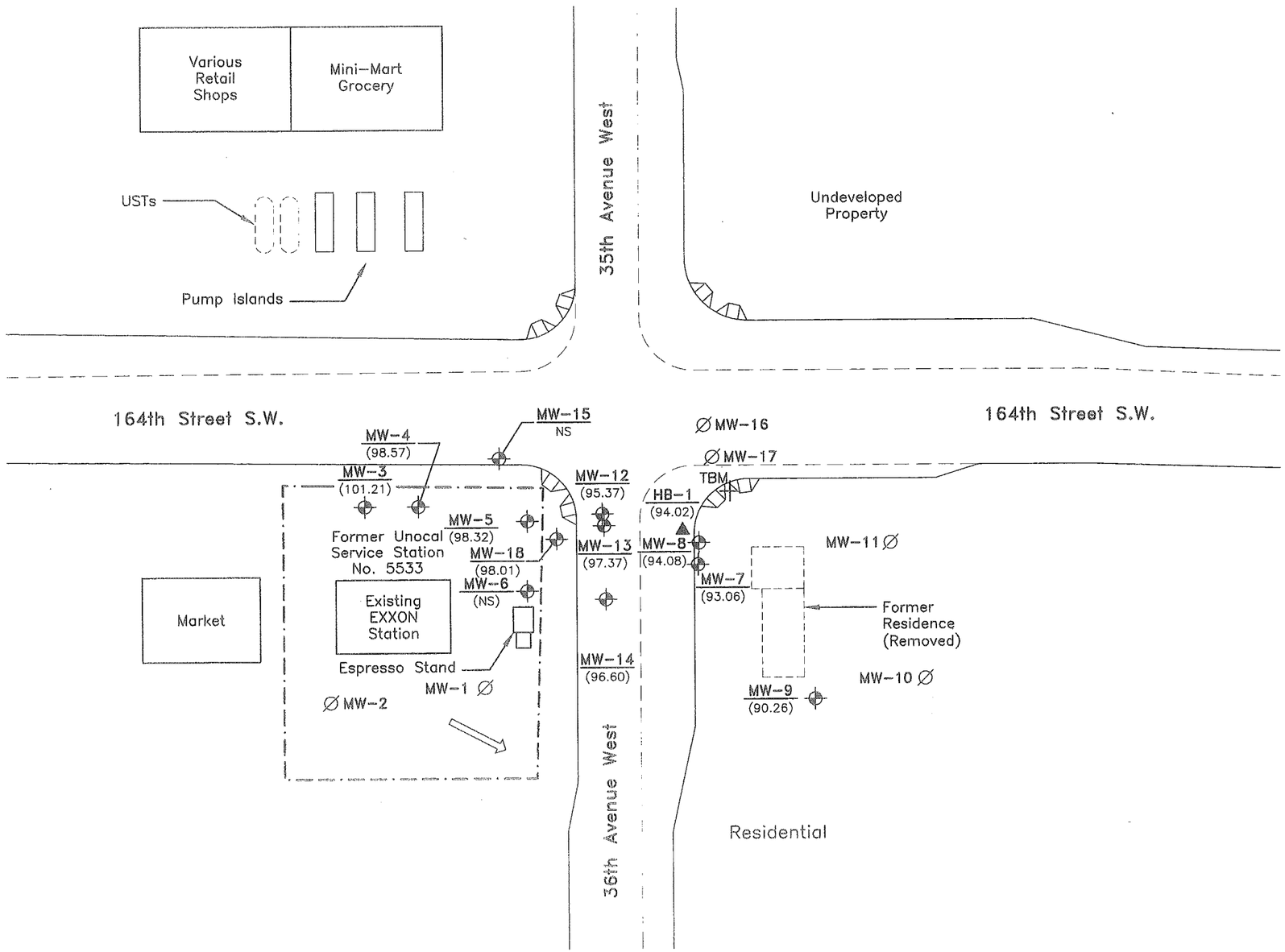
[9]Total Organic Carbon (mg/L) analyzed by EPA Method 415.1.

[10]Sulfate (mg/L) analyzed by EPA Method 300.0.

- = analysis not performed

NS = Parameter did not stabilize

Laboratory chemical analyses were completed by North Creek Analytical (Bothell, WA).



Legend

MW-9 (90.26) ⊕	Groundwater Monitoring Well / Groundwater Elevation (Feet) 11/05/05
MW-1 ∅	Decommissioned Monitoring Well
HB-1 (94.02) ▲	Existing Hand Auger Boring Location / Groundwater Elevation (Feet) 11/05/05
	Subject Property Boundary
	Pre-2003 Street Curb
(NS)	Not Surveyed
UST	Underground Storage Tank
	Approximate Groundwater Flow Direction
TBM	Temporary Benchmark; Assigned Elevation of 100.00 Ft.
NS	Not Sampled

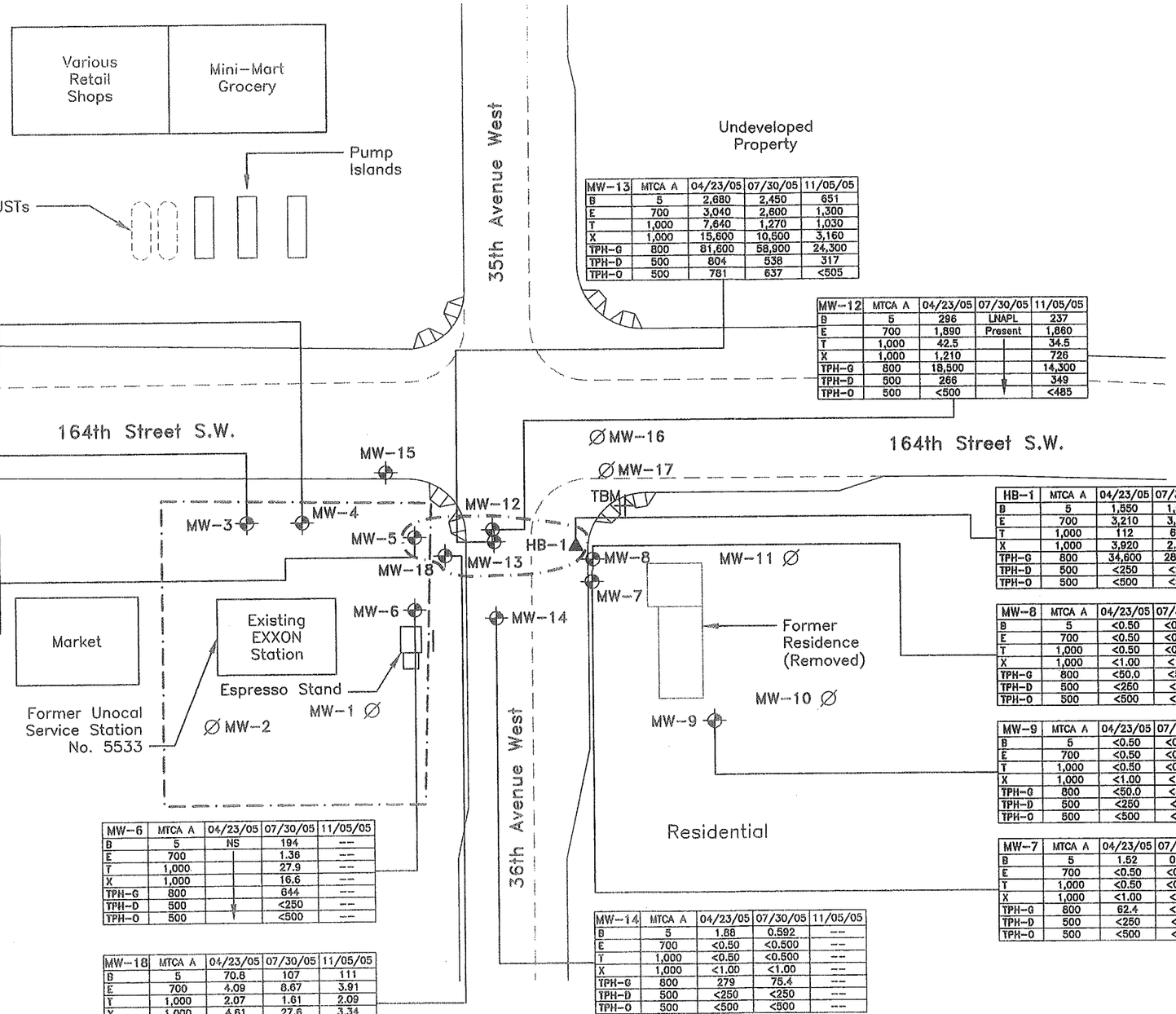
80 60 40 20 0 40 80
Approximate Scale in Feet

Source: Snohomish County Department of Public Works
Drawing #3631dr02 01/20/03
Project #RC-1068, 164th Street S.W., Spruce Way to Ash Way

SCALE:	as noted	DESIGN:	A. Cowburn	CHECKED:	A. Fekete	ENSR PROJECT NO:	
FILENAME:	0694036713U	DRAWN:	K. Mongar	DATE:	December 2, 2005	06940-367-130	

ENSR INTERNATIONAL

FIGURE 2
GROUNDWATER ELEVATIONS
NOVEMBER 5, 2005
Former Unocal Service Station No. 5533
16405 36th Avenue
Lynnwood, Washington



MW-4	MTCA A	04/23/05	07/30/05	11/05/05
B	5	<0.50	<0.500	<0.500
E	700	<0.50	<0.500	<0.500
T	1,000	<0.50	<0.500	<0.500
X	1,000	<1.00	<1.00	<1.00
TPH-G	800	<50.0	<50.0	<50.0
TPH-D	500	<250	715	<248
TPH-O	500	<500	<500	<495

MW-3	MTCA A	04/23/05	07/30/05	11/05/05
B	5	<0.50	<0.500	<0.500
E	700	<0.50	<0.500	<0.500
T	1,000	<0.50	<0.500	<0.500
X	1,000	<1.00	<1.00	<1.00
TPH-G	800	<50.0	<50.0	<50.0
TPH-D	500	399	313	253
TPH-O	500	1,340	1,140	510

MW-5	MTCA A	04/23/05	07/30/05	11/05/05
B	5	147	82.9	71.2
E	700	155	59.3	32.4
T	1,000	14.4	7.75	5.26
X	1,000	135	98.3	3.15
TPH-G	800	3,660	2,620	2,080
TPH-D	500	<250	<250	<238
TPH-O	500	<500	<500	<476

MW-13	MTCA A	04/23/05	07/30/05	11/05/05
B	5	2,680	2,450	651
E	700	3,040	2,600	1,300
T	1,000	7,640	1,270	1,030
X	1,000	15,600	10,500	3,160
TPH-G	800	81,600	58,900	24,300
TPH-D	500	804	538	317
TPH-O	500	781	637	<505

MW-12	MTCA A	04/23/05	07/30/05	11/05/05
B	5	296	LNAPL	237
E	700	1,890	Present	1,660
T	1,000	42.5		34.5
X	1,000	1,210		726
TPH-G	800	18,500		14,300
TPH-D	500	266		349
TPH-O	500	<500		<485

HB-1	MTCA A	04/23/05	07/30/05	11/05/05
B	5	1,550	1,530	Dry
E	700	3,210	3,050	
T	1,000	112	66.3	
X	1,000	3,920	2,480	
TPH-G	800	34,600	28,100	
TPH-D	500	<250	<250	
TPH-O	500	<500	<500	

MW-8	MTCA A	04/23/05	07/30/05	11/05/05
B	5	<0.50	<0.500	<0.500
E	700	<0.50	<0.500	<0.500
T	1,000	<0.50	<0.500	<0.500
X	1,000	<1.00	<1.00	<1.00
TPH-G	800	<50.0	<50.0	<50.0
TPH-D	500	<250	<250	<250
TPH-O	500	<500	<500	<500

MW-9	MTCA A	04/23/05	07/30/05	07/30/05
B	5	<0.50	<0.500	<0.500
E	700	<0.50	<0.500	<0.500
T	1,000	<0.50	<0.500	<0.500
X	1,000	<1.00	<1.00	<1.00
TPH-G	800	<50.0	<50.0	<50.0
TPH-D	500	<250	<250	<236
TPH-O	500	<500	<500	<472

MW-7	MTCA A	04/23/05	07/30/05	07/30/05
B	5	1.52	0.710	0.991
E	700	<0.50	<0.500	<0.500
T	1,000	<0.50	<0.500	<0.500
X	1,000	<1.00	<1.00	<1.00
TPH-G	800	62.4	<50.0	<50.0
TPH-D	500	<250	<250	<281
TPH-O	500	<500	<500	<562

MW-6	MTCA A	04/23/05	07/30/05	11/05/05
B	5	NS	194	---
E	700		1.36	---
T	1,000		27.9	---
X	1,000		16.6	---
TPH-G	800		644	---
TPH-D	500		<250	---
TPH-O	500		<500	---

MW-18	MTCA A	04/23/05	07/30/05	11/05/05
B	5	70.8	107	111
E	700	4.09	8.67	3.91
T	1,000	2.07	1.61	2.09
X	1,000	4.61	27.6	3.34
TPH-G	800	235	440	415
TPH-D	500	<250	<250	844
TPH-O	500	<500	768	2,650

MW-14	MTCA A	04/23/05	07/30/05	11/05/05
B	5	1.88	0.592	---
E	700	<0.50	<0.500	---
T	1,000	<0.50	<0.500	---
X	1,000	<1.00	<1.00	---
TPH-G	800	279	75.4	---
TPH-D	500	<250	<250	---
TPH-O	500	<500	<500	---

Legend

- MW-9 — Groundwater Monitoring Well
- MW-1 — Decommissioned Monitoring Well
- HB-1 — Hand Auger Boring Location
- Subject Property Boundary
- Pre-2003 Street Curb
- Approximate Area of Contamination
- NS — Well not sampled. Unable to locate.
- -- — Well not sampled
- LNAPL — LNAPL present. Well not sampled.
- UST — Underground Storage Tank
- TBM — Temporary Benchmark; Assumed Elevation of 100.00 Ft.
- B — Benzene
- E — Ethylbenzene
- T — Toluene
- X — Total Xylenes
- TPH-G — Total Petroleum Hydrocarbons as Gasoline
- TPH-D — Total Petroleum Hydrocarbons as Diesel
- TPH-O — Total Petroleum Hydrocarbons as Heavy Oil

All results given in micrograms per liter (µg/L)

80 60 40 20 0 40 80

Approximate Scale in Feet

Source: Snohomish County Department of Public Works
Drawing #3631dr02 01/20/03
Project #RC-1068, 164th Street S.W., Spruce Way to Ash Way

SCALE: as noted	DESIGN: A. Cowburn	CHECKED: A. Fekete	ENSR PROJECT NO:	ENSR INTERNATIONAL
FILENAME: 0694036713T	DRAWN: K. Mongar	DATE: December 2, 2005	06940-367-130	

FIGURE 3

SUMMARY OF GROUNDWATER ANALYTICAL DATA - NOVEMBER 5, 2005

Former Unocal Service Station No. 5533
16405 36th Avenue
Lynnwood, Washington

www.ncalabs.com

Seattle	11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244 425.420.9200 fax 425.420.9210
Spokane	East 11115 Montgomery, Suite B, Spokane, WA 99206-4776 509.924.9200 fax 509.924.9290
Portland	9405 SW Nimbus Avenue, Beaverton, OR 97008-7132 503.906.9200 fax 503.906.9210
Bend	20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 541.383.9310 fax 541.382.7588
Anchorage	2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119 907.563.9200 fax 907.563.9210

21 November 2005

Art Cowburn
ENSR-Redmond
9521 Willows Road NE
Redmond, WA 98052

RE: UNOCAL #5533

Enclosed are the results of analyses for samples received by the laboratory on 11/07/05 09:35. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Cherie Howland

Cherie Howland For Jeff Gerdes
Project Manager

www.ncalabs.com

Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
Spokane 11922 E. 1st Avenue, Spokane Valley, WA 99206-5302
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588
Anchorage 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119
907.563.9200 fax 907.563.9210

ENSR-Redmond	Project: UNOCAL #5533	
9521 Willows Road NE	Project Number: 06940-367-120	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	11/21/05 12:09

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
5533-MW3-110505	B5K0131-01	Water	11/05/05 14:50	11/07/05 09:35
5533-MW4-110505	B5K0131-02	Water	11/05/05 13:30	11/07/05 09:35
5533-MW5-110505	B5K0131-03	Water	11/05/05 14:15	11/07/05 09:35
5533-MW8-110505	B5K0131-04	Water	11/05/05 12:15	11/07/05 09:35
5533-MW9-110505	B5K0131-05	Water	11/05/05 12:30	11/07/05 09:35
5533-MW12-110505	B5K0131-06	Water	11/05/05 08:45	11/07/05 09:35
5533-MW13-110505	B5K0131-07	Water	11/05/05 09:20	11/07/05 09:35
5533-MW18-110505	B5K0131-08	Water	11/05/05 14:32	11/07/05 09:35
5533-MW20-110505	B5K0131-09	Water	11/05/05 12:35	11/07/05 09:35
5533-MW7-110505	B5K0131-10	Water	11/05/05 11:40	11/07/05 09:35

North Creek Analytical - Bothell

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Cherie Howland

Cherie Howland For Jeff Gerdes, Project Manager

www.ncalabs.com

Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
Spokane 11922 E. 1st Avenue, Spokane Valley, WA 99206-5302
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588
Anchorage 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119
907.563.9200 fax 907.563.9210

ENSR-Redmond	Project: UNOCAL #5533	
9521 Willows Road NE	Project Number: 06940-367-120	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	11/21/05 12:09

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
5533-MW3-110505 (B5K0131-01) Water	**Sampled: 11/05/05 14:50 Received: 11/07/05 09:35**								
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	5K08005	11/08/05	11/08/05	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*89.5 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*102 %*	*68-140*			"	"	"	"	
5533-MW4-110505 (B5K0131-02) Water	**Sampled: 11/05/05 13:30 Received: 11/07/05 09:35**								
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	5K08005	11/08/05	11/08/05	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*89.2 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*97.8 %*	*68-140*			"	"	"	"	
5533-MW5-110505 (B5K0131-03) Water	**Sampled: 11/05/05 14:15 Received: 11/07/05 09:35**								
Gasoline Range Hydrocarbons	**2080**	50.0	ug/l	1	5K08005	11/08/05	11/08/05	NWTPH-Gx/8021B	
Benzene	**71.2**	0.500	"	"	"	"	"	"	
Toluene	**5.26**	0.500	"	"	"	"	"	"	
Ethylbenzene	**32.4**	0.500	"	"	"	"	"	"	
Xylenes (total)	**3.15**	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*200 %*	*58-144*			"	"	"	"	*S-04*
Surrogate: 4-BFB (PID)	*151 %*	*68-140*			"	"	"	"	*S-04*

North Creek Analytical - Bothell

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Cherie Howland For Jeff Gerdes, Project Manager

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ENSR-Redmond	Project: UNOCAL #5533	
9521 Willows Road NE	Project Number: 06940-367-120	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	11/21/05 12:09

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
5533-MW8-110505 (B5K0131-04) Water Sampled: 11/05/05 12:15 Received: 11/07/05 09:35									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	5K08005	11/08/05	11/08/05	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*87.8 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*102 %*	*68-140*			"	"	"	"	
5533-MW9-110505 (B5K0131-05) Water Sampled: 11/05/05 12:30 Received: 11/07/05 09:35									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	5K08005	11/08/05	11/08/05	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*89.2 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*100 %*	*68-140*			"	"	"	"	
5533-MW12-110505 (B5K0131-06) Water Sampled: 11/05/05 08:45 Received: 11/07/05 09:35									
Gasoline Range Hydrocarbons	**14300**	1000	ug/l	20	5K08005	11/08/05	11/09/05	NWTPH-Gx/8021B	
Benzene	**237**	10.0	"	"	"	"	"	"	
Toluene	**34.5**	10.0	"	"	"	"	"	"	
Ethylbenzene	**1860**	10.0	"	"	"	"	"	"	
Xylenes (total)	**726**	20.0	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*116 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*108 %*	*68-140*			"	"	"	"	

North Creek Analytical - Bothell

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ENSR-Redmond	Project: UNOCAL #5533	
9521 Willows Road NE	Project Number: 06940-367-120	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	11/21/05 12:09

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
5533-MW13-110505 (B5K0131-07) Water Sampled: 11/05/05 09:20 Received: 11/07/05 09:35									
Gasoline Range Hydrocarbons	**24300**	500	ug/l	10	5K08005	11/08/05	11/08/05	NWTPH-Gx/8021B	
Benzene	**651**	5.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*129 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*111 %*	*68-140*			"	"	"	"	
5533-MW13-110505 (B5K0131-07RE1) Water Sampled: 11/05/05 09:20 Received: 11/07/05 09:35									
Toluene	**1030**	10.0	ug/l	20	5K08005	11/08/05	11/09/05	NWTPH-Gx/8021B	
Ethylbenzene	**1300**	10.0	"	"	"	"	"	"	
Xylenes (total)	**3160**	20.0	"	"	"	"	"	"	
Surrogate: 4-BFB (PID)	*106 %*	*68-140*			"	"	"	"	
5533-MW18-110505 (B5K0131-08) Water Sampled: 11/05/05 14:32 Received: 11/07/05 09:35									
Gasoline Range Hydrocarbons	**415**	50.0	ug/l	1	5K08005	11/08/05	11/08/05	NWTPH-Gx/8021B	
Surrogate: 4-BFB (FID)	*103 %*	*58-144*			"	"	"	"	
5533-MW18-110505 (B5K0131-08RE1) Water Sampled: 11/05/05 14:32 Received: 11/07/05 09:35									
Benzene	**111**	1.25	ug/l	2.5	5K08005	11/08/05	11/09/05	NWTPH-Gx/8021B	
Toluene	**2.09**	1.25	"	"	"	"	"	"	
Ethylbenzene	**3.91**	1.25	"	"	"	"	"	"	
Xylenes (total)	**3.34**	2.50	"	"	"	"	"	"	
Surrogate: 4-BFB (PID)	*100 %*	*68-140*			"	"	"	"	
5533-MW20-110505 (B5K0131-09) Water Sampled: 11/05/05 12:35 Received: 11/07/05 09:35									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	5K08005	11/08/05	11/09/05	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*88.5 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*100 %*	*68-140*			"	"	"	"	

North Creek Analytical - Bothell

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ENSR-Redmond	Project: UNOCAL #5533	
9521 Willows Road NE	Project Number: 06940-367-120	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	11/21/05 12:09

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
5533-MW7-110505 (B5K0131-10) Water Sampled: 11/05/05 11:40 Received: 11/07/05 09:35									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	5K08005	11/08/05	11/09/05	NWTPH-Gx/8021B	
Benzene	**0.991**	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*88.3 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*99.2 %*	*68-140*			"	"	"	"	

North Creek Analytical - Bothell

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ENSR-Redmond	Project: UNOCAL #5533	
9521 Willows Road NE	Project Number: 06940-367-120	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	11/21/05 12:09

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
5533-MW3-110505 (B5K0131-01) Water	**Sampled: 11/05/05 14:50**		**Received: 11/07/05 09:35**						
Diesel Range Hydrocarbons	**253**	245	ug/l	1	5K09009	11/09/05	11/11/05	NWTPH-Dx	D-09
Lube Oil Range Hydrocarbons	**510**	490	"	"	"	"	"	"	
Surrogate: 2-FBP	*66.9 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*91.4 %*	*50-150*			"	"	"	"	
5533-MW4-110505 (B5K0131-02) Water	**Sampled: 11/05/05 13:30**		**Received: 11/07/05 09:35**						
Diesel Range Hydrocarbons	ND	248	ug/l	1	5K09009	11/09/05	11/11/05	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	495	"	"	"	"	"	"	
Surrogate: 2-FBP	*65.3 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*93.1 %*	*50-150*			"	"	"	"	
5533-MW5-110505 (B5K0131-03) Water	**Sampled: 11/05/05 14:15**		**Received: 11/07/05 09:35**						
Diesel Range Hydrocarbons	ND	238	ug/l	1	5K09009	11/09/05	11/11/05	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	476	"	"	"	"	"	"	
Surrogate: 2-FBP	*71.8 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*95.0 %*	*50-150*			"	"	"	"	
5533-MW8-110505 (B5K0131-04) Water	**Sampled: 11/05/05 12:15**		**Received: 11/07/05 09:35**						
Diesel Range Hydrocarbons	ND	250	ug/l	1	5K09009	11/09/05	11/11/05	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	500	"	"	"	"	"	"	
Surrogate: 2-FBP	*79.6 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*93.6 %*	*50-150*			"	"	"	"	
5533-MW9-110505 (B5K0131-05) Water	**Sampled: 11/05/05 12:30**		**Received: 11/07/05 09:35**						
Diesel Range Hydrocarbons	ND	236	ug/l	1	5K09009	11/09/05	11/11/05	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	472	"	"	"	"	"	"	
Surrogate: 2-FBP	*77.5 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*91.9 %*	*50-150*			"	"	"	"	

North Creek Analytical - Bothell

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ENSR-Redmond	Project: UNOCAL #5533	
9521 Willows Road NE	Project Number: 06940-367-120	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	11/21/05 12:09

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
5533-MW12-110505 (B5K0131-06) Water Sampled: 11/05/05 08:45 Received: 11/07/05 09:35									
Diesel Range Hydrocarbons	**349**	243	ug/l	1	5K09009	11/09/05	11/11/05	NWTPH-Dx	D-08
Lube Oil Range Hydrocarbons	ND	485	"	"	"	"	"	"	
Surrogate: 2-FBP	*72.8 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*95.9 %*	*50-150*			"	"	"	"	
5533-MW13-110505 (B5K0131-07) Water Sampled: 11/05/05 09:20 Received: 11/07/05 09:35									
Diesel Range Hydrocarbons	**317**	253	ug/l	1	5K09009	11/09/05	11/11/05	NWTPH-Dx	D-08
Lube Oil Range Hydrocarbons	ND	505	"	"	"	"	"	"	
Surrogate: 2-FBP	*65.6 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*88.1 %*	*50-150*			"	"	"	"	
5533-MW18-110505 (B5K0131-08) Water Sampled: 11/05/05 14:32 Received: 11/07/05 09:35									
Diesel Range Hydrocarbons	**844**	476	ug/l	1	5K09009	11/09/05	11/11/05	NWTPH-Dx	D-06
Lube Oil Range Hydrocarbons	**2650**	952	"	"	"	"	"	"	
Surrogate: 2-FBP	*66.8 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*99.2 %*	*50-150*			"	"	"	"	
5533-MW20-110505 (B5K0131-09) Water Sampled: 11/05/05 12:35 Received: 11/07/05 09:35									
Diesel Range Hydrocarbons	ND	236	ug/l	1	5K09009	11/09/05	11/11/05	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	472	"	"	"	"	"	"	
Surrogate: 2-FBP	*62.3 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*84.7 %*	*50-150*			"	"	"	"	
5533-MW7-110505 (B5K0131-10) Water Sampled: 11/05/05 11:40 Received: 11/07/05 09:35									
Diesel Range Hydrocarbons	ND	281	ug/l	1	5K09009	11/09/05	11/11/05	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	562	"	"	"	"	"	"	
Surrogate: 2-FBP	*52.0 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*90.0 %*	*50-150*			"	"	"	"	

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ENSR-Redmond	Project: UNOCAL #5533	
9521 Willows Road NE	Project Number: 06940-367-120	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	11/21/05 12:09

Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
5533-MW3-110505 (B5K0131-01) Water	**Sampled: 11/05/05 14:50 Received: 11/07/05 09:35**								
Total Alkalinity	**33.8**	5.00	mg/L as CaCO3	1	5K08070	11/08/05	11/08/05	EPA 310.1	
Nitrate-Nitrogen	**18.1**	10.0	ug/l as N	"	5K07050	11/07/05	11/07/05	EPA 353.2	I-02
Total Organic Carbon	**11300**	2000	ug/l	"	5K10037	11/09/05	11/09/05	EPA 415.1	
5533-MW4-110505 (B5K0131-02) Water	**Sampled: 11/05/05 13:30 Received: 11/07/05 09:35**								
Total Alkalinity	**313**	5.00	mg/L as CaCO3	1	5K08070	11/08/05	11/08/05	EPA 310.1	
Nitrate-Nitrogen	ND	10.0	ug/l as N	"	5K07050	11/07/05	11/07/05	EPA 353.2	I-02
Total Organic Carbon	**21600**	2000	ug/l	"	5K10037	11/09/05	11/09/05	EPA 415.1	
5533-MW9-110505 (B5K0131-05) Water	**Sampled: 11/05/05 12:30 Received: 11/07/05 09:35**								
Total Alkalinity	**183**	5.00	mg/L as CaCO3	1	5K08070	11/08/05	11/08/05	EPA 310.1	
Nitrate-Nitrogen	**1260**	10.0	ug/l as N	"	5K07050	11/07/05	11/07/05	EPA 353.2	I-02
Total Organic Carbon	**5000**	2000	ug/l	"	5K10037	11/09/05	11/09/05	EPA 415.1	
5533-MW12-110505 (B5K0131-06) Water	**Sampled: 11/05/05 08:45 Received: 11/07/05 09:35**								
Total Alkalinity	**308**	5.00	mg/L as CaCO3	1	5K08070	11/08/05	11/08/05	EPA 310.1	
Nitrate-Nitrogen	ND	10.0	ug/l as N	"	5K07050	11/07/05	11/07/05	EPA 353.2	I-05
Total Organic Carbon	**39800**	2000	ug/l	"	5K10037	11/09/05	11/09/05	EPA 415.1	
5533-MW13-110505 (B5K0131-07) Water	**Sampled: 11/05/05 09:20 Received: 11/07/05 09:35**								
Total Alkalinity	**285**	5.00	mg/L as CaCO3	1	5K08070	11/08/05	11/08/05	EPA 310.1	
Nitrate-Nitrogen	ND	10.0	ug/l as N	"	5K07050	11/07/05	11/07/05	EPA 353.2	I-05
Total Organic Carbon	**41600**	2000	ug/l	"	5K10037	11/09/05	11/09/05	EPA 415.1	
5533-MW20-110505 (B5K0131-09) Water	**Sampled: 11/05/05 12:35 Received: 11/07/05 09:35**								
Total Alkalinity	**184**	5.00	mg/L as CaCO3	1	5K08070	11/08/05	11/08/05	EPA 310.1	
Nitrate-Nitrogen	**1060**	10.0	ug/l as N	"	5K07050	11/07/05	11/07/05	EPA 353.2	I-02
Total Organic Carbon	**4900**	2000	ug/l	"	5K10037	11/09/05	11/09/05	EPA 415.1	

North Creek Analytical - Bothell

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ENSR-Redmond	Project: UNOCAL #5533	
9521 Willows Road NE	Project Number: 06940-367-120	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	11/21/05 12:09

Anions by EPA Method 300.0

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
5533-MW3-110505 (B5K0131-01) Water	**Sampled: 11/05/05 14:50 Received: 11/07/05 09:35**								
Sulfate	**2630**	400	ug/l	1	5K16061	11/16/05	11/16/05	EPA 300.0	
5533-MW4-110505 (B5K0131-02) Water	**Sampled: 11/05/05 13:30 Received: 11/07/05 09:35**								
Sulfate	**15400**	800	ug/l	2	5K16061	11/16/05	11/16/05	EPA 300.0	
5533-MW9-110505 (B5K0131-05) Water	**Sampled: 11/05/05 12:30 Received: 11/07/05 09:35**								
Sulfate	**52800**	4000	ug/l	10	5K16061	11/16/05	11/16/05	EPA 300.0	
5533-MW12-110505 (B5K0131-06) Water	**Sampled: 11/05/05 08:45 Received: 11/07/05 09:35**								
Sulfate	ND	400	ug/l	1	5K16061	11/16/05	11/16/05	EPA 300.0	
5533-MW13-110505 (B5K0131-07) Water	**Sampled: 11/05/05 09:20 Received: 11/07/05 09:35**								
Sulfate	**923**	400	ug/l	1	5K16061	11/16/05	11/16/05	EPA 300.0	
5533-MW20-110505 (B5K0131-09) Water	**Sampled: 11/05/05 12:35 Received: 11/07/05 09:35**								
Sulfate	**50200**	4000	ug/l	10	5K16061	11/16/05	11/16/05	EPA 300.0	

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Cherie Howland For Jeff Gerdes, Project Manager

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ENSR-Redmond	Project: UNOCAL #5533	
9521 Willows Road NE	Project Number: 06940-367-120	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	11/21/05 12:09

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5K08005: Prepared 11/08/05 Using EPA 5030B (P/T)										
Blank (5K08005-BLK1)										
Gasoline Range Hydrocarbons	ND	50.0	ug/l							
Benzene	ND	0.500	"							
Toluene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
Xylenes (total)	ND	1.00	"							
Surrogate: 4-BFB (FID)	*53.5*		"	*60.0*		*89.2*	*58-144*			
Surrogate: 4-BFB (PID)	*60.0*		"	*60.0*		*100*	*68-140*			
LCS (5K08005-BS1)										
Gasoline Range Hydrocarbons	1020	50.0	ug/l	1000		102	80-120			
Benzene	12.5	0.500	"	11.3		111	80-120			
Toluene	72.0	0.500	"	84.4		85.3	80-120			
Ethylbenzene	15.3	0.500	"	16.9		90.5	80-120			
Xylenes (total)	83.6	1.00	"	98.3		85.0	80-120			
Surrogate: 4-BFB (FID)	*59.9*		"	*60.0*		*99.8*	*58-144*			
Surrogate: 4-BFB (PID)	*54.4*		"	*60.0*		*90.7*	*68-140*			
LCS Dup (5K08005-BSD1)										
Gasoline Range Hydrocarbons	989	50.0	ug/l	1000		98.9	80-120	3.09	25	
Benzene	12.2	0.500	"	11.3		108	80-120	2.43	25	
Toluene	70.4	0.500	"	84.4		83.4	80-120	2.25	25	
Ethylbenzene	14.9	0.500	"	16.9		88.2	80-120	2.65	25	
Xylenes (total)	81.4	1.00	"	98.3		82.8	80-120	2.67	25	
Surrogate: 4-BFB (FID)	*59.4*		"	*60.0*		*99.0*	*58-144*			
Surrogate: 4-BFB (PID)	*54.5*		"	*60.0*		*90.8*	*68-140*			
Matrix Spike (5K08005-MS1)					**Source: B5K0131-05**					
Gasoline Range Hydrocarbons	1060	50.0	ug/l	1000	ND	106	58-129			
Benzene	13.4	0.500	"	11.3	ND	119	46-130			
Toluene	75.7	0.500	"	84.4	ND	89.7	60-124			
Ethylbenzene	15.9	0.500	"	16.9	ND	94.1	56-141			
Xylenes (total)	85.8	1.00	"	98.3	ND	87.3	66-132			
Surrogate: 4-BFB (FID)	*59.0*		"	*60.0*		*98.3*	*58-144*			
Surrogate: 4-BFB (PID)	*53.1*		"	*60.0*		*88.5*	*68-140*			

North Creek Analytical - Bothell

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ENSR-Redmond	Project: UNOCAL #5533	
9521 Willows Road NE	Project Number: 06940-367-120	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	11/21/05 12:09

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5K08005: Prepared 11/08/05 Using EPA 5030B (P/T)										
Matrix Spike Dup (5K08005-MSD1)					**Source: B5K0131-05**					
Gasoline Range Hydrocarbons	998	50.0	ug/l	1000	ND	99.8	58-129	6.03	25	
Benzene	12.8	0.500	"	11.3	ND	113	46-130	4.58	40	
Toluene	73.4	0.500	"	84.4	ND	87.0	60-124	3.09	40	
Ethylbenzene	15.3	0.500	"	16.9	ND	90.5	56-141	3.85	40	
Xylenes (total)	83.4	1.00	"	98.3	ND	84.8	66-132	2.84	40	
Surrogate: 4-BFB (FID)	*57.4*		"	*60.0*		*95.7*	*58-144*			
Surrogate: 4-BFB (PID)	*53.4*		"	*60.0*		*89.0*	*68-140*			

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ENSR-Redmond	Project: UNOCAL #5533	
9521 Willows Road NE	Project Number: 06940-367-120	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	11/21/05 12:09

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5K09009: Prepared 11/09/05 Using EPA 3520C										
Blank (5K09009-BLK1)										
Diesel Range Hydrocarbons	ND	250	ug/l							
Lube Oil Range Hydrocarbons	ND	500	"							
Surrogate: 2-FBP	*178*		"	*250*		*71.2*	*50-150*			
Surrogate: Octacosane	*229*		"	*250*		*91.6*	*50-150*			
LCS (5K09009-BS1)										
Diesel Range Hydrocarbons	1610	250	ug/l	2000		80.5	45-119			
Surrogate: 2-FBP	*137*		"	*250*		*54.8*	*50-150*			
LCS Dup (5K09009-BSD1)										
Diesel Range Hydrocarbons	1980	250	ug/l	2000		99.0	45-119	20.6	35	
Surrogate: 2-FBP	*209*		"	*250*		*83.6*	*50-150*			
Duplicate (5K09009-DUP1)					**Source: B5K0131-01**					
Diesel Range Hydrocarbons	420	245	ug/l		253			49.6	50	
Lube Oil Range Hydrocarbons	1040	490	"		510			68.4	50	Q-14
Surrogate: 2-FBP	*138*		"	*245*		*56.3*	*50-150*			
Surrogate: Octacosane	*211*		"	*245*		*86.1*	*50-150*			

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ENSR-Redmond	Project: UNOCAL #5533	
9521 Willows Road NE	Project Number: 06940-367-120	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	11/21/05 12:09

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5K07050: Prepared 11/07/05 Using General Preparation										
Blank (5K07050-BLK1)										
Nitrate-Nitrogen	ND	10.0	ug/l as N							
LCS (5K07050-BS1)										
Nitrate-Nitrogen	1030	10.0	ug/l as N	1000		103	90-110			
LCS Dup (5K07050-BSD1)										
Nitrate-Nitrogen	1040	10.0	ug/l as N	1000		104	90-110	0.966	20	
Duplicate (5K07050-DUP1)					**Source: B5K0131-01**					
Nitrate-Nitrogen	20.4	10.0	ug/l as N		18.1			11.9	20	
Matrix Spike (5K07050-MS1)					**Source: B5K0131-01**					
Nitrate-Nitrogen	899	10.0	ug/l as N	1000	18.1	88.1	36-150			
Batch 5K08070: Prepared 11/08/05 Using General Preparation										
Blank (5K08070-BLK1)										
Total Alkalinity	ND	5.00	mg/L as CaCO3							
LCS (5K08070-BS1)										
Total Alkalinity	50.6	5.00	mg/L as CaCO3	50.0		101	90-110			
LCS Dup (5K08070-BSD1)										
Total Alkalinity	50.6	5.00	mg/L as CaCO3	50.0		101	90-110	0.00	20	
Duplicate (5K08070-DUP1)					**Source: B5K0131-01**					
Total Alkalinity	33.4	5.00	mg/L as CaCO3		33.8			1.19	20	

North Creek Analytical - Bothell

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ENSR-Redmond	Project: UNOCAL #5533	
9521 Willows Road NE	Project Number: 06940-367-120	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	11/21/05 12:09

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5K10037: Prepared 11/09/05 Using General Preparation										
Blank (5K10037-BLK1)										
Total Organic Carbon	ND	2000	ug/l							
LCS (5K10037-BS1)										
Total Organic Carbon	25700	2000	ug/l	25000		103	90-110			
LCS Dup (5K10037-BSD1)										
Total Organic Carbon	25900	2000	ug/l	25000		104	90-110	0.775	20	
Duplicate (5K10037-DUP1)					**Source: B5J0520-01**					
Total Organic Carbon	1900	2000	ug/l		2100			10.0	25	
Matrix Spike (5K10037-MS1)					**Source: B5J0520-01**					
Total Organic Carbon	28700	2000	ug/l	25000	2100	106	70-125			

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ENSR-Redmond	Project: UNOCAL #5533	
9521 Willows Road NE	Project Number: 06940-367-120	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	11/21/05 12:09

Anions by EPA Method 300.0 - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5K16061: Prepared 11/16/05 Using General Preparation										
Blank (5K16061-BLK1)										
Sulfate	ND	400	ug/l							
LCS (5K16061-BS1)										
Sulfate	5690	400	ug/l	6000		94.8	90-110			
LCS Dup (5K16061-BSD1)										
Sulfate	5820	400	ug/l	6000		97.0	90-110	2.26	20	
Duplicate (5K16061-DUP1)					**Source: B5K0030-02**					
Sulfate	7960	800	ug/l		7740			2.80	25	
Duplicate (5K16061-DUP2)					**Source: B5K0131-06**					
Sulfate	142	400	ug/l		145			2.09	25	
Duplicate (5K16061-DUP3)					**Source: B5J0520-06**					
Sulfate	18800	800	ug/l		18400			2.15	25	
Matrix Spike (5K16061-MS1)					**Source: B5K0030-02**					
Sulfate	13500	2000	ug/l	6000	7740	96.0	58-135			
Matrix Spike (5K16061-MS2)					**Source: B5K0131-06**					
Sulfate	6220	400	ug/l	6000	145	101	58-135			

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ENSR-Redmond	Project: UNOCAL #5533	
9521 Willows Road NE	Project Number: 06940-367-120	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	11/21/05 12:09

Notes and Definitions

D-06	The sample chromatographic pattern does not resemble the fuel standard used for quantitation.
D-08	Results in the diesel organics range are primarily due to overlap from a gasoline range product.
D-09	Results in the diesel organics range are primarily due to overlap from a heavy oil range product.
I-02	This sample was analyzed outside of the recommended holding time.
I-05	Since the sample was out of hold at the time of receipt, the preparation/analysis of the sample could not be initiated within the method-specified hold time.
Q-14	Visual examination indicates the RPD and/or matrix spike recovery is outside the control limit due to a non-homogeneous sample matrix.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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Unocal #5533 Pennock
Lynnwood

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Groundwater Monitoring Report
Third Quarter 2005

Site Name:	Former Unocal Service Station #5533
Site Address:	16405 36th Avenue West
City, State, ZIP:	Lynnwood, Washington, 98037

Report Date:	October 18, 2005
ENSR Project No:	06940-367
DOE Facility No:	74865182
LUST No:	200441
DOE Contact Name:	Mr. Joe Hickey
Client:	Union Oil Company of California (Unocal) 276 Tank Farm Road, PO Box 1069 San Luis Obispo, CA 93406
Unocal Project Manager:	Mr. Paul Lindquist
ENSR Project Manager:	Art Cowburn
Sampling Date:	July 30, 2005

INTRODUCTION:

This groundwater monitoring report is prepared for former Unocal Service Station #5533 located at 16405 36th Avenue West, Lynnwood, Washington (Figure 1). Groundwater elevations and sample analytical results are presented in the attached tables. On July 30, 2005, MW-3 through MW-9, MW-12 through MW-14, MW-18, and HB-1 were gauged and sampled. MW-12 was not sampled due to the presence light non-aqueous phase liquid (LNAPL) hydrocarbons. This was the first observation of LNAPL in MW-12.

Two geologic units with different hydraulic conductivities are present at this location. The upper geologic unit is a silty-sand (higher hydraulic conductivity) that was used as fill to approximately eight feet below current ground surface. The water found in the fill appears to be surface infiltration which is slowly transmitted to the lower geologic unit. The deeper geologic unit is weathered till (lower hydraulic conductivity) and begins at a depth of approximately eight feet below ground surface (bgs). Two pairs of monitoring wells are screened at different intervals and distinguish between the geologic units. MW-12 and MW-7 are screened over groundwater (deeper) from approximately eight to eighteen feet and fourteen to twenty-four feet bgs, respectively. MW-13 and MW-8 are screened (shallower) from approximately two to seven and nine to fourteen feet bgs, respectively. The wells which are only screened in the fill include MW-

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8, MW-13, and HB-1. These wells have slow recharge and are quickly purged dry during sampling.

SAMPLING METHODS:

The volume of water in each well was calculated using the known diameter, total well depth, and the depth to water measurements. A disposable polyethylene bailer was used to remove a minimum of three well volumes of water prior to sample collection.

Groundwater samples were collected from each monitoring well by slowly lowering the bailer into the well, thus minimizing the potential for volatilization of dissolved volatile organic compounds (if present). The bailer was retrieved from the well, and the water was slowly transferred into clean, laboratory-supplied containers. Each sample was labeled, placed into an iced cooler, and submitted by ENSR to North Creek Analytical (Bothell, WA) using standard chain-of-custody protocol. During this groundwater sampling event, a total of 55 gallons of purge water were generated. The purge water was stored in a properly labeled 55 gallon drum for subsequent pickup by a disposal service contractor.

GROUNDWATER FLOW DIRECTION:

Each well was gauged using an electronic water-level meter with water depths measured relative to the top of well casing. In wells screened over the aquifer, the depths to groundwater ranged from 3.99 feet (MW-3) to 9.24 feet (MW-7) below ground surface (Table 1). Relative groundwater elevations ranged from 89.52 feet (MW-9) to 99.98 feet (MW-3) (Figure 2).

In the upper geologic unit (fill), the depths to groundwater ranged from to 5.95 feet (MW-13) to 8.97 feet (MW-8) below ground surface (Table 1). Relative groundwater elevations ranged from 92.36 feet (MW-8) to 96.18 feet (MW-13) (Figure 2).

Groundwater elevations are relative to a temporary benchmark onsite. The location of the temporary benchmark is a light pole numbered 164/36#2 on the southeast corner of the intersection of 164th Street SW and 36th Avenue West, top of bolt. According to measurements taken on July 30, 2005, groundwater beneath the site flows to the southeast (Figure 2).

ANALYTICAL METHODS:

Groundwater samples were analyzed for benzene, ethylbenzene, toluene, and total xylenes (BETX) by EPA Method 8021B, total petroleum hydrocarbons (TPH) as gasoline (TPH-G) by Northwest Method NWTPH-G, TPH as diesel (TPH-D) and TPH as heavy oil (TPH-O) by Northwest Method NWTPH-Dx with acid/silica gel cleanup.

ANALYTICAL RESULTS

The groundwater analytical results were compared with the Washington Model Toxics Control Act (MTCA) Method A Cleanup Levels.

Analytical results from the July 30, 2005 samples show BETX compounds detected above the MTCA Method A cleanup levels in samples from groundwater monitoring wells MW-5, MW-6, HB-1, MW-12, MW-13, and MW-18 (Table 2).

TPH as gasoline, diesel and/or heavy oil were detected above the MTCA Method A cleanup levels in samples from groundwater monitoring wells MW-3, MW-4, MW-5, HB-1, MW-12, MW-13 and MW-18 (Table 2).

DISCUSSION

Analytical results show petroleum constituents exceed the MTCA Method A cleanup levels were present in groundwater samples from MW-3, MW-4, MW-5, MW-6, HB-1, MW-12, MW-13, and MW-18.

Data indicates a plume of contaminated groundwater exists in both geologic units under 36th Avenue West between groundwater monitoring wells MW-5 and HB-1 (Figure 3). Other contaminated monitoring wells (MW-12, MW-13, and MW-18) are also located within this area. This quarter LNAPL was observed in MW-12 for the first time.

All monitoring wells outside this area, with the exception of MW-3 and MW-4 located near the fuel island, do not contain contaminants that exceed the MTCA Method A reporting levels (Figure 3). The THP-O in MW-3 and the TPH-D in MW-4 may be the result of incursion of contaminated surface water. Contaminated water has been observed accumulating in both of these well boxes. Drips and spills of petroleum products from automobiles have stained the asphalt in the area. A work plan is being prepared for the repair of groundwater monitoring wells MW-3 and MW-4 to eliminate the possibility of surface water entering the well box.

LIMITATIONS

The interpretations in this report represent our professional opinions and are based, in part, on the information supplied by the client. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

Art Cowburn
Project Manager

Akos Fekete, LG
Senior Project Manager

State of Washington
1272
Licensed Geologist
Akos Paul Fekete

Attachments

Table 1 – Summary of Groundwater Elevations
Table 2 – Summary of Groundwater Chemical Analytical Data
Figure 1 – Site Location
Figure 2 – Groundwater Elevations July 30, 2005
Figure 3 – Summary of Groundwater Analytical Data – April 4, 2005 to July 30, 2005
Laboratory Report/COC

Distribution

Mr. Paul Lindquist, Unocal Project Manager
Mr. Joe Hickey, Agency Project Manager, DOE

Quality Assurance/Technical Review By:

Barbara Orchard
Staff Engineer II

TABLE 1
SUMMARY OF GROUNDWATER ELEVATIONS
FORMER UNOCAL SERVICE STATION #5533
16405 36TH AVENUE WEST, LYNNWOOD, WA
06940-367

Monitoring Well (Casing Elevation in feet)	Date Measured	Depth to Groundwater[a] (feet)	Groundwater Elevation[b] (feet)
HB-1	04/23/05	6.77	94.57
(101.34)	07/30/05	8.35	92.99
MW-1	Well Abandoned		
MW-2	Well Abandoned		
MW-3	04/23/05	3.60	100.37
(103.97)	07/30/05	3.99	99.98
MW-4	04/23/05	4.80	98.48
(103.28)	07/30/05	5.37	97.91
MW-5	04/23/05	3.69	98.39
(102.08)	07/30/05	4.61	97.47
MW-6	04/23/05	Well Not Found	Well Not Found
(NS)	07/30/05	5.57	--
MW-7	04/23/05	8.41	92.83
(101.24)	07/30/05	9.24	92.00
MW-8	04/23/05	7.19	94.14
(101.33)	07/30/05	8.97	92.36
MW-9	04/23/05	3.55	90.56
(94.11)	07/30/05	4.59	89.52
MW-10	Well Abandoned		
MW-11	Well Abandoned		
MW-12	04/23/05	7.46	94.81
(102.27)	07/30/05	7.41	94.86
MW-13	04/23/05	4.48	97.65
(102.13)	07/30/05	5.95	96.18
MW-14	04/23/05	5.21	97.84
(103.05)	07/30/05	6.53	96.52
MW-15	Not Sampled		
MW-16	Well Abandoned		
MW-17	Well Abandoned		
MW-18	04/23/05	4.63	98.08
(102.71)	07/30/05	5.77	96.94

Notes:

[a] The depths to groundwater were measured from the top of the well casings.

[b] Groundwater elevations are relative to a temporary benchmark onsite, not mean sea level. The temporary benchmark is the light pole numbered 164/36 #2 located at the southwest corner of

NS = Well not surveyed.

TABLE 2
SUMMARY OF GROUNDWATER CHEMICAL ANALYTICAL DATA
BETX AND PETROLEUM HYDROCARBONS
FORMER UNOCAL SERVICE STATION #5533
16405 36TH AVE WEST, LYNNWOOD, WA
06940-367

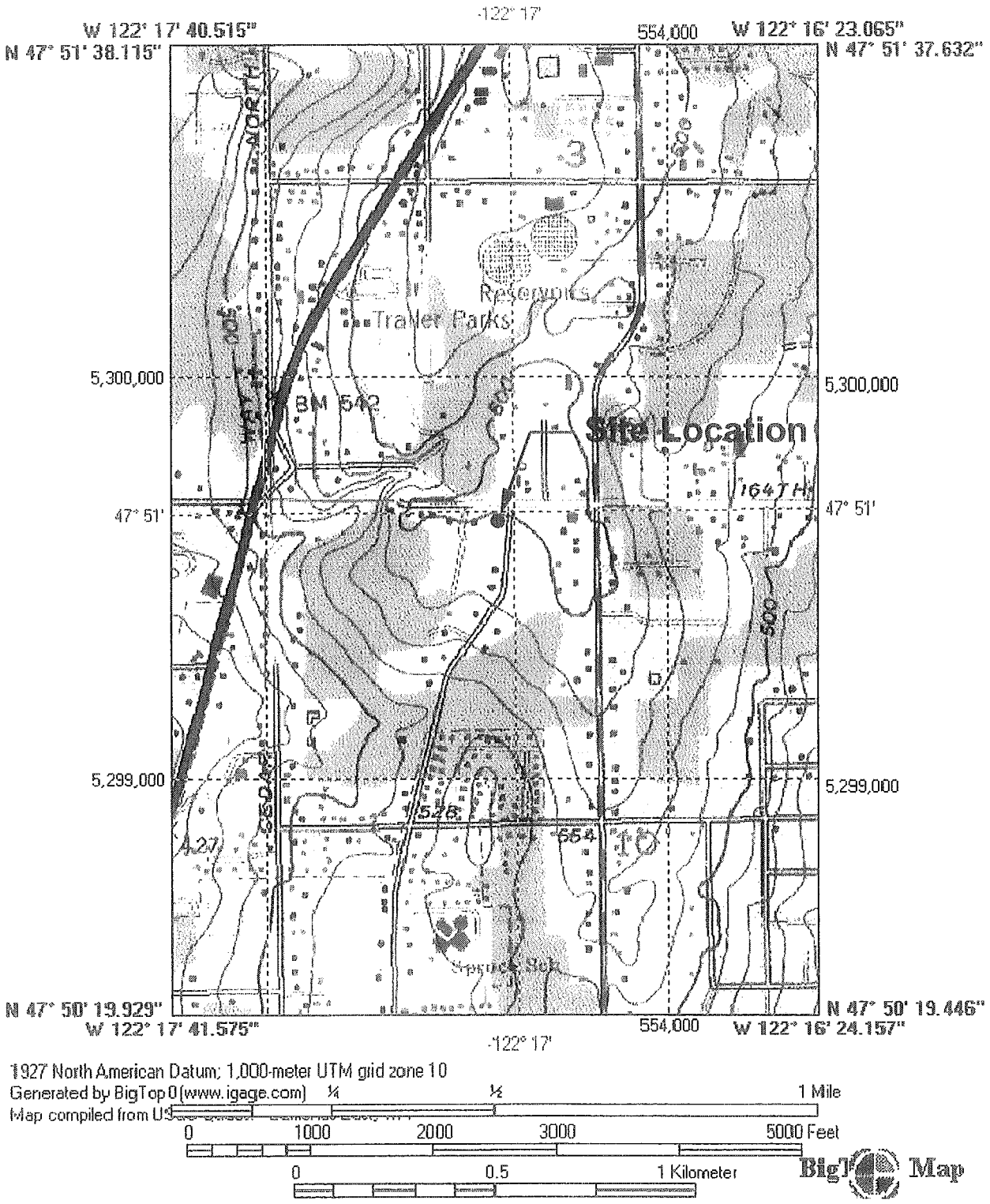
Well Number	Date Sampled	BETX [1] (µg/L)				Gasoline-range Hydrocarbons [2] (µg/L)	Diesel-range Hydrocarbons [3] (µg/L)	Heavy Oil-range Hydrocarbons [3] (µg/L)
		B	E	T	X			
MTCA Method A Cleanup Level		5.0	700	1,000	1,000	800	500	500
HB-1	04/23/05	1,550	3,210	112	3,920	34,600	<250	<500
	07/30/05	1,530	3,050	66.3	2,480	28,100	<250	<500
MW-1	Well Abandoned							
MW-2	Well Abandoned							
MW-03	04/23/05	<0.50	<0.50	<0.50	<1.00	<50.0	399	1,340
	07/30/05	<0.500	<0.500	<0.500	<1.00	<50.0	313	1,140
MW-04	04/23/05	<0.50	<0.50	<0.50	<1.00	<50.0	<250	<500
	07/30/05	<0.500	<0.500	<0.500	<1.00	<50.0	715	<500
MW-05	04/23/05	147	155	14.4	135	3,660	<250	<500
	07/30/05	82.9	59.3	7.75	98.3	2,620	<250	<500
MW-06	04/23/05	Well Not Found						
	07/30/05	194	1.36	27.9	16.6	644	<250	<500
MW-07	04/23/05	1.52	<0.50	<0.50	<1.00	62.4	<250	<500
	07/30/05	0.710	<0.500	<0.500	<1.00	<50.0	<250	<500
MW-08	04/23/05	<0.50	<0.50	<0.50	<1.00	<50.0	<250	<500
	07/30/05	<0.500	<0.500	<0.500	<1.00	<50.0	<250	<500
MW-09	04/23/05	<0.50	<0.50	<0.50	<1.00	<50.0	<250	<500
	07/30/05	<0.500	<0.500	<0.500	<1.00	<50.0	<250	<500
MW-10	Well Abandoned							
MW-11	Well Abandoned							
MW-12	04/23/05	296	1,890	42.5	1,210	18,500	266	<500
	07/30/05[4]	--	--	--	--	--	--	--
MW-13	04/23/05	2,680	3,040	7,640	15,600	81,600	804	781
	07/30/05	2,450	2,600	1,270	10,500	58,900	538	637
MW-14	04/23/05	1.88	<0.50	<0.50	<1.00	279	<250	<500
	07/30/05	0.592	<0.500	<0.500	<1.00	75.4	<250	<500

TABLE 2
SUMMARY OF GROUNDWATER CHEMICAL ANALYTICAL DATA
BETX AND PETROLEUM HYDROCARBONS
FORMER UNOCAL SERVICE STATION #5533
16405 36TH AVE WEST, LYNNWOOD, WA
06940-367

Well Number	Date Sampled	BETX [1] (µg/L)				Gasoline-range Hydrocarbons [2] (µg/L)	Diesel-range Hydrocarbons [3] (µg/L)	Heavy Oil-range Hydrocarbons [3] (µg/L)
		B	E	T	X			
MTCA Method A Cleanup Level		5.0	700	1,000	1,000	800	500	500
MW-15	Not Sampled							
MW-16	Well Abandoned							
MW-17	Well Abandoned							
MW-18	04/23/05	70.8	4.09	2.07	4.61	235	<250	<500
	07/30/05	107	8.67	1.61	27.6	440	<250	768

Notes:
[1] B = Benzene, E = Ethylbenzene, T = Toluene, X = Total Xylenes. Analyzed by EPA Method 8021B.
[2] Gasoline-range hydrocarbons analyzed by Northwest Method NWTPH-G or NWTPH-Gx.
[3] Diesel- and heavy oil-range hydrocarbons analyzed by Northwest Method NWTPH-D with acid/silica gel cleanup.
[4] MW-12 was not sampled due to the presence of phase-separated petroleum products.
µg/L = micrograms per liter
MTCA = Model Toxics Control Act
Analyses conducted by North Creek Analytical of Bothell, Washington.

Lynnwood-1



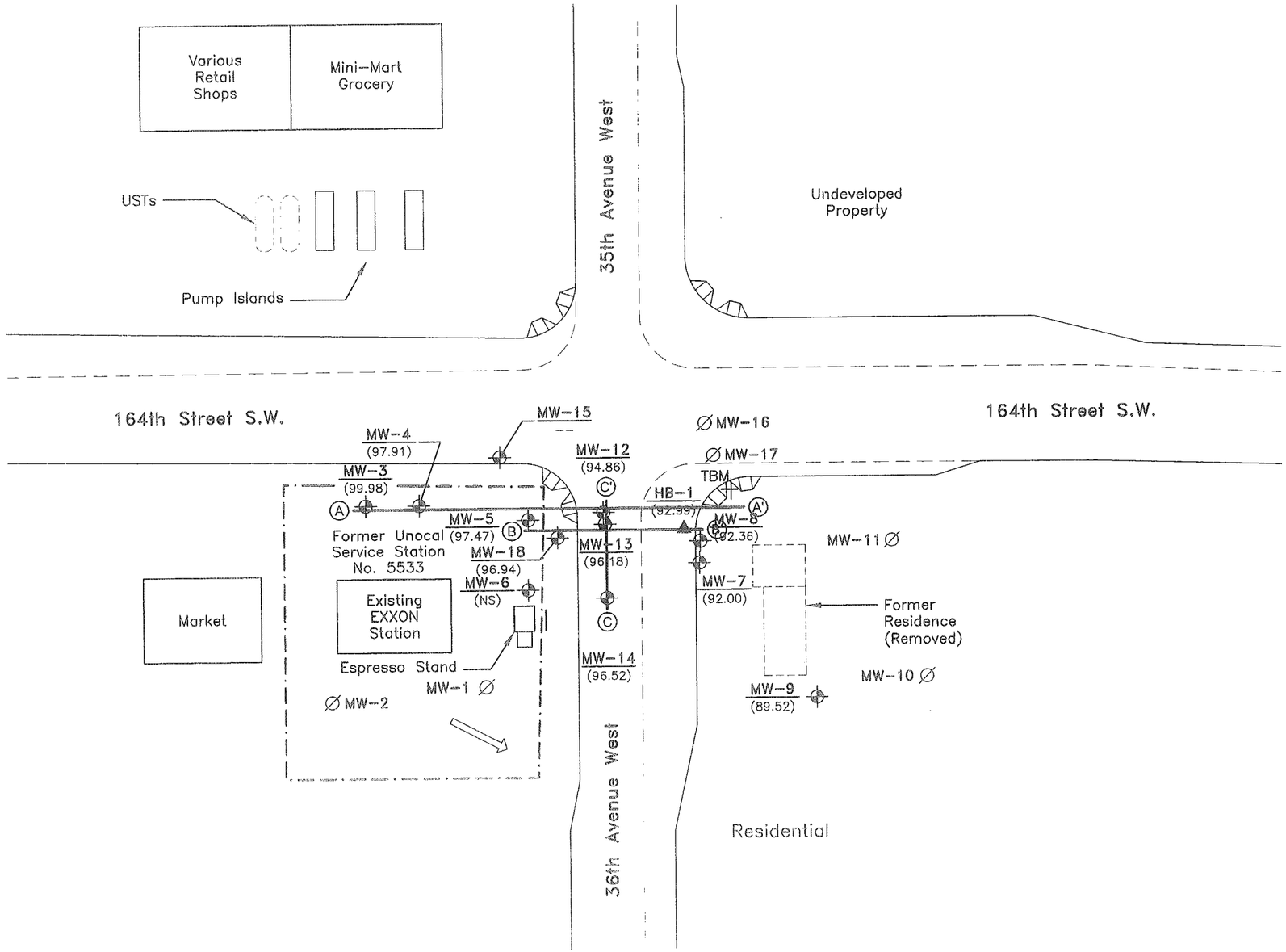
DRAWN:	K. Mongar
CHECKED:	A. Fekete
DATE:	March 11, 2004
FILENAME:	0694036713A
PROJECT NO:	06940-367-130

ENSR INTERNATIONAL

FIGURE 1

SITE LOCATION

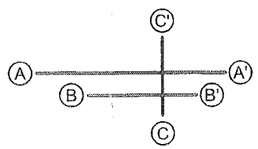
Former Unocal Service Station No.5533
16405 36th Avenue
Lynnwood, Washington



Legend

- MW-9 (89.52) — Groundwater Monitoring Well / Groundwater Elevation (Feet) 07/30/05
- MW-1 — Decommissioned Monitoring Well
- HB-1 (92.99) — Existing Hand Auger Boring Location / Groundwater Elevation (Feet) 07/30/05
- Subject Property Boundary
- Pre-2003 Street Curb
- (NS) Not Surveyed
- UST Underground Storage Tank
- Approximate Groundwater Flow Direction
- TBM — Temporary Benchmark; Assigned Elevation of 100.00 Ft.

Note: MW-15 is a third party monitoring well and not the responsibility of Unocal.



Monitoring Well Subsurface Profile

80 60 40 20 0 40 80

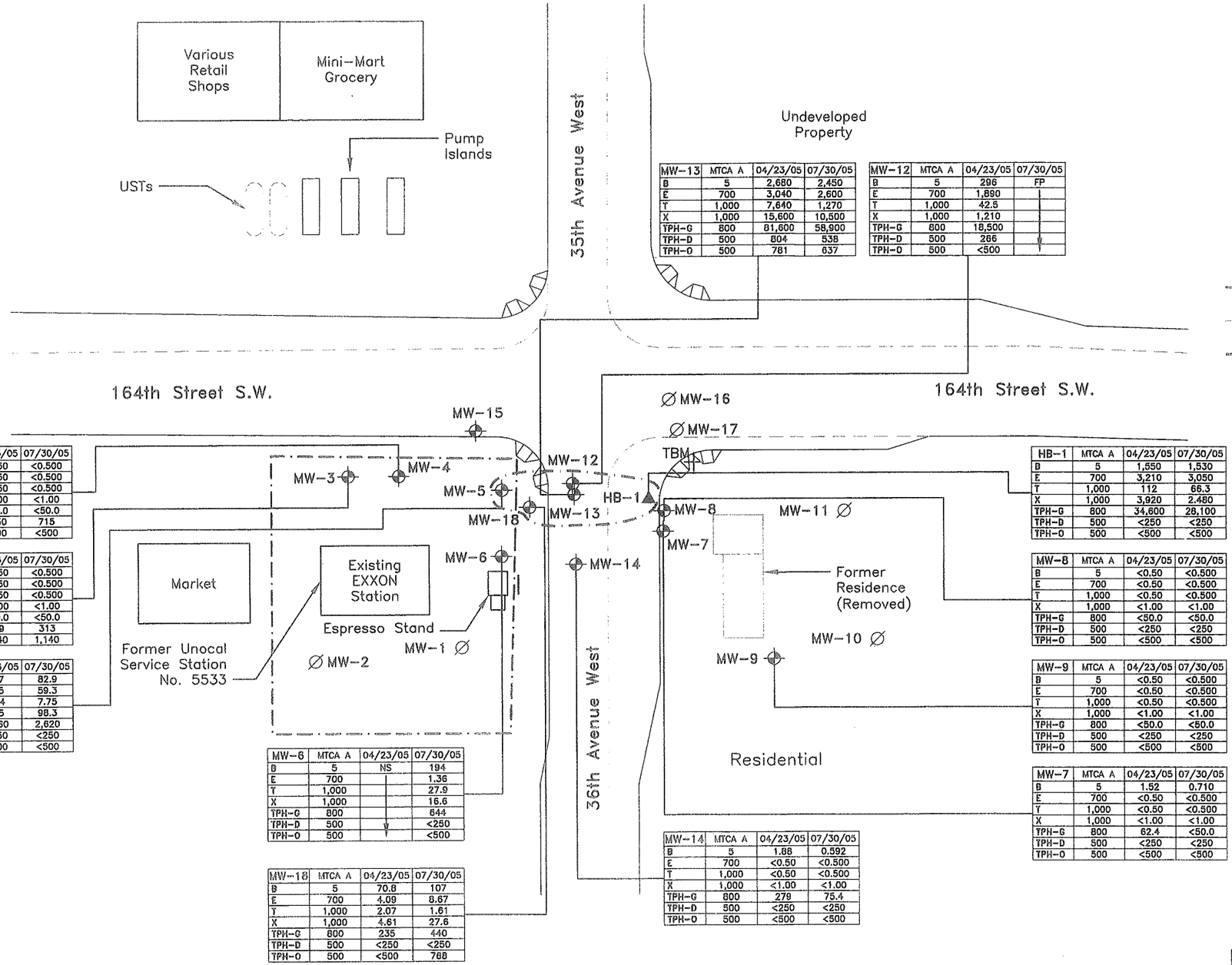
Approximate Scale in Feet

Source: Snohomish County Department of Public Works
Drawing #3631dr02 01/20/03
Project #RC-1068, 164th Street S.W., Spruce Way to Ash Way

SCALE: as noted	DESIGN: A. Cowburn	CHECKED: A. Fekete	ENSR PROJECT NO:
FILENAME: 0694036713L	DRAWN: K. Mongar	DATE: September 22, 2005	06940-367-130

ENSR INTERNATIONAL

FIGURE 2
GROUNDWATER ELEVATIONS
JULY 30, 2005
Former Unocal Service Station No. 5533
16405 36th Avenue
Lynnwood, Washington



MW-13	MTCA A	04/23/05	07/30/05
B	5	2,680	2,450
E	700	3,040	2,600
T	1,000	7,640	1,270
X	1,000	15,600	10,500
TPH-G	800	81,600	58,900
TPH-D	500	804	538
TPH-O	500	781	637

MW-12	MTCA A	04/23/05	07/30/05
B	5	296	FP
E	700	1,890	
T	1,000	42.5	
X	1,000	1,210	
TPH-G	800	18,500	
TPH-D	500	266	
TPH-O	500	<500	

MW-4	MTCA A	04/23/05	07/30/05
B	5	<0.50	<0.500
E	700	<0.50	<0.500
T	1,000	<0.50	<0.500
X	1,000	<1.00	<1.00
TPH-G	800	<50.0	<50.0
TPH-D	500	<250	715
TPH-O	500	<500	<500

MW-3	MTCA A	04/23/05	07/30/05
B	5	<0.50	<0.500
E	700	<0.50	<0.500
T	1,000	<0.50	<0.500
X	1,000	<1.00	<1.00
TPH-G	800	<50.0	<50.0
TPH-D	500	399	313
TPH-O	500	1,340	1,140

MW-5	MTCA A	04/23/05	07/30/05
B	5	147	82.9
E	700	155	59.3
T	1,000	14.4	7.75
X	1,000	135	98.3
TPH-G	800	3,660	2,620
TPH-D	500	<250	<250
TPH-O	500	<500	<500

MW-6	MTCA A	04/23/05	07/30/05
B	5	NS	194
E	700		1.36
T	1,000		27.9
X	1,000		16.6
TPH-G	800		644
TPH-D	500		<250
TPH-O	500		<500

MW-18	MTCA A	04/23/05	07/30/05
B	5	70.8	107
E	700	4.09	8.67
T	1,000	2.07	1.61
X	1,000	4.61	27.6
TPH-G	800	235	440
TPH-D	500	<250	<250
TPH-O	500	<500	788

MW-14	MTCA A	04/23/05	07/30/05
B	5	1.88	0.592
E	700	<0.50	<0.500
T	1,000	<0.50	<0.500
X	1,000	<1.00	<1.00
TPH-G	800	279	75.4
TPH-D	500	<250	<250
TPH-O	500	<500	<500

HB-1	MTCA A	04/23/05	07/30/05
B	5	1,550	1,530
E	700	3,210	3,050
T	1,000	112	66.3
X	1,000	3,920	2,480
TPH-G	800	34,600	28,100
TPH-D	500	<250	<250
TPH-O	500	<500	<500

MW-8	MTCA A	04/23/05	07/30/05
B	5	<0.50	<0.500
E	700	<0.50	<0.500
T	1,000	<0.50	<0.500
X	1,000	<1.00	<1.00
TPH-G	800	<50.0	<50.0
TPH-D	500	<250	<250
TPH-O	500	<500	<500

MW-9	MTCA A	04/23/05	07/30/05
B	5	<0.50	<0.500
E	700	<0.50	<0.500
T	1,000	<0.50	<0.500
X	1,000	<1.00	<1.00
TPH-G	800	<50.0	<50.0
TPH-D	500	<250	<250
TPH-O	500	<500	<500

MW-7	MTCA A	04/23/05	07/30/05
B	5	1.52	0.710
E	700	<0.50	<0.500
T	1,000	<0.50	<0.500
X	1,000	<1.00	<1.00
TPH-G	800	62.4	<50.0
TPH-D	500	<250	<250
TPH-O	500	<500	<500

Legend

- MW-9 ⊕ Groundwater Monitoring Well
- MW-1 ∅ Decommissioned Monitoring Well
- HB-1 ▲ Hand Auger Boring Location
- Subject Property Boundary
- Pre-2003 Street Curb
- Approximate Area of Contamination
- NS Well not sampled. Unable to locate.
- FP Free product present. Well not sampled.
- UST Underground Storage Tank
- TBM Temporary Benchmark; Assumed Elevation of 100.00 Ft.
- B Benzene
- E Ethylbenzene
- T Toluene
- X Total Xylenes
- TPH-G Total Petroleum Hydrocarbons as Gasoline
- TPH-D Total Petroleum Hydrocarbons as Diesel
- TPH-O Total Petroleum Hydrocarbons as Heavy Oil

All results given in micrograms per liter (μg/L)

Note: MW-15 is a third party monitoring well and not the responsibility of Unocal.

80 60 40 20 0 40 80
Approximate Scale in Feet

Source: Snohomish County Department of Public Works
Drawing #3631dr02 01/20/03
Project #RC-1068, 164th Street S.W., Spruce Way to Ash Way

SCALE:	as noted	DESIGN:	A. Cowburn	CHECKED:	A. Fekete	ENSR PROJECT NO:	06940-367-130
FILENAME:	0694036713M	DRAWN:	K. Mongar	DATE:	September 22, 2005		

ENSR INTERNATIONAL

FIGURE 3

SUMMARY OF GROUNDWATER ANALYTICAL DATA – APRIL 4, 2005 TO JULY 30, 2005

Former Unocal Service Station No. 5533
16405 36th Avenue
Lynnwood, Washington

www.ncalabs.com

Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
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509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588
Anchorage 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119
907.563.9200 fax 907.563.9210

17 August 2005

Art Cowburn
ENSR-Redmond
9521 Willows Road NE
Redmond, WA 98052
RE: UNOCAL Former Service Station #5533

Enclosed are the results of analyses for samples received by the laboratory on 07/30/05 12:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jeff Gerdes

Jeff Gerdes
Project Manager

www.ncalabs.com

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541.383.9310 fax 541.382.7588
Anchorage 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119
907.563.9200 fax 907.563.9210

ENSR-Redmond
9521 Willows Road NE
Redmond, WA 98052

Project: UNOCAL Former Service Station #5533
Project Number: 06940-367
Project Manager: Art Cowburn

Reported:
08/17/05 22:21

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
5533-MW3-073005	B5G0699-01	Water	07/30/05 11:15	07/30/05 12:30
5533-MW4-073005	B5G0699-02	Water	07/30/05 11:30	07/30/05 12:30
5533-MW5-073005	B5G0699-03	Water	07/30/05 11:45	07/30/05 12:30
5533-MW6-073005	B5G0699-04	Water	07/30/05 07:00	07/30/05 12:30
5533-MW7-073005	B5G0699-05	Water	07/30/05 08:30	07/30/05 12:30
5533-MW8-073005	B5G0699-06	Water	07/30/05 07:35	07/30/05 12:30
5533-MW9-073005	B5G0699-07	Water	07/30/05 08:45	07/30/05 12:30
5533-MW13-073005	B5G0699-08	Water	07/30/05 09:30	07/30/05 12:30
5533-MW14-073005	B5G0699-09	Water	07/30/05 10:00	07/30/05 12:30
5533-MW18-073005	B5G0699-10	Water	07/30/05 06:45	07/30/05 12:30
5533-HB1-073005	B5G0699-11	Water	07/30/05 07:45	07/30/05 12:30
TRIP BLANK	B5G0699-12	Water	07/30/05 12:00	07/30/05 12:30

North Creek Analytical - Bothell

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jeff Gerdes

Jeff Gerdes, Project Manager

www.ncalabs.com

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541.383.9310 fax 541.382.7588
Anchorage 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119
907.563.9200 fax 907.563.9210

ENSR-Redmond 9521 Willows Road NE Redmond, WA 98052	Project: UNOCAL Former Service Station #5533 Project Number: 06940-367 Project Manager: Art Cowburn	**Reported:** 08/17/05 22:21

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
5533-MW3-073005 (B5G0699-01) Water Sampled: 07/30/05 11:15 Received: 07/30/05 12:30									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	5H08029	08/08/05	08/10/05	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*87.7 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*108 %*	*68-140*			"	"	"	"	
5533-MW4-073005 (B5G0699-02) Water Sampled: 07/30/05 11:30 Received: 07/30/05 12:30									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	5H08029	08/08/05	08/10/05	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*89.5 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*109 %*	*68-140*			"	"	"	"	
5533-MW5-073005 (B5G0699-03) Water Sampled: 07/30/05 11:45 Received: 07/30/05 12:30									
Gasoline Range Hydrocarbons	**2620**	50.0	ug/l	1	5H08029	08/08/05	08/10/05	NWTPH-Gx/8021B	
Benzene	**82.9**	0.500	"	"	"	"	"	"	
Toluene	**7.75**	0.500	"	"	"	"	"	"	
Ethylbenzene	**59.3**	0.500	"	"	"	"	"	"	
Xylenes (total)	**98.3**	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*>200 %*	*58-144*			"	"	"	"	*S-04*
Surrogate: 4-BFB (PID)	*148 %*	*68-140*			"	"	"	"	*S-04*

North Creek Analytical - Bothell

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jeff Gerdes, Project Manager

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541.383.9310 fax 541.382.7588
Anchorage 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119
907.563.9200 fax 907.563.9210

ENSR-Redmond	Project: UNOCAL Former Service Station #5533	
9521 Willows Road NE	Project Number: 06940-367	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	08/17/05 22:21

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
5533-MW6-073005 (B5G0699-04) Water Sampled: 07/30/05 07:00 Received: 07/30/05 12:30									
Gasoline Range Hydrocarbons	**644**	50.0	ug/l	1	5H08029	08/08/05	08/10/05	NWTPH-Gx/8021B	
Toluene	**27.9**	0.500	"	"	"	"	"	"	
Ethylbenzene	**1.36**	0.500	"	"	"	"	"	"	
Xylenes (total)	**16.6**	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*90.2 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*103 %*	*68-140*			"	"	"	"	
5533-MW6-073005 (B5G0699-04RE1) Water Sampled: 07/30/05 07:00 Received: 07/30/05 12:30									
Benzene	**194**	2.50	ug/l	5	5H08029	08/08/05	08/10/05	NWTPH-Gx/8021B	
Surrogate: 4-BFB (FID)	*92.3 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*124 %*	*68-140*			"	"	"	"	
5533-MW7-073005 (B5G0699-05) Water Sampled: 07/30/05 08:30 Received: 07/30/05 12:30									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	5H08029	08/08/05	08/10/05	NWTPH-Gx/8021B	
Benzene	**0.710**	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*91.5 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*110 %*	*68-140*			"	"	"	"	
5533-MW8-073005 (B5G0699-06) Water Sampled: 07/30/05 07:35 Received: 07/30/05 12:30									
Gasoline Range Hydrocarbons	**28100**	500	ug/l	10	5H08029	08/08/05	08/10/05	NWTPH-Gx/8021B	
Toluene	**66.3**	5.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*150 %*	*58-144*			"	"	"	"	*S-04*
Surrogate: 4-BFB (PID)	*126 %*	*68-140*			"	"	"	"	

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ENSR-Redmond 9521 Willows Road NE Redmond, WA 98052	Project: UNOCAL Former Service Station #5533 Project Number: 06940-367 Project Manager: Art Cowburn	**Reported:** 08/17/05 22:21

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
5533-MW8-073005 (B5G0699-06RE1) Water Sampled: 07/30/05 07:35 Received: 07/30/05 12:30									
Benzene	**1530**	25.0	ug/l	50	5H08029	08/08/05	08/10/05	NWTPH-Gx/8021B	
Ethylbenzene	**3050**	25.0	"	"	"	"	"	"	
Xylenes (total)	**2480**	50.0	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*107 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*109 %*	*68-140*			"	"	"	"	
5533-MW9-073005 (B5G0699-07) Water Sampled: 07/30/05 08:45 Received: 07/30/05 12:30									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	5H08029	08/08/05	08/10/05	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*89.3 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*110 %*	*68-140*			"	"	"	"	
5533-MW13-073005 (B5G0699-08) Water Sampled: 07/30/05 09:30 Received: 07/30/05 12:30									
Gasoline Range Hydrocarbons	**58900**	2500	ug/l	50	5H08029	08/08/05	08/10/05	NWTPH-Gx/8021B	
Benzene	**2450**	25.0	"	"	"	"	"	"	
Toluene	**1270**	25.0	"	"	"	"	"	"	
Ethylbenzene	**2600**	25.0	"	"	"	"	"	"	
Xylenes (total)	**10500**	50.0	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*101 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*104 %*	*68-140*			"	"	"	"	
5533-MW14-073005 (B5G0699-09) Water Sampled: 07/30/05 10:00 Received: 07/30/05 12:30									
Gasoline Range Hydrocarbons	**75.4**	50.0	ug/l	1	5H08029	08/08/05	08/10/05	NWTPH-Gx/8021B	
Benzene	**0.592**	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*84.7 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*106 %*	*68-140*			"	"	"	"	

North Creek Analytical - Bothell

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ENSR-Redmond	Project: UNOCAL Former Service Station #5533	
9521 Willows Road NE	Project Number: 06940-367	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	08/17/05 22:21

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
5533-MW18-073005 (B5G0699-10) Water Sampled: 07/30/05 06:45 Received: 07/30/05 12:30									
Gasoline Range Hydrocarbons	**440**	50.0	ug/l	1	5H08029	08/08/05	08/10/05	NWTPH-Gx/8021B	
Toluene	**1.61**	0.500	"	"	"	"	"	"	
Ethylbenzene	**8.67**	0.500	"	"	"	"	"	"	
Xylenes (total)	**27.6**	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*96.0 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*111 %*	*68-140*			"	"	"	"	
5533-MW18-073005 (B5G0699-10RE1) Water Sampled: 07/30/05 06:45 Received: 07/30/05 12:30									
Benzene	**107**	1.00	ug/l	2	5H08029	08/08/05	08/10/05	NWTPH-Gx/8021B	
Surrogate: 4-BFB (FID)	*93.2 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*107 %*	*68-140*			"	"	"	"	
5533-HB1-073005 (B5G0699-11) Water Sampled: 07/30/05 07:45 Received: 07/30/05 12:30									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	5H08029	08/08/05	08/10/05	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*85.8 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*112 %*	*68-140*			"	"	"	"	
TRIP BLANK (B5G0699-12) Water Sampled: 07/30/05 12:00 Received: 07/30/05 12:30									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	5H08029	08/08/05	08/10/05	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*90.2 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*108 %*	*68-140*			"	"	"	"	

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ENSR-Redmond 9521 Willows Road NE Redmond, WA 98052	Project: UNOCAL Former Service Station #5533 Project Number: 06940-367 Project Manager: Art Cowburn	**Reported:** 08/17/05 22:21

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
5533-MW3-073005 (B5G0699-01) Water Sampled: 07/30/05 11:15 Received: 07/30/05 12:30									
Diesel Range Hydrocarbons	**313**	250	ug/l	1	5H04007	08/04/05	08/05/05	NWTPH-Dx	D-09
Lube Oil Range Hydrocarbons	**1140**	500	"	"	"	"	"	"	
Surrogate: 2-FBP	*74.5 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*85.2 %*	*50-150*			"	"	"	"	
5533-MW4-073005 (B5G0699-02) Water Sampled: 07/30/05 11:30 Received: 07/30/05 12:30									
Diesel Range Hydrocarbons	**715**	250	ug/l	1	5H04007	08/04/05	08/05/05	NWTPH-Dx	D-06
Lube Oil Range Hydrocarbons	ND	500	"	"	"	"	"	"	
Surrogate: 2-FBP	*84.0 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*102 %*	*50-150*			"	"	"	"	
5533-MW5-073005 (B5G0699-03) Water Sampled: 07/30/05 11:45 Received: 07/30/05 12:30									
Diesel Range Hydrocarbons	ND	250	ug/l	1	5H04007	08/04/05	08/05/05	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	500	"	"	"	"	"	"	
Surrogate: 2-FBP	*74.2 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*93.5 %*	*50-150*			"	"	"	"	
5533-MW6-073005 (B5G0699-04) Water Sampled: 07/30/05 07:00 Received: 07/30/05 12:30									
Diesel Range Hydrocarbons	ND	250	ug/l	1	5H04007	08/04/05	08/05/05	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	500	"	"	"	"	"	"	
Surrogate: 2-FBP	*84.0 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*93.4 %*	*50-150*			"	"	"	"	
5533-MW7-073005 (B5G0699-05) Water Sampled: 07/30/05 08:30 Received: 07/30/05 12:30									
Diesel Range Hydrocarbons	ND	250	ug/l	1	5H04007	08/04/05	08/05/05	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	500	"	"	"	"	"	"	
Surrogate: 2-FBP	*81.1 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*93.4 %*	*50-150*			"	"	"	"	

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ENSR-Redmond	Project: UNOCAL Former Service Station #5533	
9521 Willows Road NE	Project Number: 06940-367	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	08/17/05 22:21

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
5533-MW8-073005 (B5G0699-06) Water Sampled: 07/30/05 07:35 Received: 07/30/05 12:30									
Diesel Range Hydrocarbons	ND	250	ug/l	1	5H04007	08/04/05	08/06/05	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	500	"	"	"	"	"	"	
Surrogate: 2-FBP	*82.9 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*94.3 %*	*50-150*			"	"	"	"	
5533-MW9-073005 (B5G0699-07) Water Sampled: 07/30/05 08:45 Received: 07/30/05 12:30									
Diesel Range Hydrocarbons	ND	250	ug/l	1	5H04007	08/04/05	08/06/05	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	500	"	"	"	"	"	"	
Surrogate: 2-FBP	*85.7 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*97.9 %*	*50-150*			"	"	"	"	
5533-MW13-073005 (B5G0699-08) Water Sampled: 07/30/05 09:30 Received: 07/30/05 12:30									
Diesel Range Hydrocarbons	**538**	250	ug/l	1	5H04007	08/04/05	08/06/05	NWTPH-Dx	D-08
Lube Oil Range Hydrocarbons	**637**	500	"	"	"	"	"	"	
Surrogate: 2-FBP	*76.5 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*100 %*	*50-150*			"	"	"	"	
5533-MW14-073005 (B5G0699-09) Water Sampled: 07/30/05 10:00 Received: 07/30/05 12:30									
Diesel Range Hydrocarbons	ND	250	ug/l	1	5H04007	08/04/05	08/06/05	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	500	"	"	"	"	"	"	
Surrogate: 2-FBP	*80.4 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*93.5 %*	*50-150*			"	"	"	"	
5533-MW18-073005 (B5G0699-10) Water Sampled: 07/30/05 06:45 Received: 07/30/05 12:30									
Diesel Range Hydrocarbons	ND	250	ug/l	1	5H04007	08/04/05	08/06/05	NWTPH-Dx	
Lube Oil Range Hydrocarbons	**768**	500	"	"	"	"	"	"	
Surrogate: 2-FBP	*80.5 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*100 %*	*50-150*			"	"	"	"	

North Creek Analytical - Bothell

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ENSR-Redmond	Project: UNOCAL Former Service Station #5533	**Reported:**
9521 Willows Road NE	Project Number: 06940-367	08/17/05 22:21
Redmond, WA 98052	Project Manager: Art Cowburn	

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
5533-HB1-073005 (B5G0699-11) Water Sampled: 07/30/05 07:45 Received: 07/30/05 12:30									
Diesel Range Hydrocarbons	ND	250	ug/l	1	5H04007	08/04/05	08/06/05	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	500	"	"	"	"	"	"	
Surrogate: 2-FBP	*76.5 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*87.2 %*	*50-150*			"	"	"	"	

North Creek Analytical - Bothell

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ENSR-Redmond	Project: UNOCAL Former Service Station #5533	
9521 Willows Road NE	Project Number: 06940-367	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	08/17/05 22:21

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5H08029: Prepared 08/08/05 Using EPA 5030B (P/T)										
Blank (5H08029-BLK1)										
Gasoline Range Hydrocarbons	ND	50.0	ug/l							
Benzene	ND	0.500	"							
Toluene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
Xylenes (total)	ND	1.00	"							
Surrogate: 4-BFB (FID)	*49.7*		"	*60.0*		*82.8*	*58-144*			
Surrogate: 4-BFB (PID)	*63.0*		"	*60.0*		*105*	*68-140*			
LCS (5H08029-BS1)										
Gasoline Range Hydrocarbons	996	50.0	ug/l	1000		99.6	80-120			
Benzene	12.1	0.500	"	13.9		87.1	80-120			
Toluene	62.1	0.500	"	75.0		82.8	80-120			
Ethylbenzene	17.1	0.500	"	17.9		95.5	80-120			
Xylenes (total)	84.8	1.00	"	87.7		96.7	80-120			
Surrogate: 4-BFB (FID)	*57.4*		"	*60.0*		*95.7*	*58-144*			
Surrogate: 4-BFB (PID)	*58.6*		"	*60.0*		*97.7*	*68-140*			
LCS Dup (5H08029-BSD1)										
Gasoline Range Hydrocarbons	964	50.0	ug/l	1000		96.4	80-120	3.27	25	
Benzene	11.7	0.500	"	13.9		84.2	80-120	3.36	25	
Toluene	60.6	0.500	"	75.0		80.8	80-120	2.44	25	
Ethylbenzene	16.5	0.500	"	17.9		92.2	80-120	3.57	25	
Xylenes (total)	82.6	1.00	"	87.7		94.2	80-120	2.63	25	
Surrogate: 4-BFB (FID)	*58.6*		"	*60.0*		*97.7*	*58-144*			
Surrogate: 4-BFB (PID)	*58.6*		"	*60.0*		*97.7*	*68-140*			
Matrix Spike (5H08029-MS1)					**Source: B5H0161-01**					
Gasoline Range Hydrocarbons	1040	50.0	ug/l	1000	ND	104	58-129			
Benzene	13.0	0.500	"	13.9	ND	93.5	46-130			
Toluene	65.1	0.500	"	75.0	0.244	86.5	60-124			
Ethylbenzene	18.1	0.500	"	17.9	ND	101	56-141			
Xylenes (total)	90.0	1.00	"	87.7	0.542	102	66-132			
Surrogate: 4-BFB (FID)	*65.2*		"	*60.0*		*109*	*58-144*			
Surrogate: 4-BFB (PID)	*61.5*		"	*60.0*		*102*	*68-140*			

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ENSR-Redmond	Project: UNOCAL Former Service Station #5533	
9521 Willows Road NE	Project Number: 06940-367	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	08/17/05 22:21

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5H08029: Prepared 08/08/05 Using EPA 5030B (P/T)										
Matrix Spike Dup (5H08029-MSD1)					**Source: B5H0161-01**					
Gasoline Range Hydrocarbons	971	50.0	ug/l	1000	ND	97.1	58-129	6.86	25	
Benzene	12.6	0.500	"	13.9	ND	90.6	46-130	3.12	40	
Toluene	64.6	0.500	"	75.0	0.244	85.8	60-124	0.771	40	
Ethylbenzene	17.4	0.500	"	17.9	ND	97.2	56-141	3.94	40	
Xylenes (total)	87.4	1.00	"	87.7	0.542	99.0	66-132	2.93	40	
Surrogate: 4-BFB (FID)	*63.7*		"	*60.0*		*106*	*58-144*			
Surrogate: 4-BFB (PID)	*61.4*		"	*60.0*		*102*	*68-140*			

North Creek Analytical - Bothell

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jeff Gerdes

Jeff Gerdes, Project Manager

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503.906.9200 fax 503.906.9210
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541.383.9310 fax 541.382.7588
Anchorage 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119
907.563.9200 fax 907.563.9210

ENSR-Redmond	Project: UNOCAL Former Service Station #5533	
9521 Willows Road NE	Project Number: 06940-367	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	08/17/05 22:21

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5H04007: Prepared 08/04/05 Using EPA 3520C										
Blank (5H04007-BLK1)										
Diesel Range Hydrocarbons	ND	250	ug/l							
Lube Oil Range Hydrocarbons	ND	500	"							
Surrogate: 2-FBP	*218*		"	*250*		*87.2*	*50-150*			
Surrogate: Octacosane	*239*		"	*250*		*95.6*	*50-150*			
LCS (5H04007-BS1)										
Diesel Range Hydrocarbons	1790	250	ug/l	2000		89.5	45-119			
Surrogate: 2-FBP	*253*		"	*250*		*101*	*50-150*			
LCS Dup (5H04007-BSD1)										
Diesel Range Hydrocarbons	1620	250	ug/l	2000		81.0	45-119	9.97	35	
Surrogate: 2-FBP	*205*		"	*250*		*82.0*	*50-150*			
Duplicate (5H04007-DUP1)					**Source: B5G0699-01**					
Diesel Range Hydrocarbons	377	250	ug/l		313			18.6	50	
Lube Oil Range Hydrocarbons	1380	500	"		1140			19.0	50	
Surrogate: 2-FBP	*190*		"	*243*		*78.2*	*50-150*			
Surrogate: Octacosane	*208*		"	*243*		*85.6*	*50-150*			

North Creek Analytical - Bothell

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jeff Gerdes, Project Manager

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541.383.9310 fax 541.382.7588
Anchorage 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119
907.563.9200 fax 907.563.9210

ENSR-Redmond	Project: UNOCAL Former Service Station #5533	
9521 Willows Road NE	Project Number: 06940-367	**Reported:**
Redmond, WA 98052	Project Manager: Art Cowburn	08/17/05 22:21

Notes and Definitions

D-06	The sample chromatographic pattern does not resemble the fuel standard used for quantitation.
D-08	Results in the diesel organics range are primarily due to overlap from a gasoline range product.
D-09	Results in the diesel organics range are primarily due to overlap from a heavy oil range product.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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9405 SW Nimbus Ave • Beaverton, OR 97008-7184 • 503-906-9200 • Fax 906-9210
20332 Empire Ave #F1 • Bend, OR 99701-5712 • 541-383-9310 • Fax 382-7588
2000 W International Airport Rd #A10 • Anchorage, AK 99502-1119 • 907-563-9200 • Fax 563-9210

ENSR CHAIN OF CUSTODY REPORT B5G0699

SITE INFORMATION

Facility Number: FORMER UNOCAL SERVICE STATION #5533
Site Address: 16904 36th AVE W
City, State, ZIP: LYNNWOOD WA 98037
P.O. Number:

CERT INFO: (check one) ☒ Evaluation ☐ Remediation
☐ Detection ☐ Demolition ☐ Closure ☐ Miscellaneous

CONSULTANT INFORMATION

Name: ENSR
Address: 9521 WILLOWS RD NE
REDMOND WA 98052
Phone: 425 881-7700 Fax: 425 883 4473
Project No.: 06940-367
Project Manager: ART CANDUELA
Samples collected by: SCOTT ZORN / MORGAN ERHARDT

Chain of Custody Record #:

Quality Assurance Data Level: A ☒ B
A: Standard Summary
B: Standard + Chromatograms

Laboratory Turnaround Days: ☒ 10 ☐ 5 ☐ 3 ☐ 2 ☐ 1

☐ AK ☐ OR ☐ WA ☒ NW Series

SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W, S, O)	NUMBER OF CONTAINERS	TPH-HCID	TPH-Gas	BTEX Only EPA 8021 Mod.	TPH-Gas + BTEX	TPH-Diesel	TPH-Diesel Extended	TPH-Diesel-Ext. w/SG cleanup	Halogen. Volatiles EPA	Pesticides/PCBs or PCBs only	GC/MS Volatiles EPA 8260	GC/MS Semivols. EPA 8270	PAHs: 8270 SIM or 8310	Lead: Total or Dissolved	TCLP or RCRA Metals (8)							NCA SAMPLE NUMBER
1. 5533-MW3-073005	7-30-05 1115	W	5				X			X														-01
2. 5533-MW4-073005	7-30-05 1130	W	5				X			X														-02
3. 5533-MW5-073005	7-30-05 1145	W	5				X			X														-03
4. 5533-MW6-073005	7-30-05 0700	W	5				X			X														-04
5. 5533-MW7-073005	7-30-05 0830	W	5				X			X														-05
6. 5533-MW8-073005	7-30-05 0735	W	4				X			X														-06
7. 5533-MW9-073005	7-30-05 0845	W	5				X			X														-07
8. 5533-MW13-073005	7-30-05 0950	W	5				X			X														-08
9. 5533-MW14-073005	7-30-05 1000	W	5				X			X														-09
10. 5533-MW18-073005	7-30-05 0845	W	5				X			X														12.1 w/o -10

Relinquished by	Firm	Date/Time	Received by	Firm	Date/Time
1. Scott Zorn	ENSR	7-30-05 1230	Cathy Crumble	NCA	7/30/05 12:30
2.					
3.					

Were all requested results provided? yes no Define "no" on back
Were the results within the requested turnaround? yes no
Final approval signature:
Firm: Date:

Page 1 of 2

Comments:

Distribution: White - Laboratory Yellow - Consultant

ENSR COC rev 12/03

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2000 W International Airport Rd #A10 • Anchorage, AK 99502-1119 • 907-563-9200 • Fax 563-9210

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ENSR CHAIN OF CUSTODY REPORT B5G0699

Chain of Custody Record #:

SITE INFORMATION

Facility Number: FORMER UNOCAL SERVICE STATION # 5533
Site Address: 16404 164th 36th AVEN
City, State, ZIP: LYNNWOOD WA
P.O. Number:

CERT INFO: (check one) ☒ Evaluation ☐ Remediation
☐ Detection ☐ Demolition ☐ Closure ☐ Miscellaneous

Name: ENSR
Address: 9521 WILLOWS Rd NE
REDMOND WA 98052
Phone: 425 881-7900 Fax: 425 883-4473
Project No.: 06940-367
Project Manager: ART COWBUEN
Samples collected by: SCOTT FORNEY / MORGAN ERHARDT

Quality Assurance Data Level: A ☒ B
A: Standard Summary
B: Standard + Chromatograms

Laboratory Turnaround Days: 10 5 3 2 1

☐ AK ☐ OR ☐ WA ☒ NW Series

SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W, S, O)	NUMBER OF CONTAINERS	TPH-HCID	TPH-Gas	BTEX Only EPA 8021 Mod.	TPH-Gas + BTEX	TPH-Diesel	TPH-Diesel Extended	TPH-Diesel-Ext. w/SG cleanup	Halogen. Volatiles EPA	Pesticides/PCBs or PCBs only	GC/MS Volatiles EPA 8260	GC/MS Semivols. EPA 8270	PAHs: 8270 SIM or 8310	Lead: Total or Dissolved	TCLP or RCRA Metals (8)	NCA SAMPLE NUMBER
1. 5533-HBI-073005	7-30-05 0745	W	3				X			X								-11
2. TRIP BLANK	7-30-05	W	2				X			X								-12
3.																		
4.																		
5.																		
6.																		
7.																		
8.																		
9.																		
10.																		

Relinquished by	Firm	Date/Time	Received by	Firm	Date/Time
1. Scott Forney	ENSR	7-30-05 1230	Kathy Crumble	NCA	7/30/05 12:32
2.					
3.					

Were all requested results provided? yes ☒ no ☐ Define "no" on back
Were the results within the requested turnaround? yes ☒ no ☐
Final approval signature:
Firm: Date:

Page 2 of 2

Comments: SAMPLE 5533-HBI-073005 ONLY / AMBER 2 VOA VIALS

Distribution: White - Laboratory Yellow - Consultant

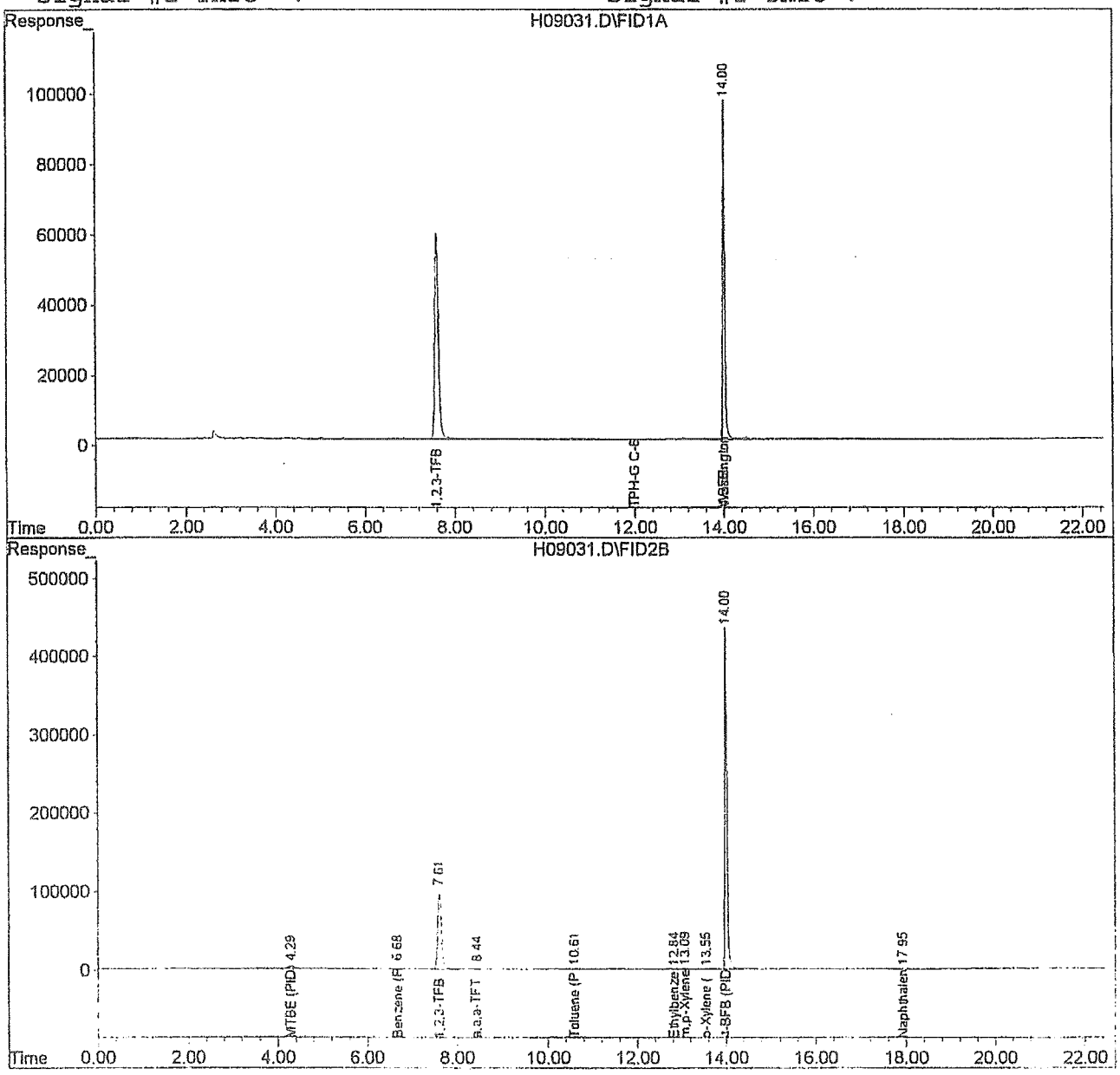
ENSR COC rev 12/03

Quantitation Report

Signal #1 : C:\HPCHEM\2\DATA\080805\H09031.D\FID1A.CH Vial: 31
Signal #2 : C:\HPCHEM\2\DATA\080805\H09031.D\FID2B.CH
Acq On : 10 Aug 2005 00:55 Operator: nsb
Sample : b5g0699-01 Inst : GC #4
Misc : 1x 5 mL Multiplr: 1.00
IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E
Quant Time: Aug 10 1:17 2005 Quant Results File: TGH0705.RES

Quant Method : C:\HPCHEM\2\METHODS\TGH0705.M (Chemstation Integrator)
Title : TPH-G/BTEX 8015/8021 Method
Last Update : Tue Aug 09 12:05:55 2005
Response via : Multiple Level Calibration
DataAcq Meth : TGH0705.M

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

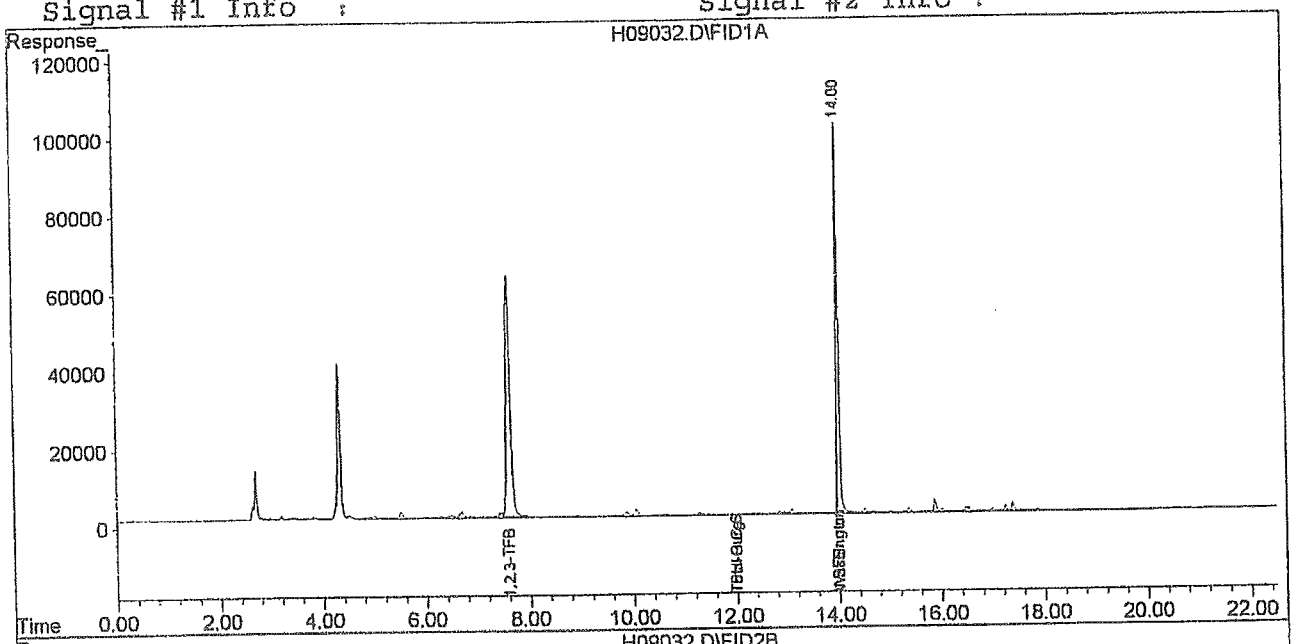


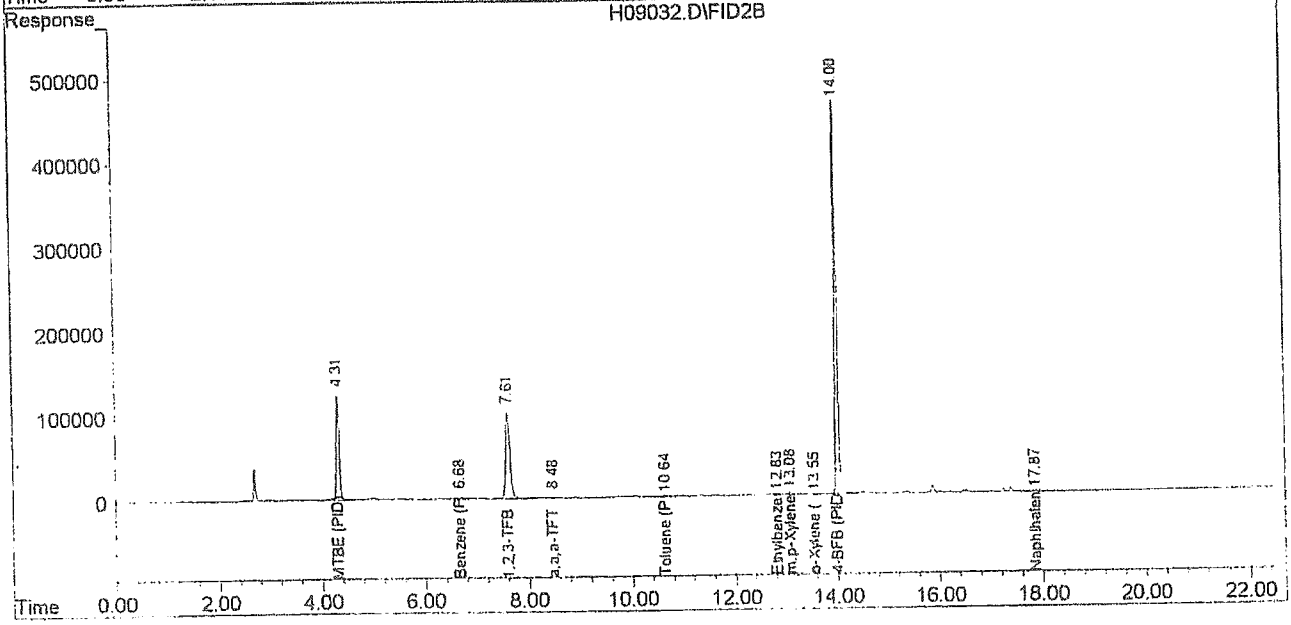
Quantitation Report

Signal #1 : C:\HPCHEM\2\DATA\080805\H09032.D\FID1A.CH Vial: 32
Signal #2 : C:\HPCHEM\2\DATA\080805\H09032.D\FID2B.CH
Acq On : 10 Aug 2005 1:24 Operator: nsb
Sample : b5g0699-02 Inst : GC #4
Misc : 1x 5 mL Multiplr: 1.00
IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E
Quant Time: Aug 10 1:47 2005 Quant Results File: TGH0705.RES

Quant Method : C:\HPCHEM\2\METHODS\TGH0705.M (Chemstation Integrator)
Title : TPH-G/BTEX 8015/8021 Method
Last Update : Tue Aug 09 12:05:55 2005
Response via : Multiple Level Calibration
DataAcq Meth : TGH0705.M

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



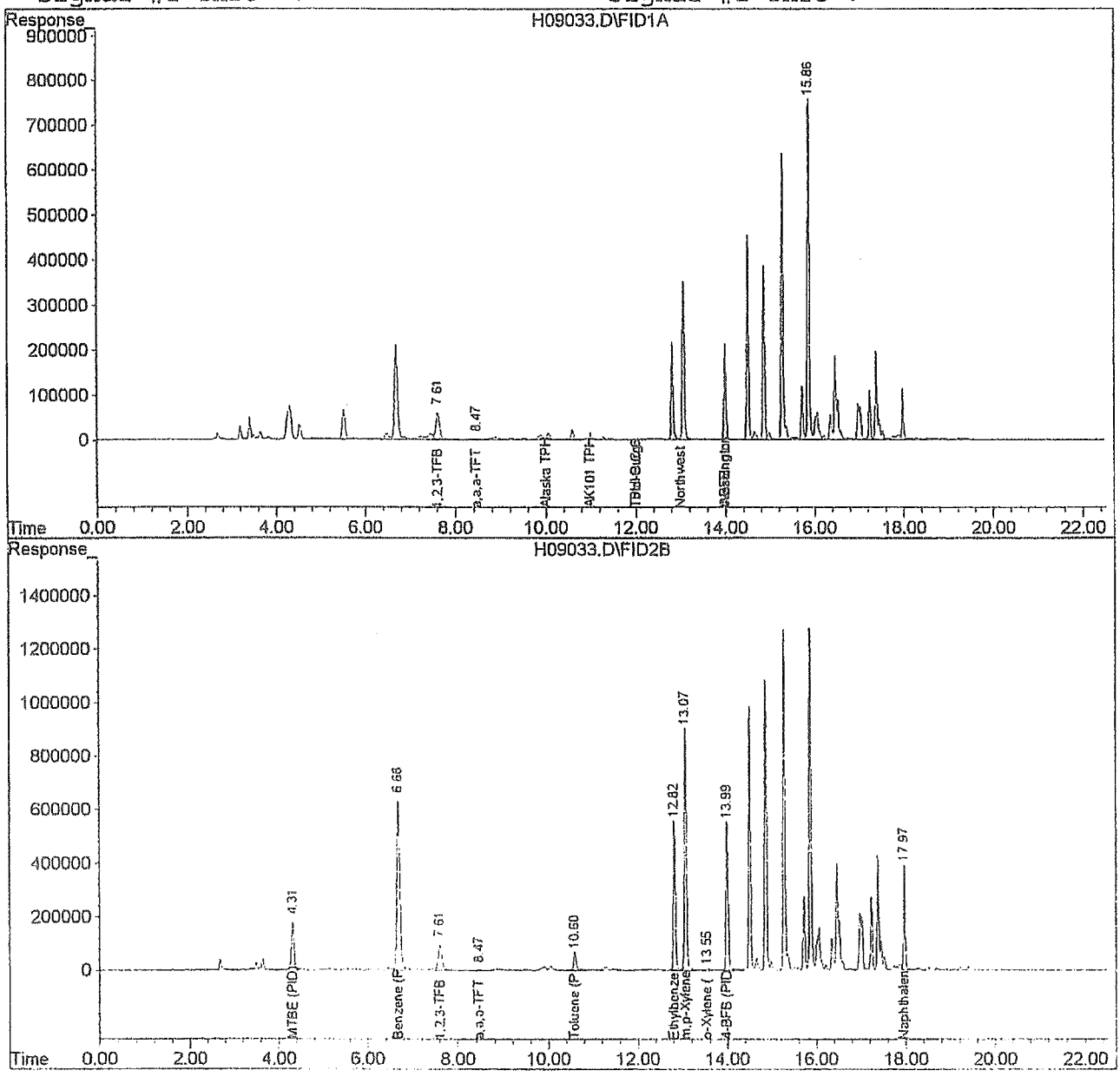


Quantitation Report

Signal #1 : C:\HPCHEM\2\DATA\080805\H09033.D\FID1A.CH Vial: 33
Signal #2 : C:\HPCHEM\2\DATA\080805\H09033.D\FID2B.CH
Acq On : 10 Aug 2005 1:54 Operator: nsb
Sample : b5g0699-03 Inst : GC #4
Misc : 1x 5 mL Multiplr: 1.00
IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E
Quant Time: Aug 10 2:17 2005 Quant Results File: TGH0705.RES

Quant Method : C:\HPCHEM\2\METHODS\TGH0705.M (Chemstation Integrator)
Title : TPH-G/BTEX 8015/8021 Method
Last Update : Tue Aug 09 12:05:55 2005
Response via : Multiple Level Calibration
DataAcq Meth : TGH0705.M

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

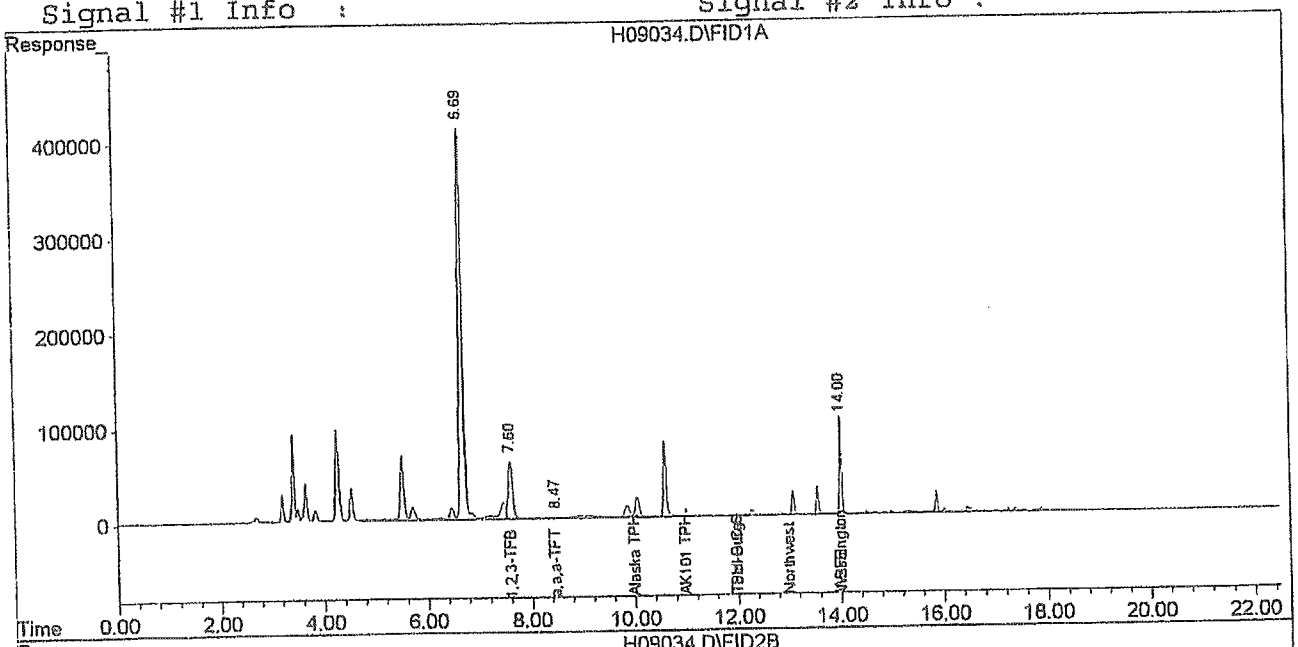


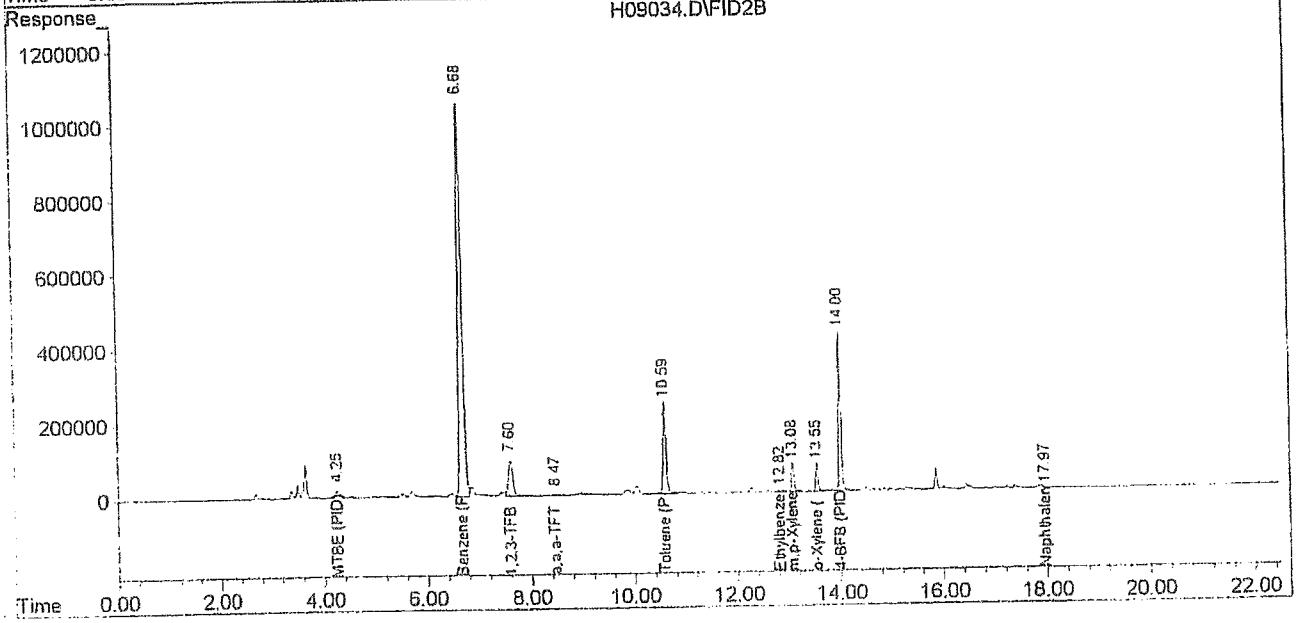
Quantitation Report

Signal #1 : C:\HPCHEM\2\DATA\080805\H09034.D\FID1A.CH Vial: 34
Signal #2 : C:\HPCHEM\2\DATA\080805\H09034.D\FID2B.CH
Acq On : 10 Aug 2005 2:24 Operator: nsb
Sample : b5g0699-04 Inst : GC #4
Misc : 1x 5 mL Multiplr: 1.00
IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E
Quant Time: Aug 10 2:47 2005 Quant Results File: TGH0705.RES

Quant Method : C:\HPCHEM\2\METHODS\TGH0705.M (Chemstation Integrator)
Title : TPH-G/BTEX 8015/8021 Method
Last Update : Tue Aug 09 12:05:55 2005
Response via : Multiple Level Calibration
DataAcq Meth : TGH0705.M

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



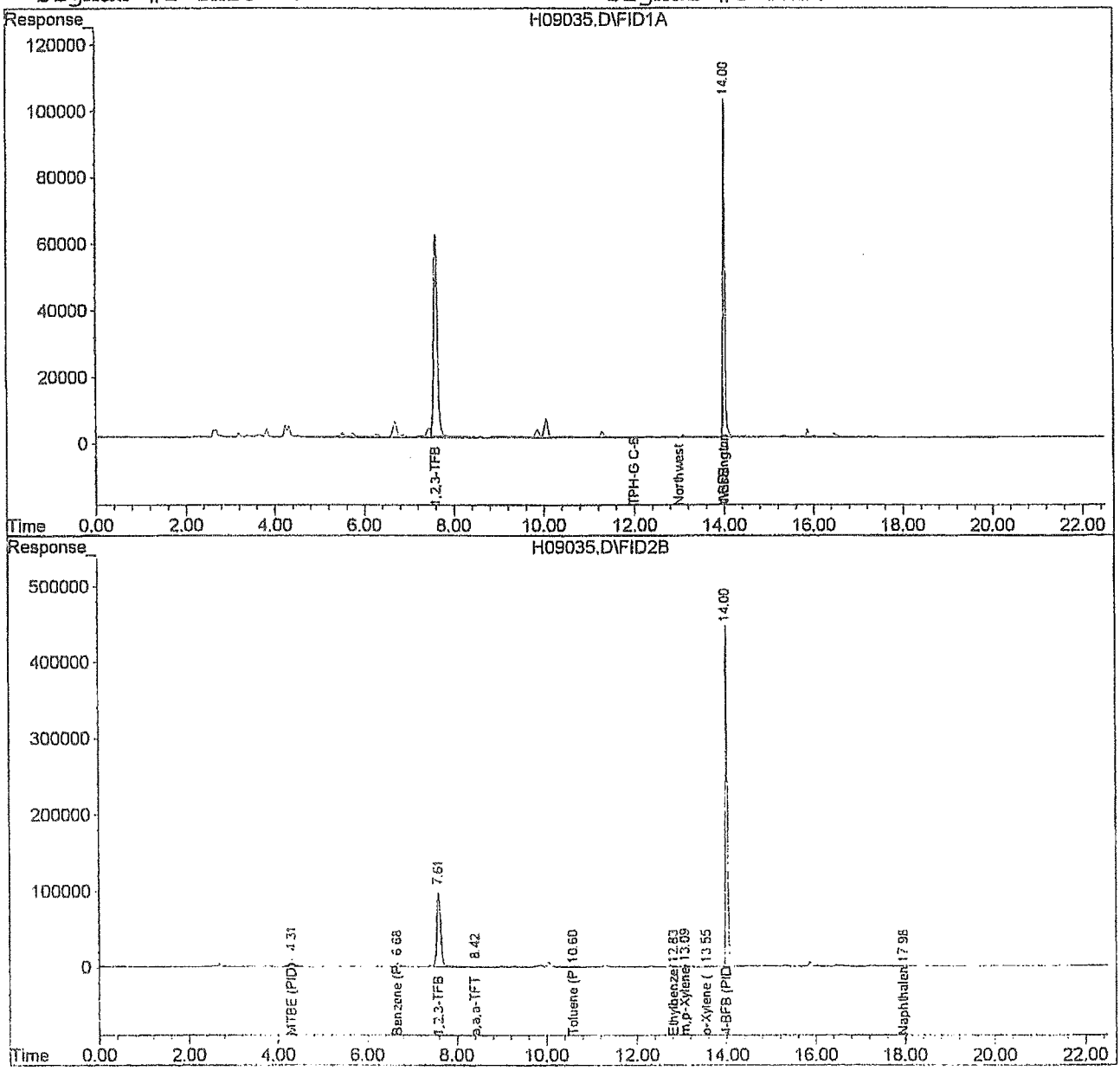


Quantitation Report

Signal #1 : C:\HPCHEM\2\DATA\080805\H09035.D\FID1A.CH Vial: 35
Signal #2 : C:\HPCHEM\2\DATA\080805\H09035.D\FID2B.CH
Acq On : 10 Aug 2005 2:54 Operator: nsb
Sample : b5g0699-05 Inst : GC #4
Misc : 1x 5 mL Multiplr: 1.00
IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E
Quant Time: Aug 10 3:16 2005 Quant Results File: TGH0705.RES

Quant Method : C:\HPCHEM\2\METHODS\TGH0705.M (Chemstation Integrator)
Title : TPH-G/BTEX 8015/8021 Method
Last Update : Tue Aug 09 12:05:55 2005
Response via : Multiple Level Calibration
DataAcq Meth : TGH0705.M

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

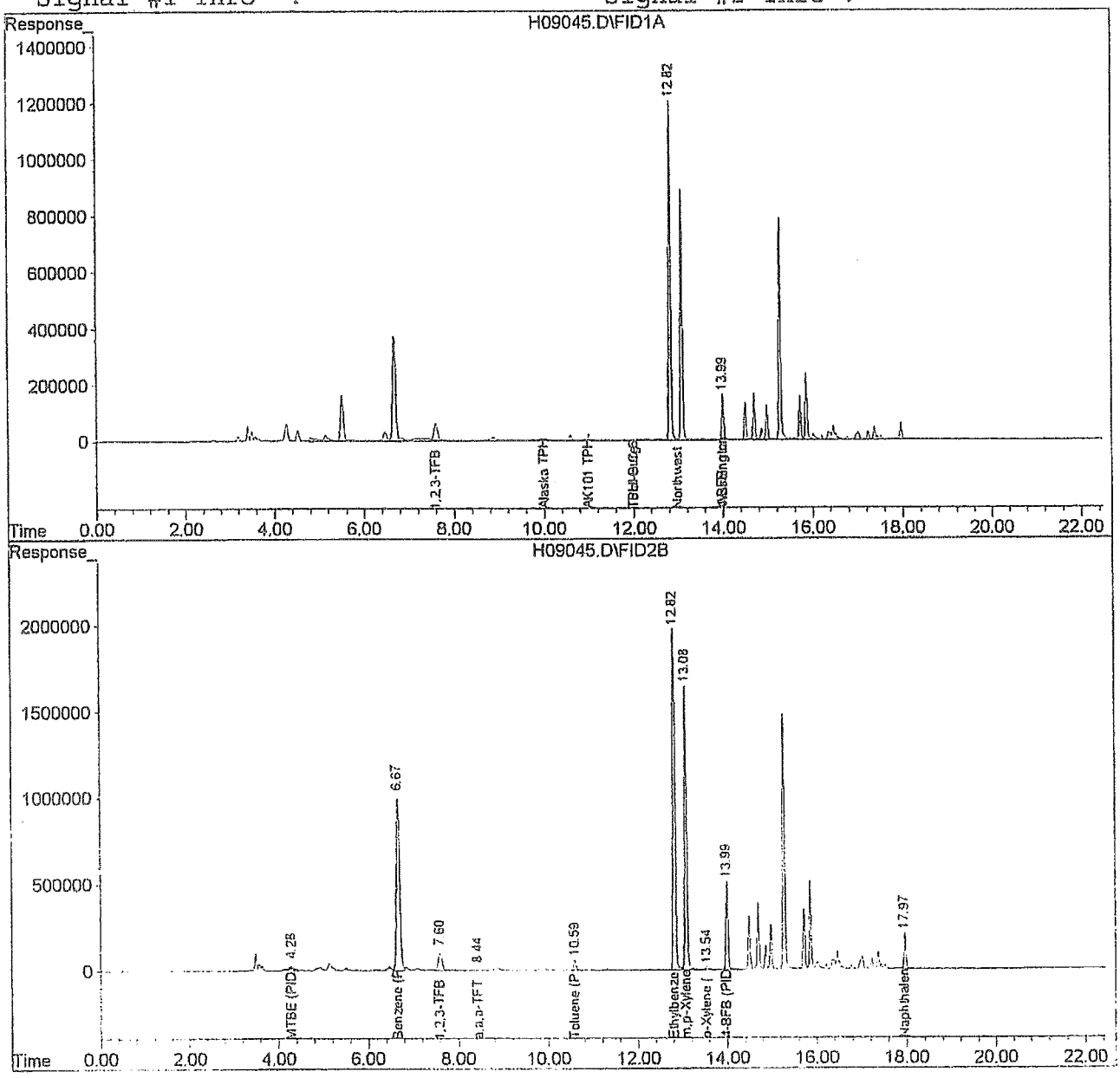


Quantitation Report

Signal #1 : C:\HPCHEM\2\DATA\080805\H09045.D\FID1A.CH Vial: 45
Signal #2 : C:\HPCHEM\2\DATA\080805\H09045.D\FID2B.CH
Acq On : 10 Aug 2005 7:51 Operator: nsb
Sample : b5g0699-06 Inst : GC #4
Misc : 10x 500 uL Multiplr: 1.00
IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E
Quant Time: Aug 10 8:13 2005 Quant Results File: TGH0705.RES

Quant Method : C:\HPCHEM\2\METHODS\TGH0705.M (Chemstation Integrator)
Title : TPH-G/BTEX 8015/8021 Method
Last Update : Tue Aug 09 12:05:55 2005
Response via : Multiple Level Calibration
DataAcq Meth : TGH0705.M

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

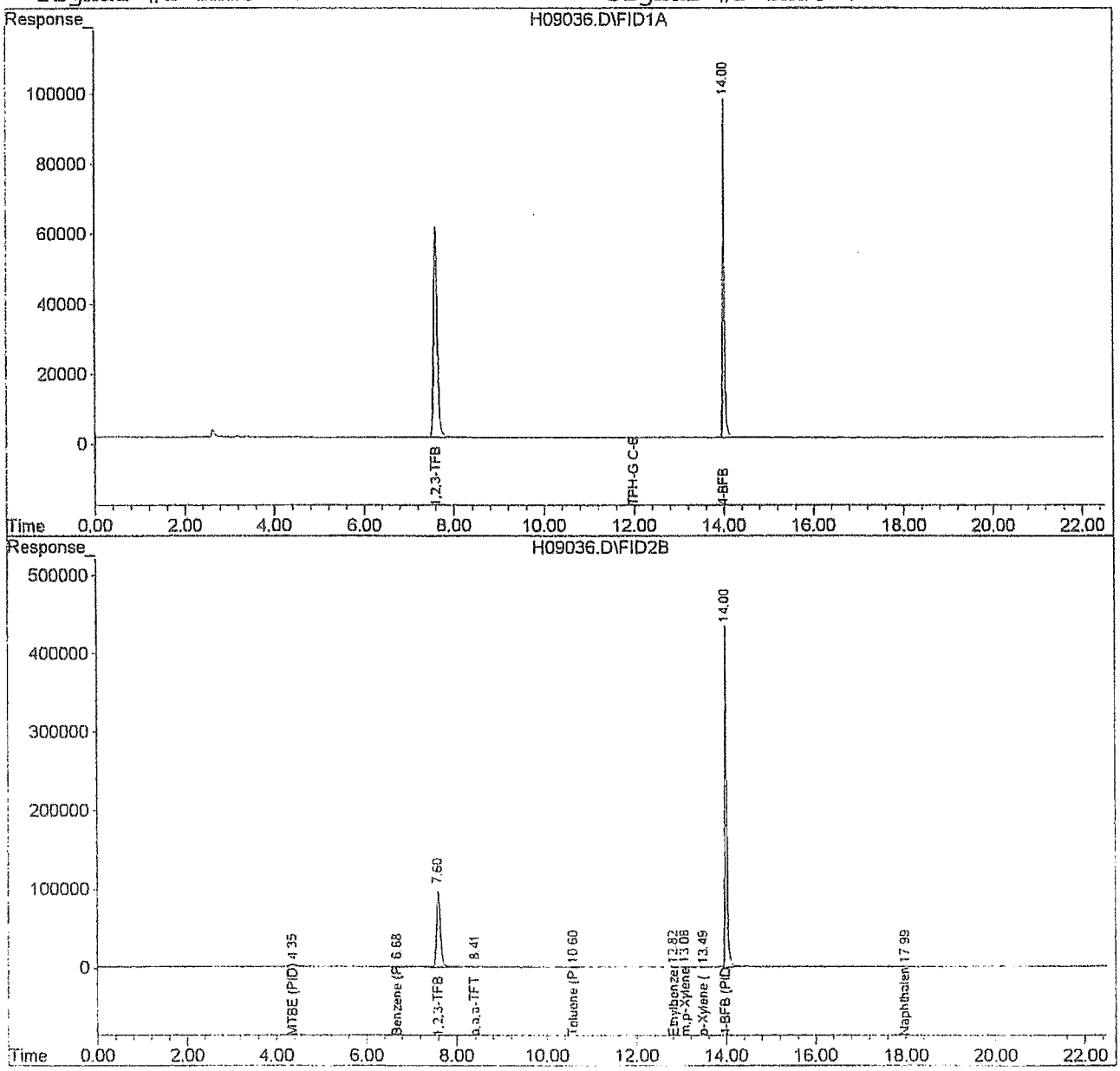


Quantitation Report

Signal #1 : C:\HPCHEM\2\DATA\080805\H09036.D\FID1A.CH Vial: 36
Signal #2 : C:\HPCHEM\2\DATA\080805\H09036.D\FID2B.CH
Acq On : 10 Aug 2005 3:23 Operator: nsb
Sample : b5g0699-07 Inst : GC #4
Misc : 1x 5 mL Multiplr: 1.00
IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E
Quant Time: Aug 10 3:46 2005 Quant Results File: TGH0705.RES

Quant Method : C:\HPCHEM\2\METHODS\TGH0705.M (Chemstation Integrator)
Title : TPH-G/BTEX 8015/8021 Method
Last Update : Tue Aug 09 12:05:55 2005
Response via : Multiple Level Calibration
DataAcq Meth : TGH0705.M

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

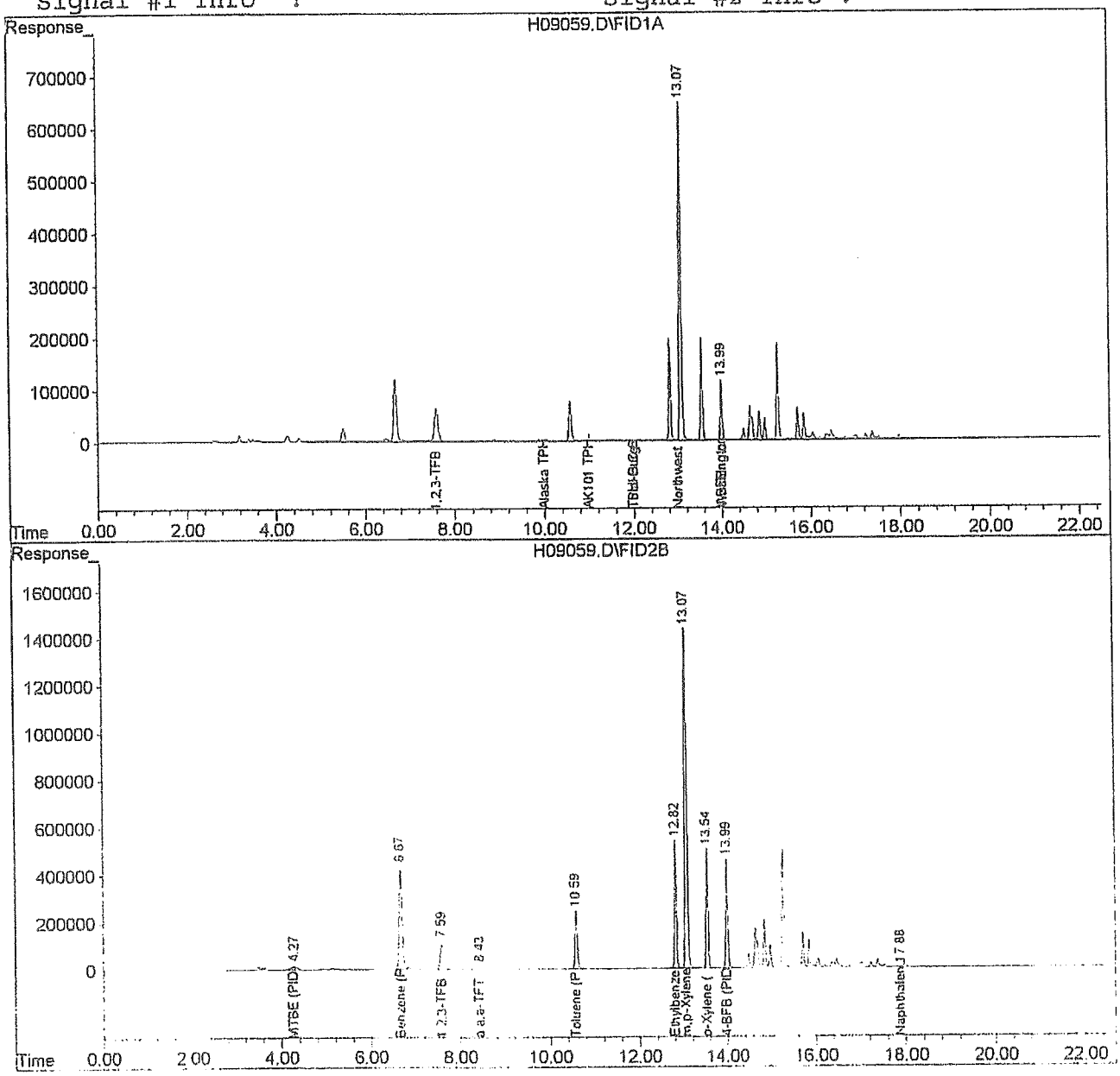


Quantitation Report

Signal #1 : C:\HPCHEM\2\DATA\080905\H09059.D\FID1A.CH Vial: 59
Signal #2 : C:\HPCHEM\2\DATA\080905\H09059.D\FID2B.CH
Acq On : 10 Aug 2005 17:02 Operator: nsb
Sample : b5g0699-08 r1 Inst : GC #4
Misc : 50x 100 uL Multiplr: 1.00
IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E
Quant Time: Aug 10 17:25 2005 Quant Results File: TGH0705.RES

Quant Method : C:\HPCHEM\2\METHODS\TGH0705.M (Chemstation Integrator)
Title : TPH-G/BTEX 8015/8021 Method
Last Update : Tue Aug 09 12:05:55 2005
Response via : Multiple Level Calibration
DataAcq Meth : TGH0705.M

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

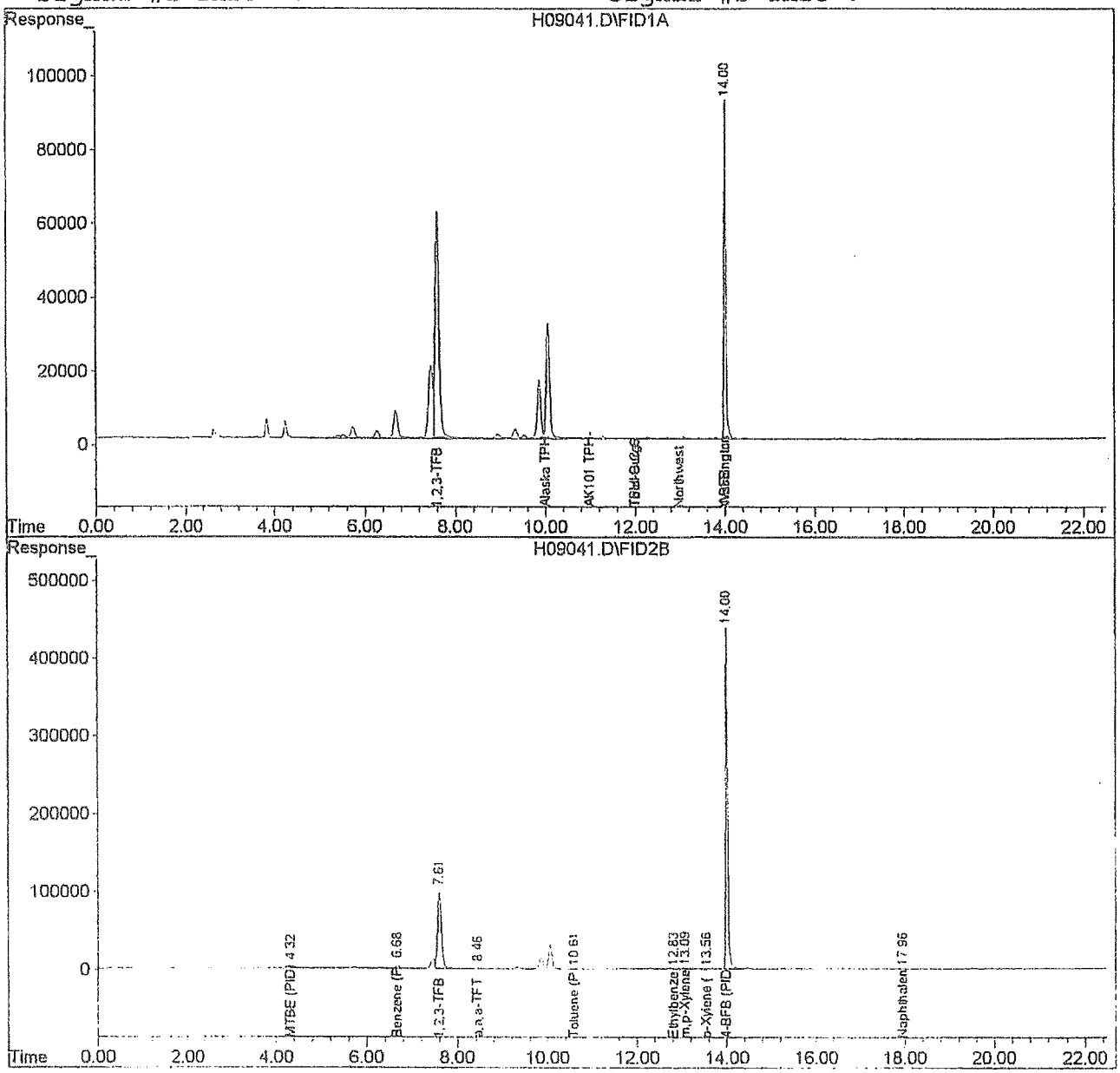


Quantitation Report

Signal #1 : C:\HPCHEM\2\DATA\080805\H09041.D\FID1A.CH Vial: 41
Signal #2 : C:\HPCHEM\2\DATA\080805\H09041.D\FID2B.CH
Acq On : 10 Aug 2005 5:52 Operator: nsb
Sample : b5g0699-09 Inst : GC #4
Misc : 1x 5 mL Multiplr: 1.00
IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E
Quant Time: Aug 10 6:15 2005 Quant Results File: TGH0705.RES

Quant Method : C:\HPCHEM\2\METHODS\TGH0705.M (Chemstation Integrator)
Title : TPH-G/BTEX 8015/8021 Method
Last Update : Tue Aug 09 12:05:55 2005
Response via : Multiple Level Calibration
DataAcq Meth : TGH0705.M

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

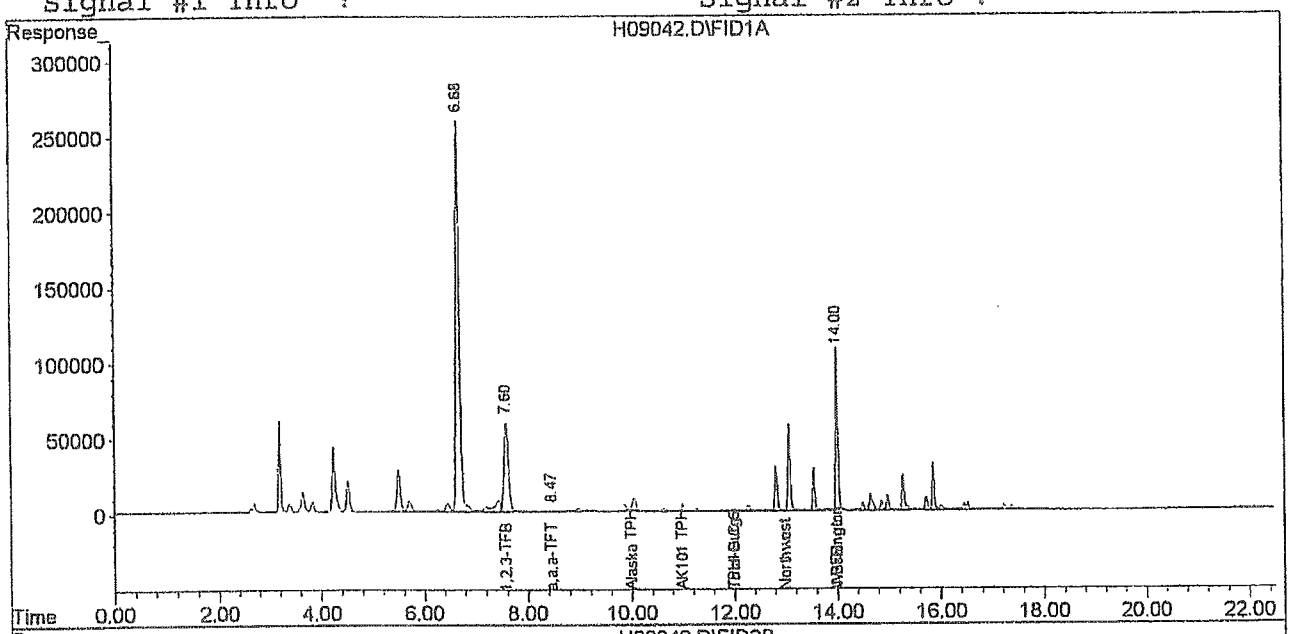


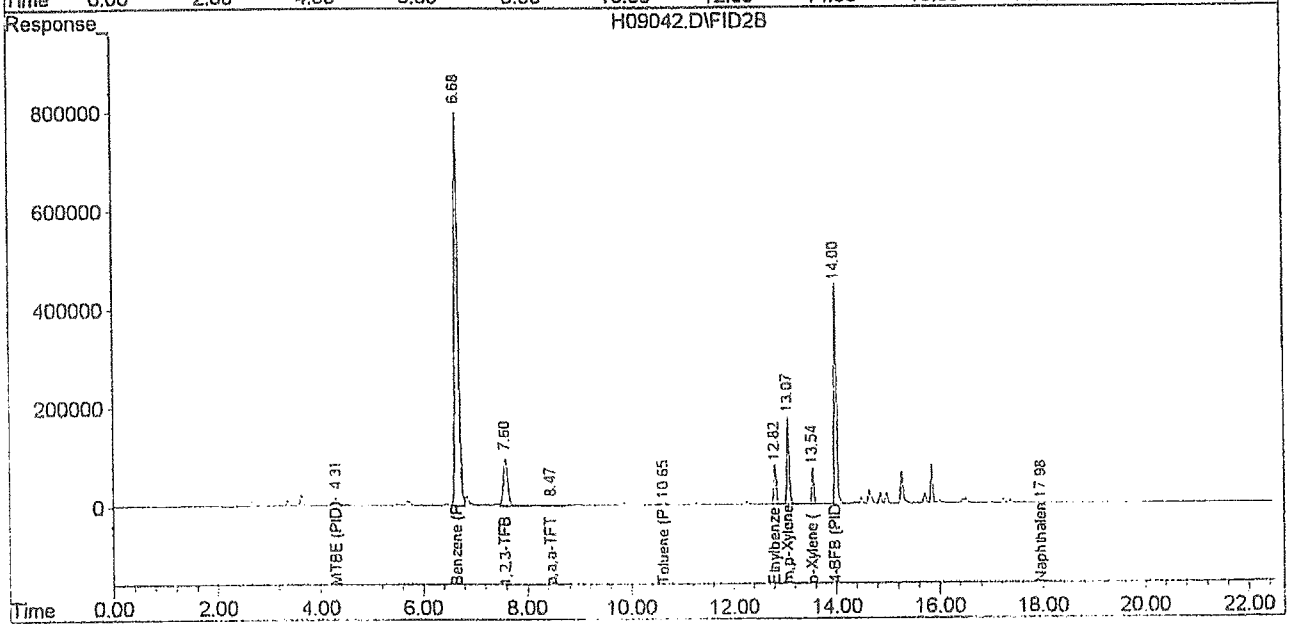
Quantitation Report

Signal #1 : C:\HPCHEM\2\DATA\080805\H09042.D\FID1A.CH Vial: 42
Signal #2 : C:\HPCHEM\2\DATA\080805\H09042.D\FID2B.CH
Acq On : 10 Aug 2005 6:21 Operator: nsb
Sample : b5g0699-10 Inst : GC #4
Misc : 1x 5 mL Multiplr: 1.00
IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E
Quant Time: Aug 10 6:44 2005 Quant Results File: TGH0705.RES

Quant Method : C:\HPCHEM\2\METHODS\TGH0705.M (Chemstation Integrator)
Title : TPH-G/BTEX 8015/8021 Method
Last Update : Tue Aug 09 12:05:55 2005
Response via : Multiple Level Calibration
DataAcq Meth : TGH0705.M

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



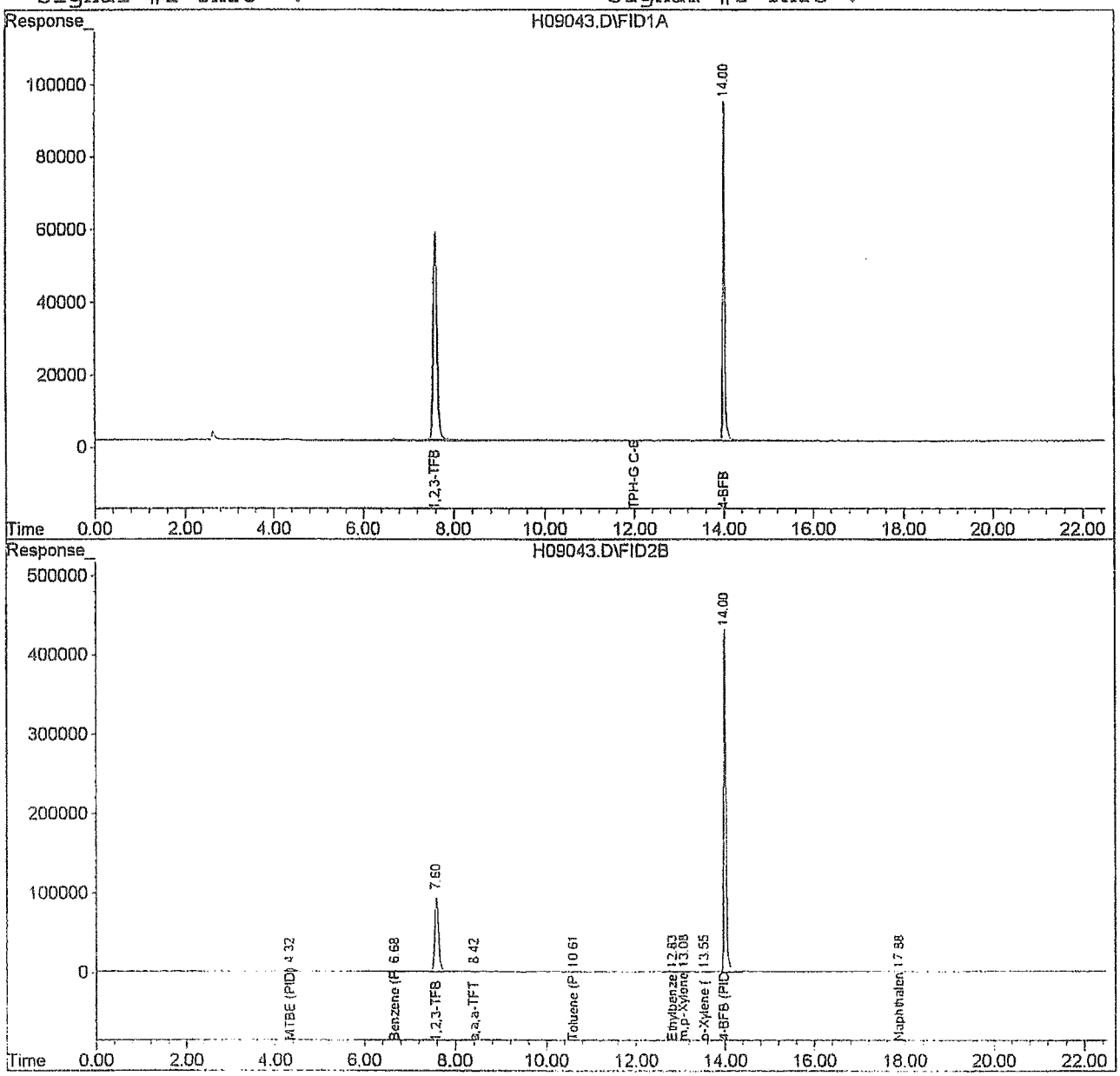


Quantitation Report

Signal #1 : C:\HPCHEM\2\DATA\080805\H09043.D\FID1A.CH Vial: 43
Signal #2 : C:\HPCHEM\2\DATA\080805\H09043.D\FID2B.CH
Acq On : 10 Aug 2005 6:51 Operator: nsb
Sample : b5g0699-11 Inst : GC #4
Misc : 1x 5 mL Multiplr: 1.00
IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E
Quant Time: Aug 10 7:14 2005 Quant Results File: TGH0705.RES

Quant Method : C:\HPCHEM\2\METHODS\TGH0705.M (Chemstation Integrator)
Title : TPH-G/BTEX 8015/8021 Method
Last Update : Tue Aug 09 12:05:55 2005
Response via : Multiple Level Calibration
DataAcq Meth : TGH0705.M

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

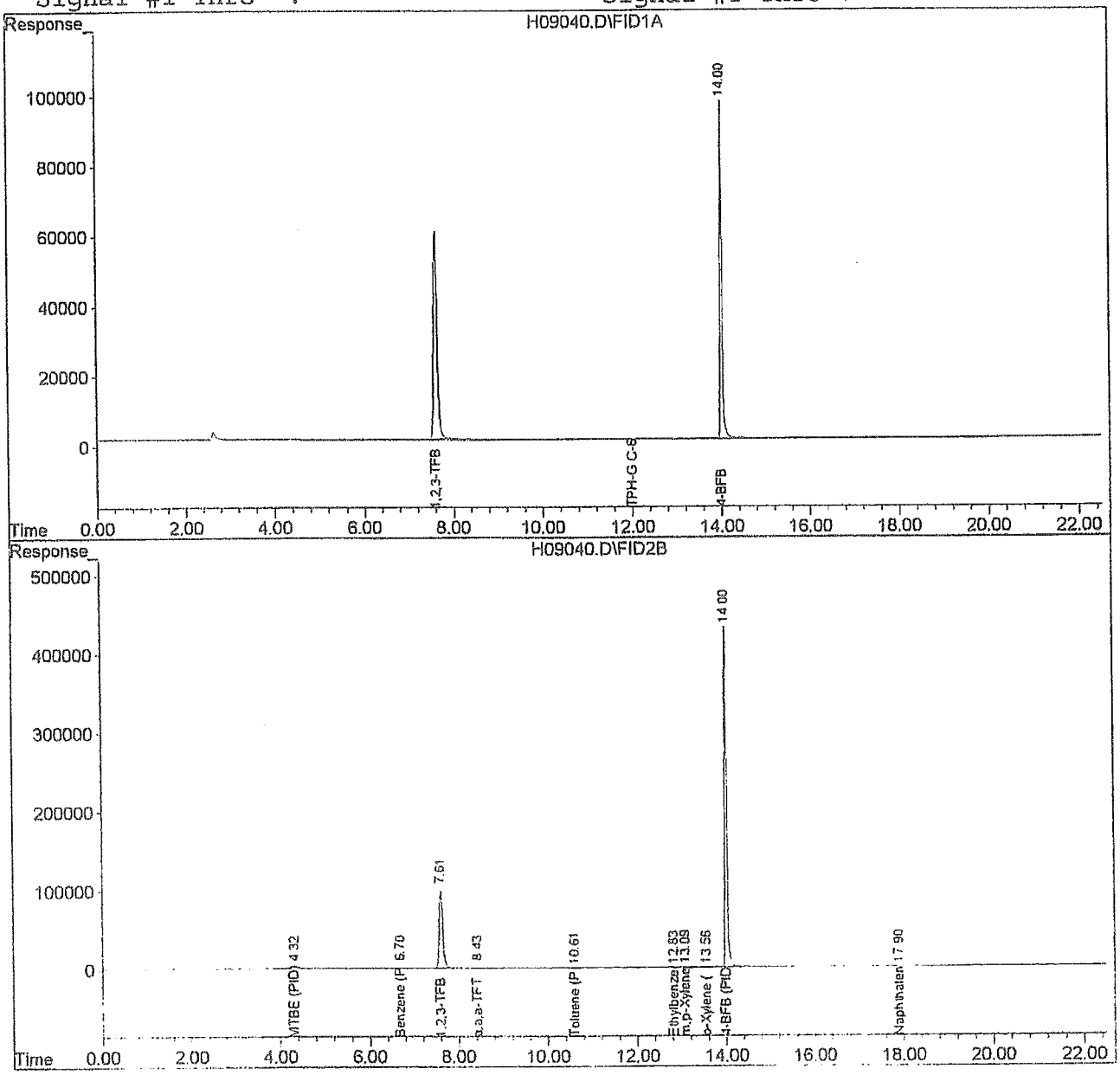


Quantitation Report

Signal #1 : C:\HPCHEM\2\DATA\080805\H09040.D\FID1A.CH Vial: 40
Signal #2 : C:\HPCHEM\2\DATA\080805\H09040.D\FID2B.CH
Acq On : 10 Aug 2005 5:22 Operator: nsb
Sample : b5g0699-12 Inst : GC #4
Misc : 1x 5 mL tb Multiplr: 1.00
IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E
Quant Time: Aug 10 5:45 2005 Quant Results File: TGH0705.RES

Quant Method : C:\HPCHEM\2\METHODS\TGH0705.M (Chemstation Integrator)
Title : TPH-G/BTEX 8015/8021 Method
Last Update : Tue Aug 09 12:05:55 2005
Response via : Multiple Level Calibration
DataAcq Meth : TGH0705.M

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

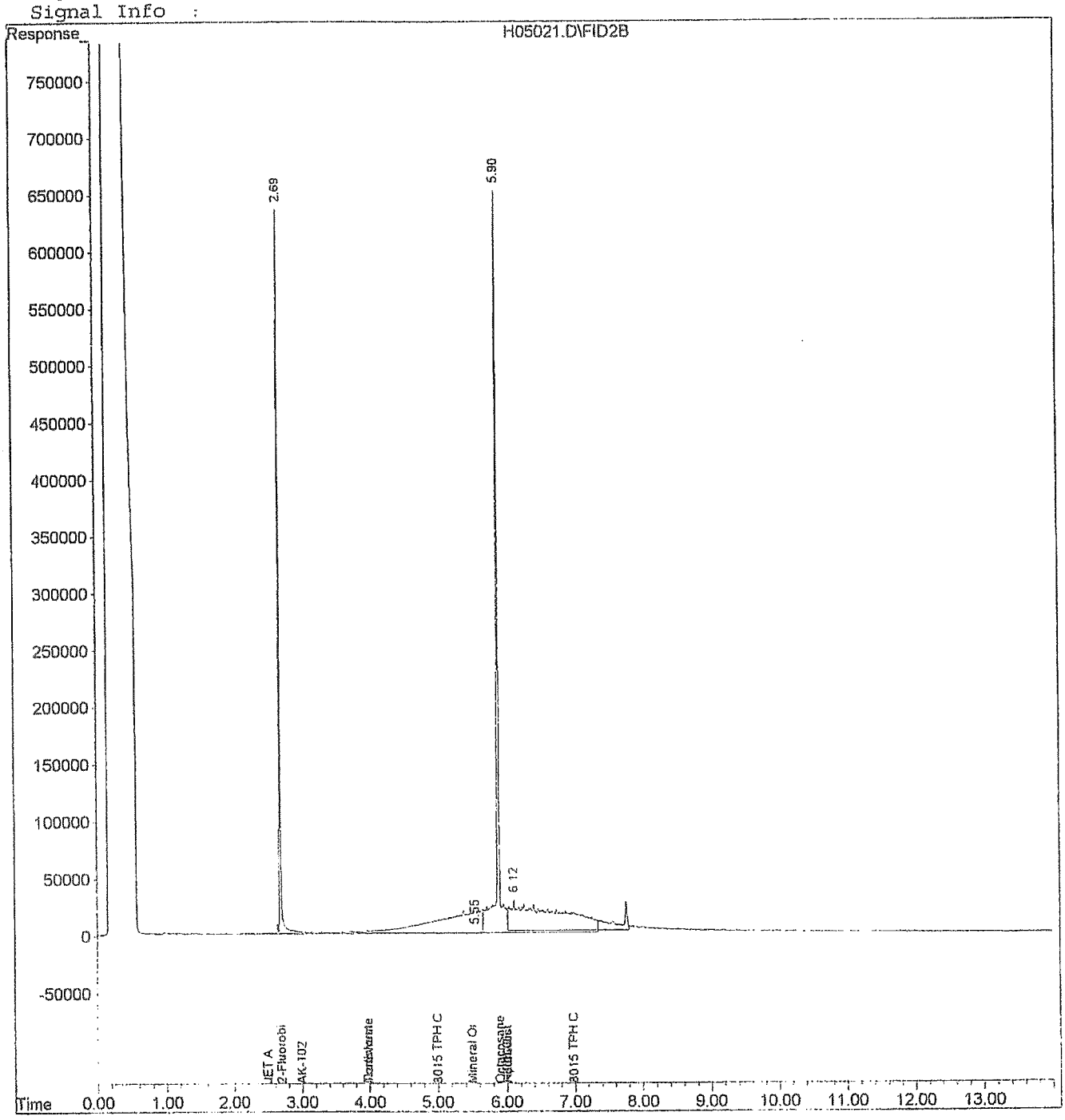


Quantitation Report

Data File : C:\HPCHEM\1\DATA\080505.SEC\H05021.D Vial: 58
Acq On : 5 Aug 2005 22:41 Operator: DEB
Sample : B5G0699-01 Inst : GC-7
Misc : 1X NWTPH-Dx w/SG Water Multiplr: 1.00
IntFile : SURR.E
Quant Time: Aug 8 9:12 2005 Quant Results File: TRF0805.RES

Quant Method : D:\HPCHEM\2\METHODS\TRF0805.M (Chemstation Integrator)
Title : GC#7 TPH-Dx Rear Column
Last Update : Thu Jun 09 08:11:18 2005
Response via : Multiple Level Calibration
DataAcq Meth : TFE1805.M

Volume Inj. :
Signal Phase :
Signal Info :



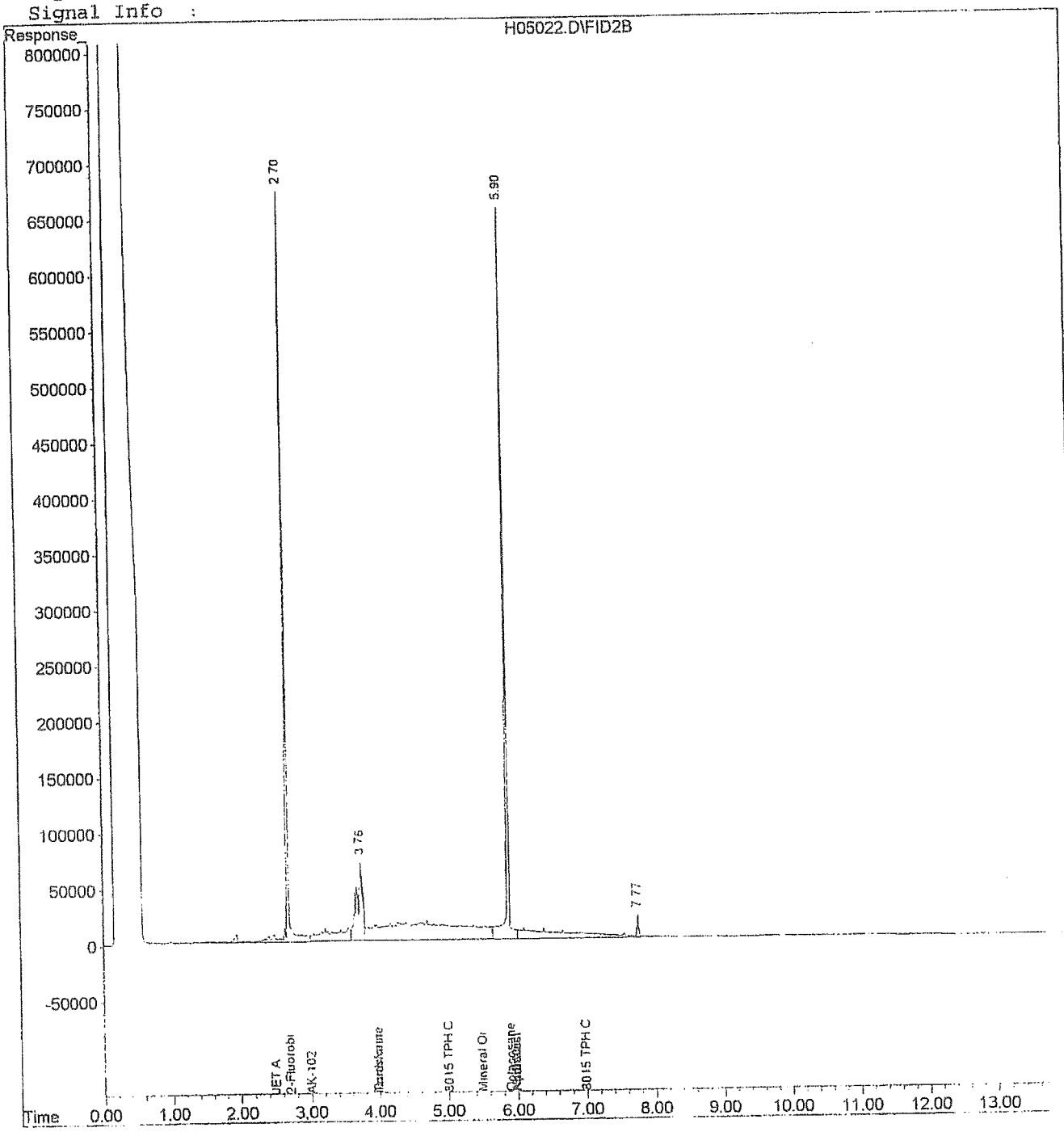
Quantitation Report

Data File : C:\HPCHEM\1\DATA\080505.SEC\H05022.D
Acq On : 5 Aug 2005 22:53
Sample : B5G0699-02
Misc : 1X NWTPH-Dx w/SG Water
IntFile : SURR.E
Quant Time: Aug 5 23:03 2005 Quant Results File: TRF0805.RES

Vial: 59
Operator: DEB
Inst : GC-7
Multiplr: 1.00

Quant Method : D:\HPCHEM\2\METHODS\TRF0805.M (Chemstation Integrator)
Title : GC#7 TPH-Dx Rear Column
Last Update : Thu Jun 09 08:11:18 2005
Response via : Multiple Level Calibration
DataAcq Meth : TFE1805.M

Volume Inj. :
Signal Phase :
Signal Info :

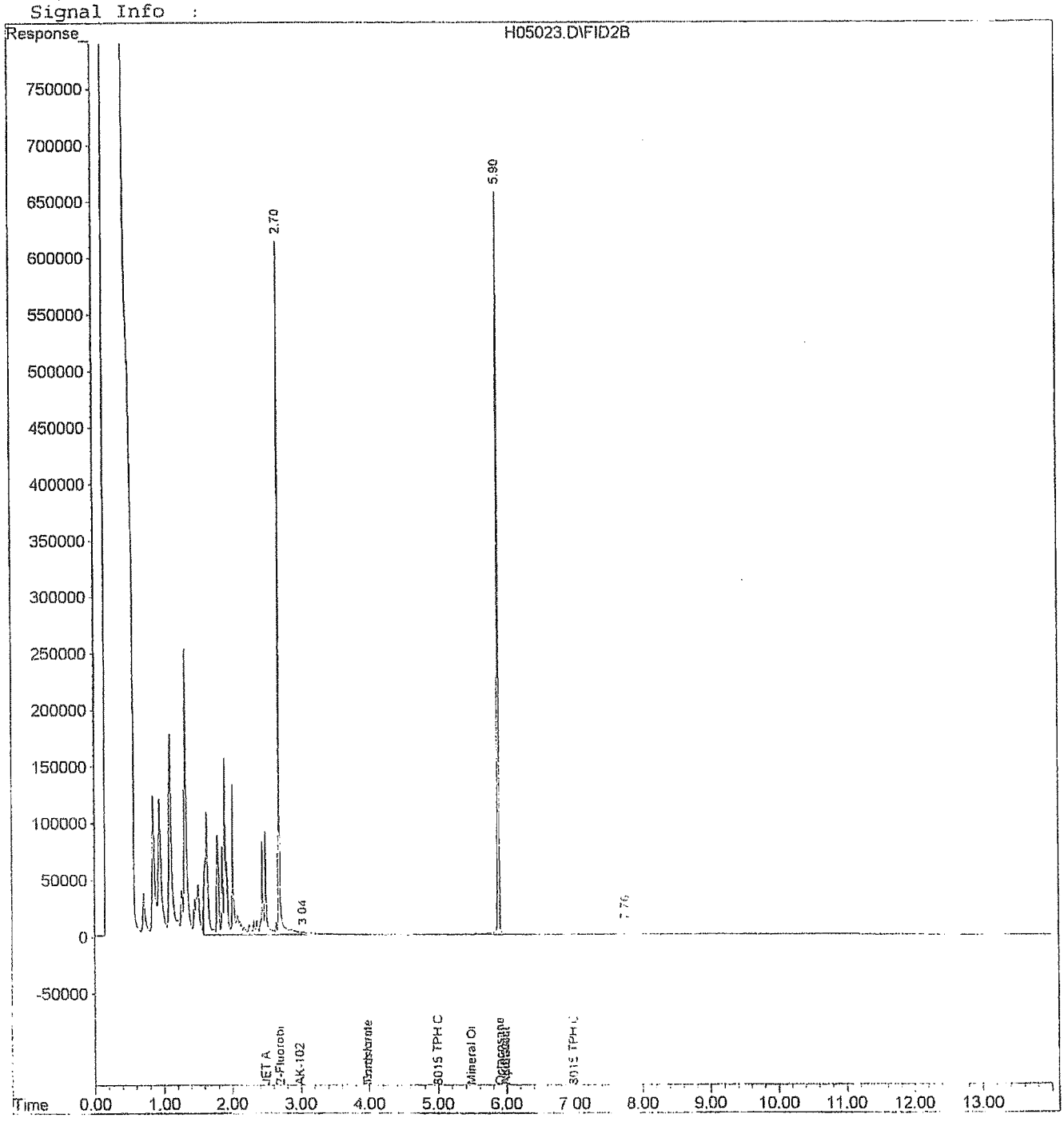


Quantitation Report

Data File : C:\HPCHEM\1\DATA\080505.SEC\H05023.D Vial: 60
Acq On : 5 Aug 2005 23:11 Operator: DEB
Sample : B5G0699-03 Inst : GC-7
Misc : 1X NWTPH-Dx w/SG Water Multiplr: 1.00
IntFile : SURR.E
Quant Time: Aug 5 23:24 2005 Quant Results File: TRF0805.RES

Quant Method : D:\HPCHEM\2\METHODS\TRF0805.M (Chemstation Integrator)
Title : GC#7 TPH-Dx Rear Column
Last Update : Thu Jun 09 08:11:18 2005
Response via : Multiple Level Calibration
DataAcq Meth : TFE1805.M

Volume Inj. :
Signal Phase :
Signal Info :

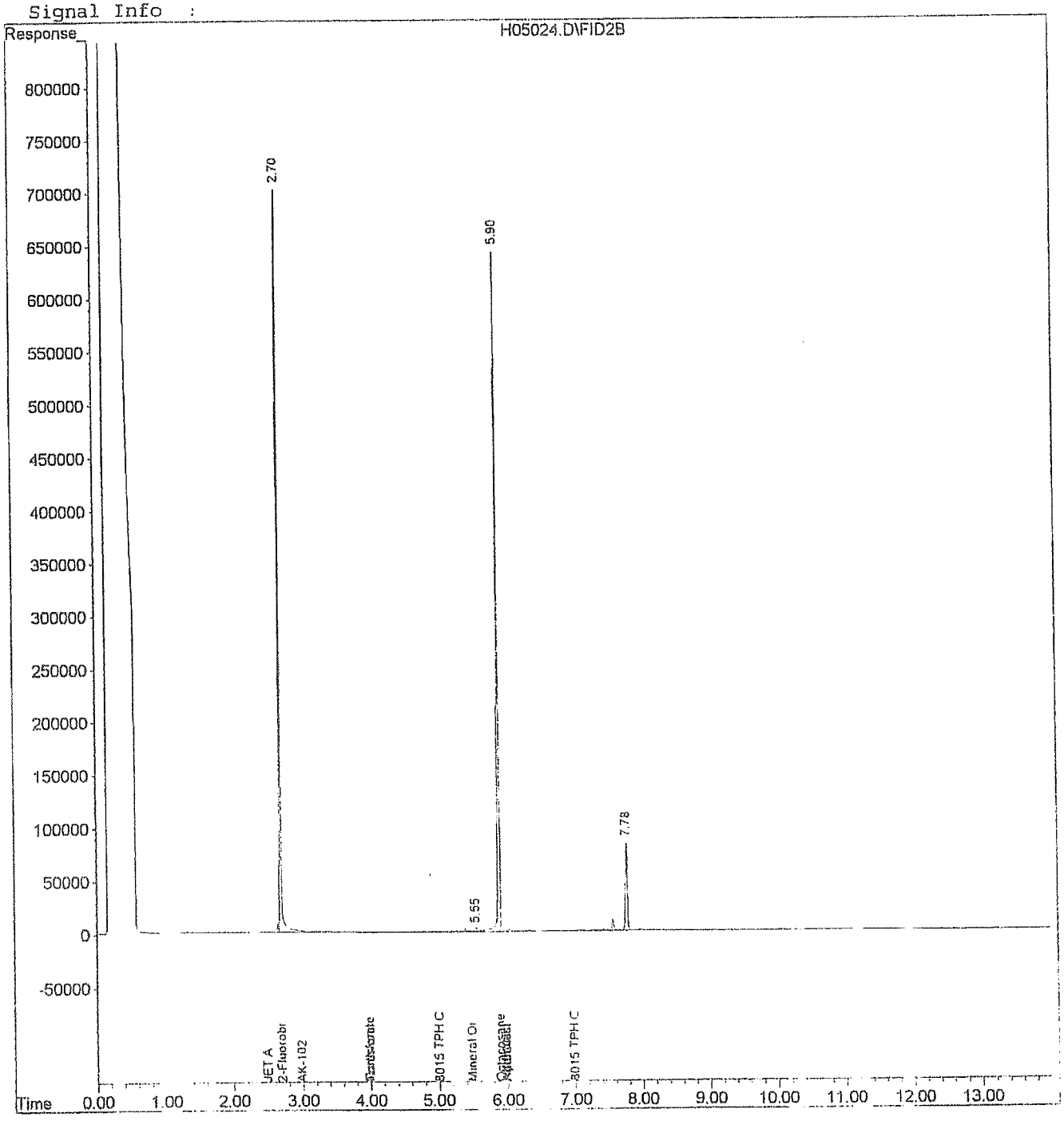


Quantitation Report

Data File : C:\HPCHEM\1\DATA\080505.SEC\H05024.D Vial: 61
Acq On : 5 Aug 2005 23:37 Operator: DEB
Sample : B5G0699-04 Inst : GC-7
Misc : 1X NWTPH-Dx w/SG Water Multiplr: 1.00
IntFile : SURR.E
Quant Time: Aug 5 23:45 2005 Quant Results File: TRF0805.RES

Quant Method : D:\HPCHEM\2\METHODS\TRF0805.M (Chemstation Integrator)
Title : GC#7 TPH-Dx Rear Column
Last Update : Thu Jun 09 08:11:18 2005
Response via : Multiple Level Calibration
DataAcq Meth : TFE1805.M

Volume Inj. :
Signal Phase :
Signal Info :

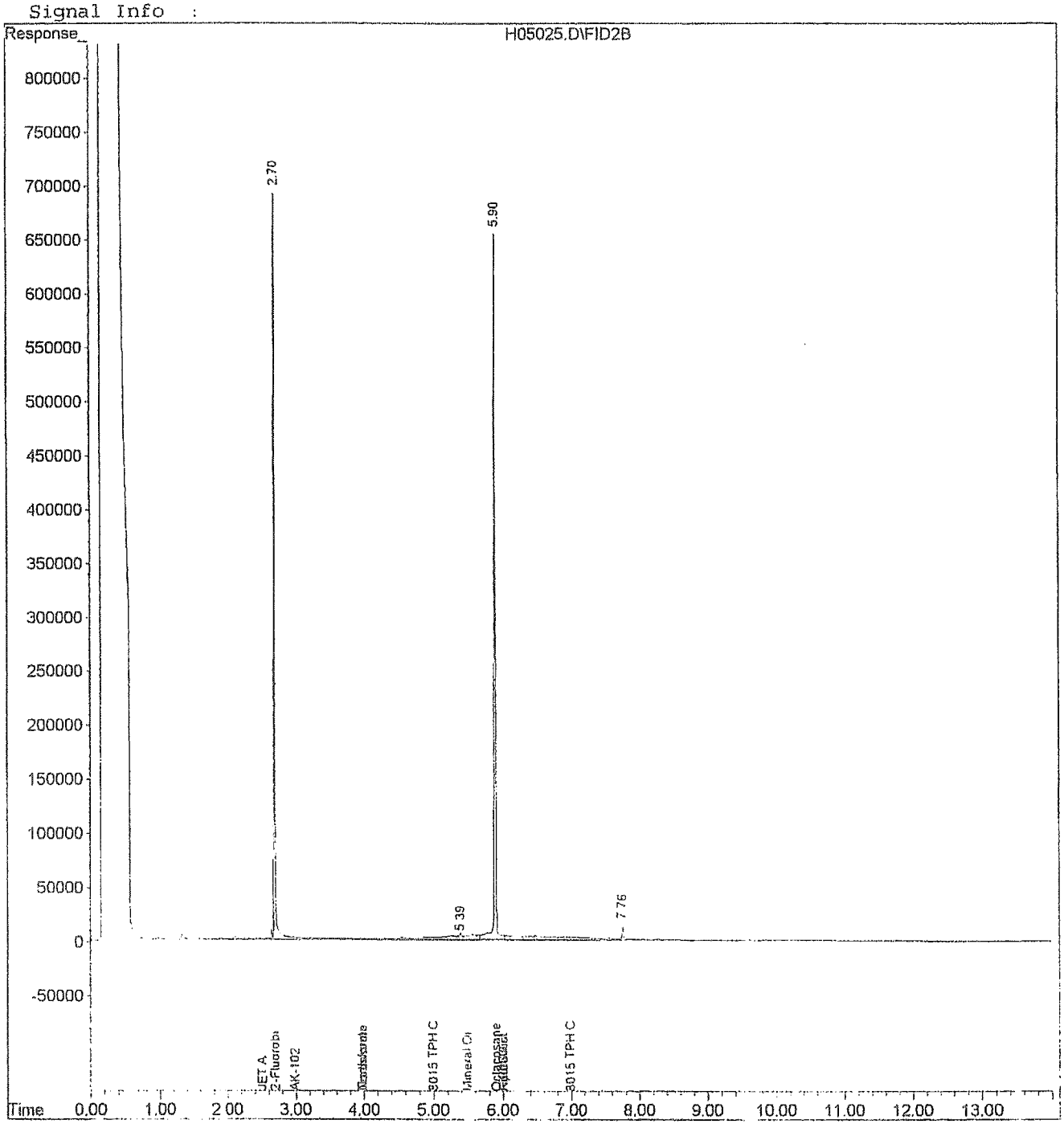


Quantitation Report

Data File : C:\HPCHEM\1\DATA\080505.SEC\H05025.D Vial: 62
Acq On : 5 Aug 2005 00:05 Operator: DEB
Sample : B5G0699-05 Inst : GC-7
Misc : 1X NWTPH-Dx w/SG Water Multiplr: 1.00
IntFile : SURR.E
Quant Time: Aug 6 0:07 2005 Quant Results File: TRF0805.RES

Quant Method : D:\HPCHEM\2\METHODS\TRF0805.M (Chemstation Integrator)
Title : GC#7 TPH-Dx Rear Column
Last Update : Thu Jun 09 08:11:18 2005
Response via : Multiple Level Calibration
DataAcq Meth : TFE1805.M

Volume Inj. :
Signal Phase :
Signal Info :



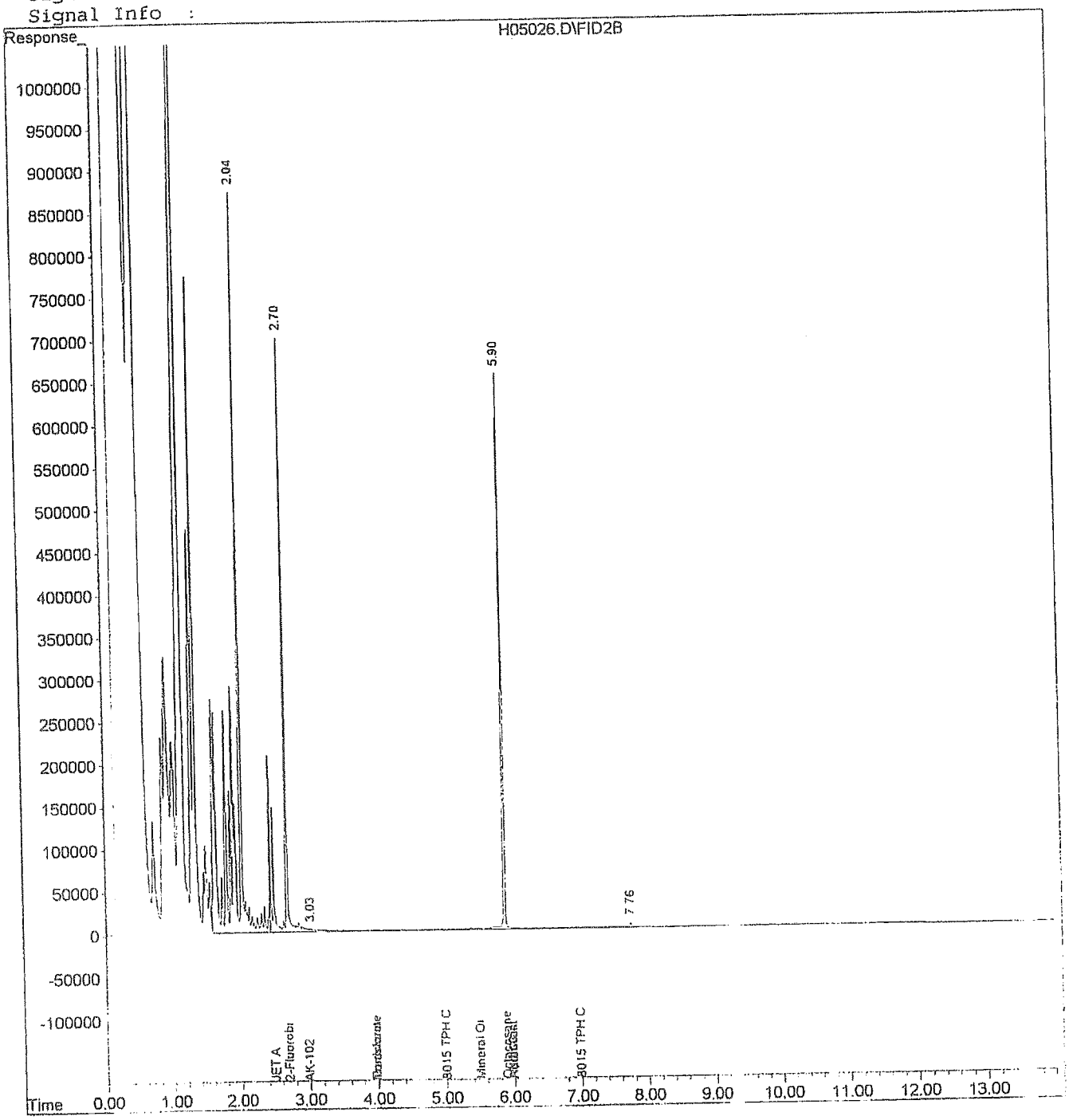
Quantitation Report

Data File : C:\HPCHEM\1\DATA\080505.SEC\H05026.D
Acq On : 6 Aug 2005 00:20
Sample : B5G0699-06
Misc : 1X NWTPH-Dx w/SG Water
IntFile : SURR.E
Quant Time: Aug 6 0:28 2005 Quant Results File: TRF0805.RES

Vial: 63
Operator: DEB
Inst : GC-7
Multiplr: 1.00

Quant Method : D:\HPCHEM\2\METHODS\TRF0805.M (Chemstation Integrator)
Title : GC#7 TPH-Dx Rear Column
Last Update : Thu Jun 09 08:11:18 2005
Response via : Multiple Level Calibration
DataAcq Meth : TFE1805.M

Volume Inj. :
Signal Phase :
Signal Info :

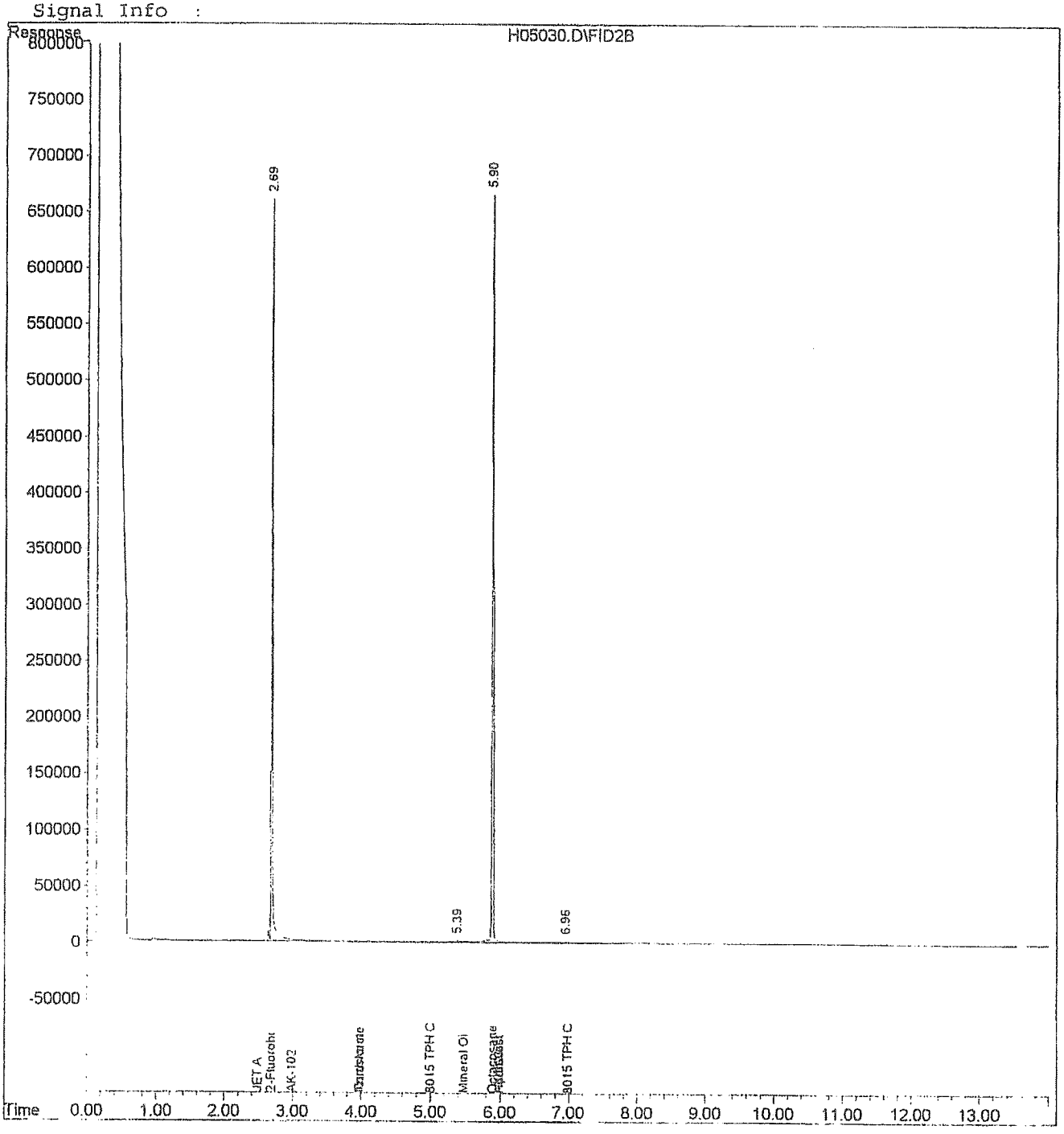


Quantitation Report

Data File : C:\HPCHEM\1\DATA\080505.SEC\H05030.D Vial: 66
Acq On : 6 Aug 2005 1:47 Operator: DEB
Sample : B5G0699-07 Inst : GC-7
Misc : 1X NWTPH-Dx w/SG Water Multiplr: 1.00
IntFile : SURR.E
Quant Time: Aug 6 1:53 2005 Quant Results File: TRF0805.RES

Quant Method : D:\HPCHEM\2\METHODS\TRF0805.M (Chemstation Integrator)
Title : GC#7 TPH-Dx Rear Column
Last Update : Thu Jun 09 08:11:18 2005
Response via : Multiple Level Calibration
DataAcq Meth : TFE1805.M

Volume Inj. :
Signal Phase :
Signal Info :

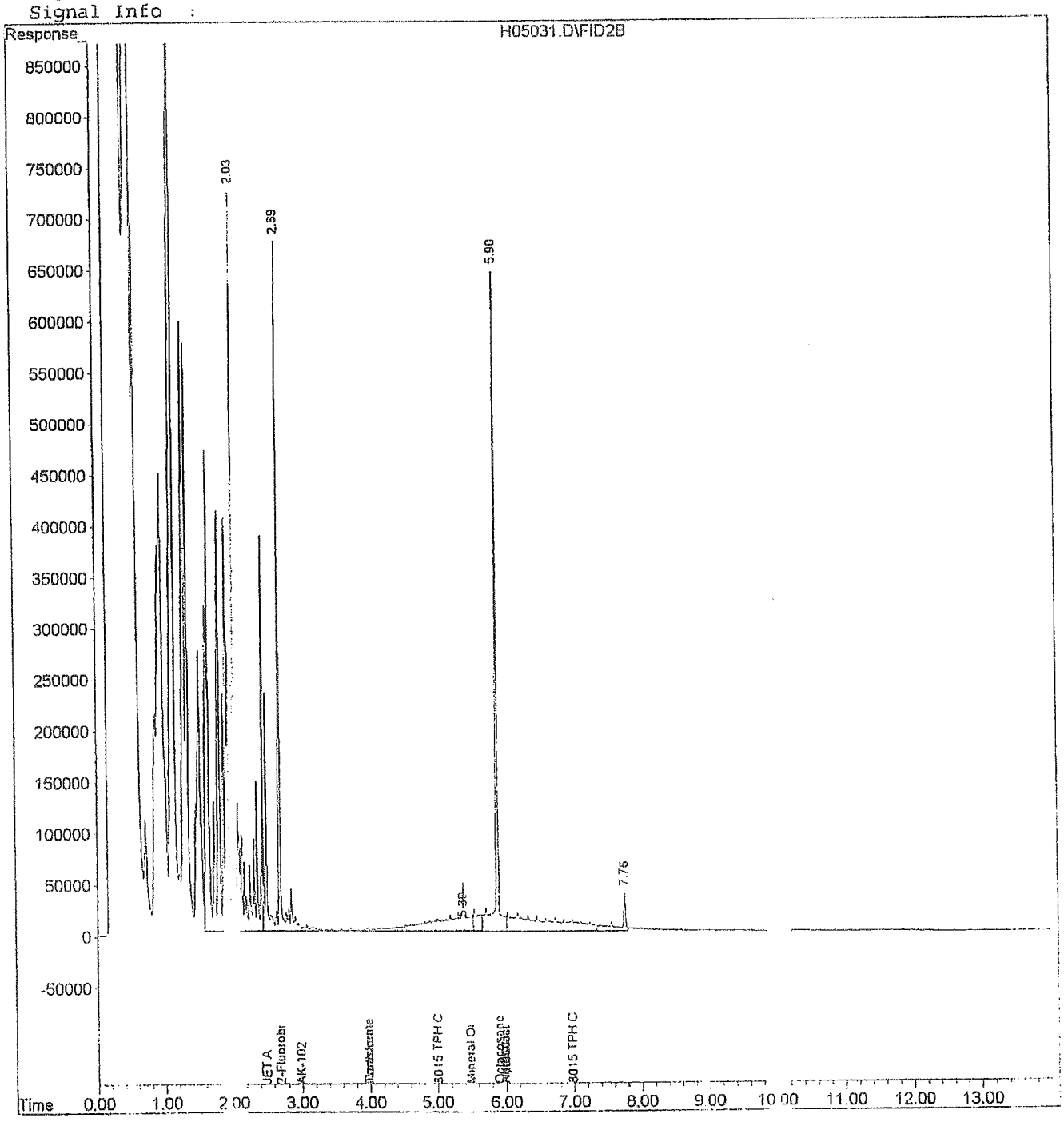


Quantitation Report

Data File : C:\HPCHEM\1\DATA\080505.SEC\H05031.D Vial: 67
Acq On : 6 Aug 2005 2:02 Operator: DEB
Sample : B5G0699-08 Inst : GC-7
Misc : 1X NWTPH-Dx w/SG Water Multiplr: 1.00
IntFile : SURR.E
Quant Time: Aug 6 2:15 2005 Quant Results File: TRF0805.RES

Quant Method : D:\HPCHEM\2\METHODS\TRF0805.M (Chemstation Integrator)
Title : GC#7 TPH-Dx Rear Column
Last Update : Thu Jun 09 08:11:18 2005
Response via : Multiple Level Calibration
DataAcq Meth : TFE1805.M

Volume Inj. :
Signal Phase :
Signal Info :

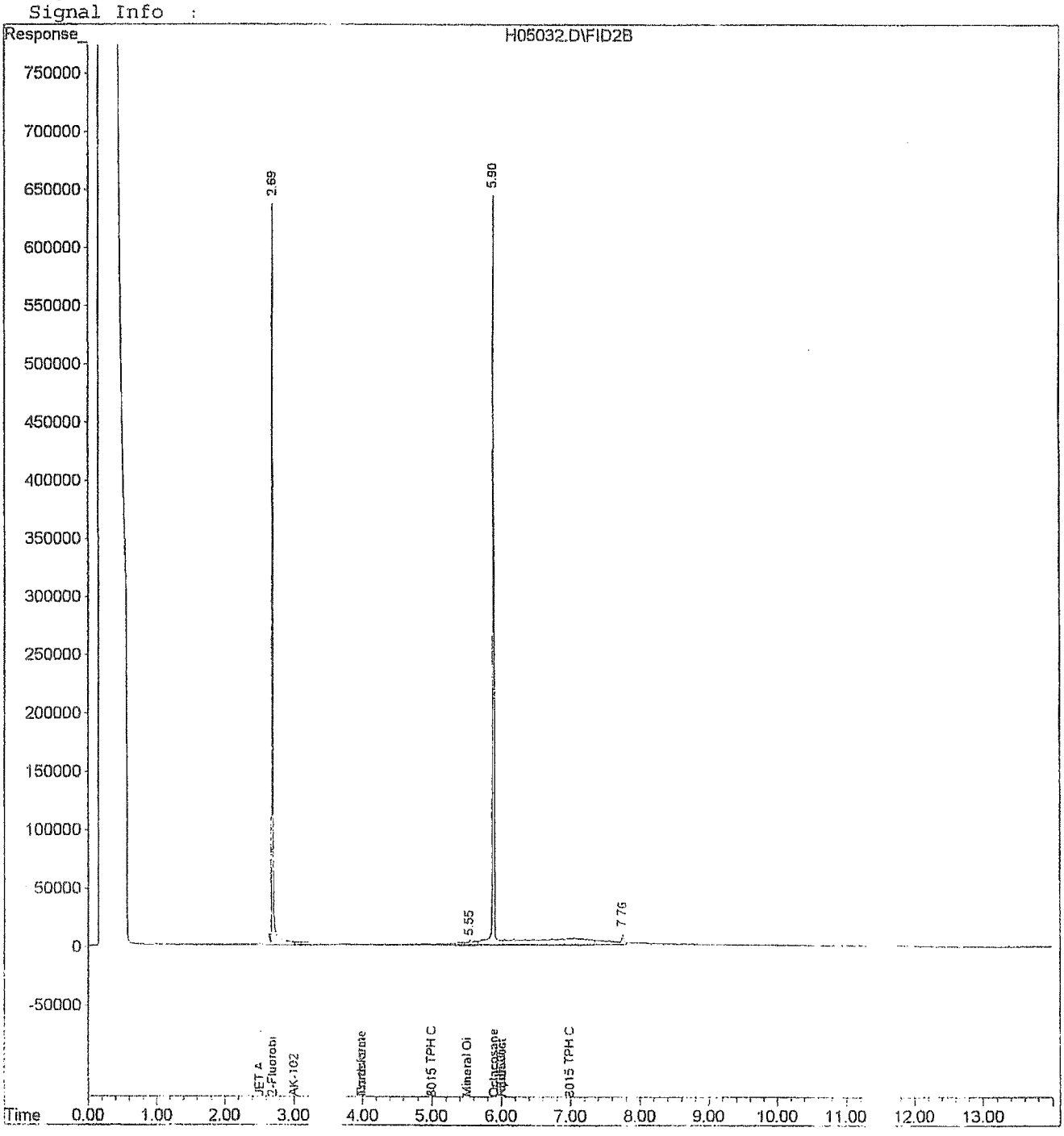


Quantitation Report

Data File : C:\HPCHEM\1\DATA\080505.SEC\H05032.D Vial: 68
Acq On : 6 Aug 2005 2:29 Operator: DEB
Sample : B5G0699-09 Inst : GC-7
Misc : 1X NWTPH-Dx w/SG Water Multiplr: 1.00
IntFile : SURR.E
Quant Time: Aug 6 2:36 2005 Quant Results File: TRF0805.RES

Quant Method : D:\HPCHEM\2\METHODS\TRF0805.M (Chemstation Integrator)
Title : GC#7 TPH-Dx Rear Column
Last Update : Thu Jun 09 08:11:18 2005
Response via : Multiple Level Calibration
DataAcq Meth : TFE1805.M

Volume Inj. :
Signal Phase :
Signal Info :

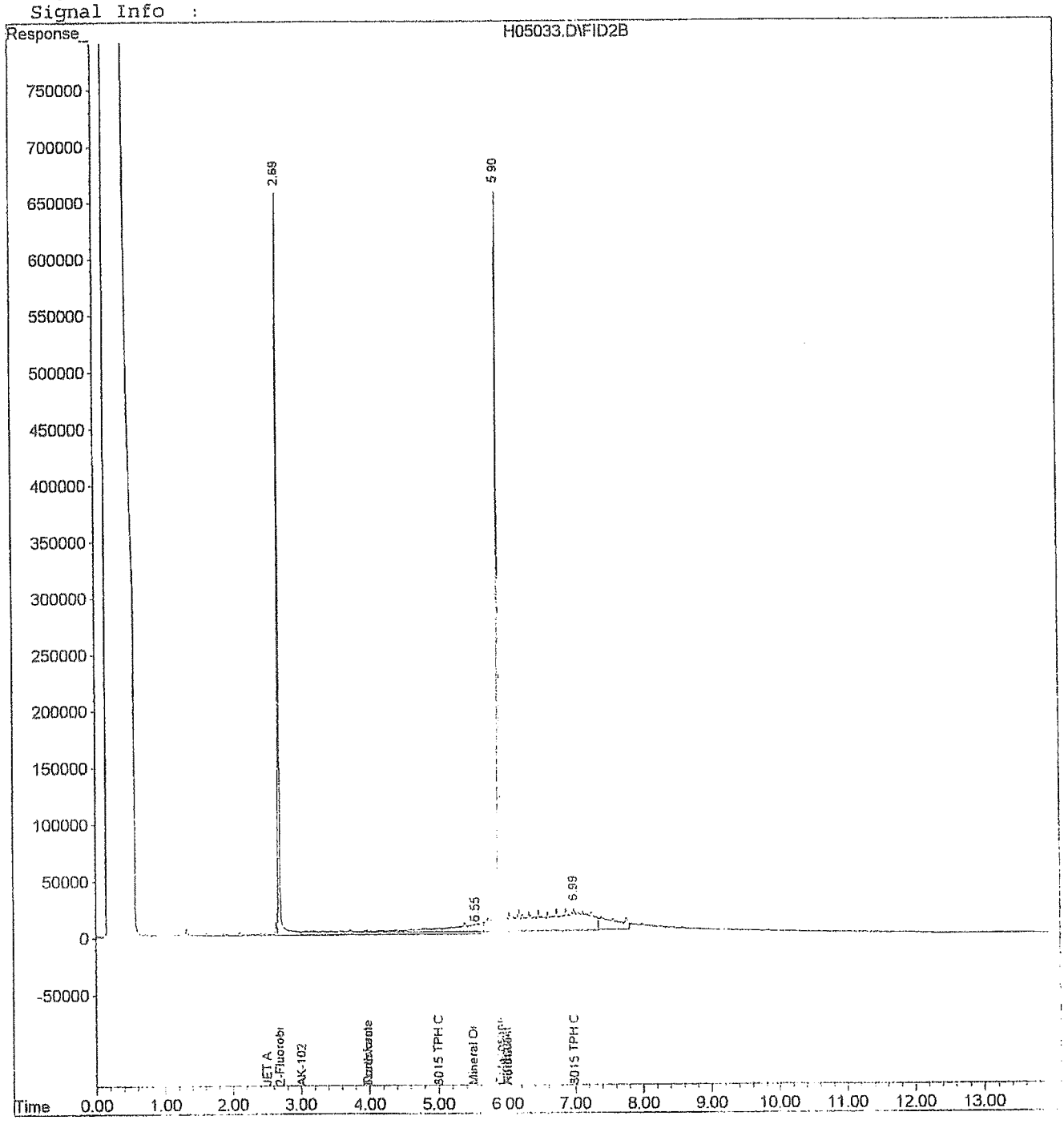


Quantitation Report

Data File : C:\HPCHEM\1\DATA\080505.SEC\H05033.D Vial: 69
Acq On : 6 Aug 2005 2:57 Operator: DEB
Sample : B5G0699-10 Inst : GC-7
Misc : 1X NWTPH-Dx w/SG Water Multiplr: 1.00
IntFile : SURR.E
Quant Time: Aug 6 2:57 2005 Quant Results File: TRF0805.RES

Quant Method : D:\HPCHEM\2\METHODS\TRF0805.M (Chemstation Integrator)
Title : GC#7 TPH-Dx Rear Column
Last Update : Thu Jun 09 08:11:18 2005
Response via : Multiple Level Calibration
DataAcq Meth : TFE1805.M

Volume Inj. :
Signal Phase :
Signal Info :

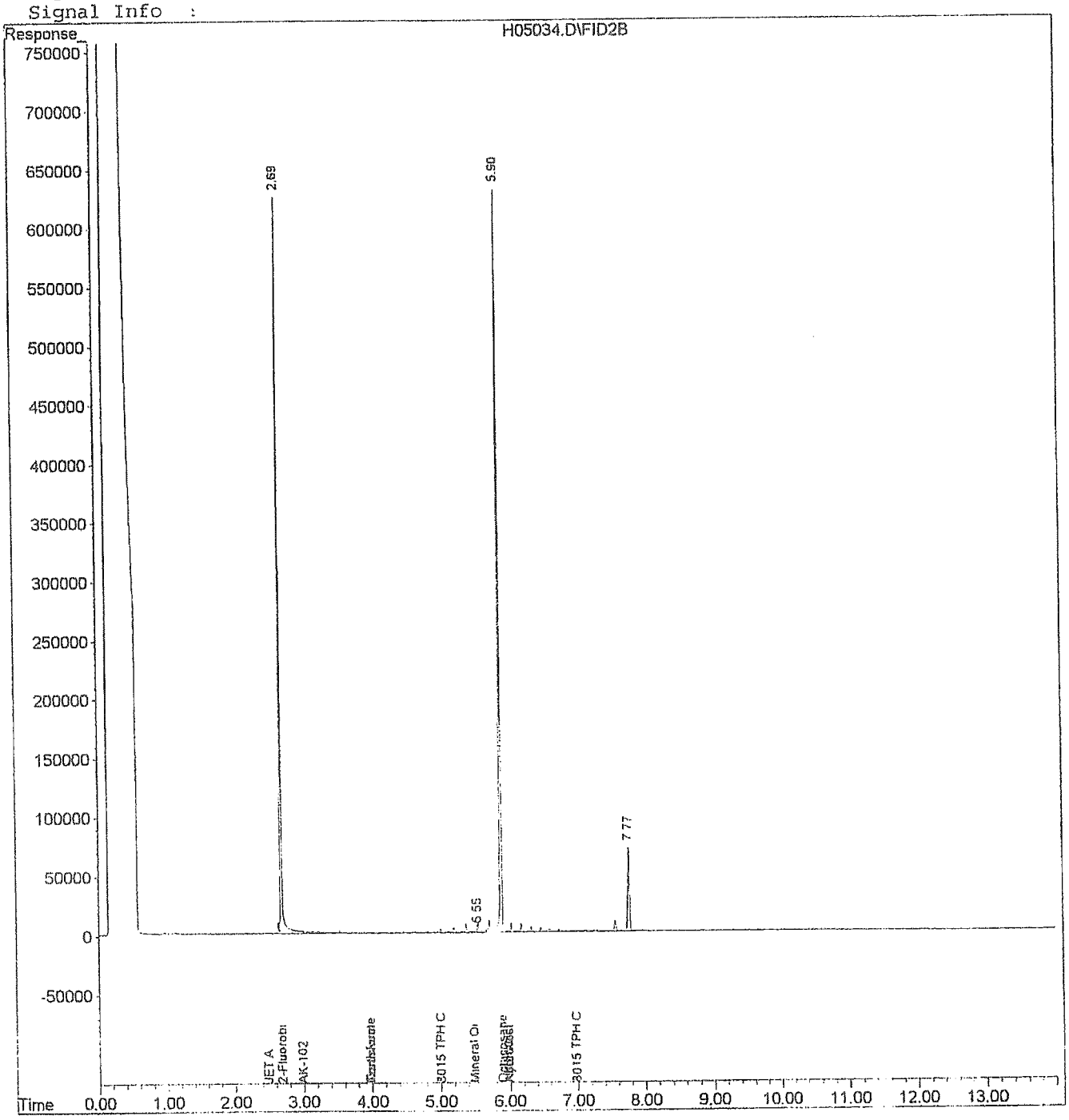


Quantitation Report

Data File : C:\HPCHEM\1\DATA\080505.SEC\H05034.D Vial: 70
Acq On : 6 Aug 2005 3:15 Operator: DEB
Sample : B5G0699-11 Inst : GC-7
Misc : 1X NWTPH-Dx w/SG Water Multiplr: 1.00
IntFile : SURR.E
Quant Time: Aug 6 3:19 2005 Quant Results File: TRF0805.RES

Quant Method : D:\HPCHEM\2\METHODS\TRF0805.M (Chemstation Integrator)
Title : GC#7 TPH-Dx Rear Column
Last Update : Thu Jun 09 08:11:18 2005
Response via : Multiple Level Calibration
DataAcq Meth : TFE1805.M

Volume Inj. :
Signal Phase :
Signal Info :



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Letter of Transmittal

Attention: Joe Hickey
Washington DOE
3190 – 160th Avenue SE
Bellevue, WA 98008

cc: Mark Inglis – Chevron EMC

Date: 7/3/07

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DEPT. OF ECOLOGY

Project Reference: Chevron Site # 306535
Former Unocal Bulk Plant No.5533
16405 36th Avenue West
Lynnwood, Washington
LUST #74865182 LUST #3680
F/S

Project number: 01231-217

We are sending you the following:

Number of originals:	Number of copies:	Description:
	1	Second Quarter 2007 Groundwater Monitoring Report

Remarks

Art Cowburn
Project Manager
acowburn@ensr.aecom.com

ENTERED
7-31-2007

J:\Projects\Unocal\01231-217 Lynnwood 306535\06940-367 Lynnwood\2007\Groundwater Monitoring\2nd Qtr\306535 Lynnwood GWM Report Transmittal Letter.doc

GETTLER-RYAN INC.

TRANSMITTAL

June 26, 2007
G-R #385520

TO: Mr. Don Lance
ENSR International
9521 Willows Road NE
Redmond, Washington 98052

FROM: Deanna L. Harding
Project Coordinator
Gettler-Ryan Inc.
6747 Sierra Court, Suite J
Dublin, California 94568

RE: **Chevron Facility**
#306535
(Former Unocal #5533)
16405 36th Avenue West
Lynnwood, Washington

WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DATED	DESCRIPTION
3	June 24, 2007	Groundwater Monitoring and Sampling Report **Event of May 4 and May 11, 2007**

COMMENTS:

Pursuant to your request, we are providing you with copies of the above referenced report for **your use and distribution to the following (and any other concerned parties):**

Mr. Mark J. Inglis, Chevron Environmental Management Company, P.O. Box K2256, San Ramon, CA 94583

☐ Current Site Check List included.

Enclosure

trans/306535-MI

GETTLER-RYAN INC.

June 25, 2007
Job #385520

Mr. Mark J. Inglis
Chevron Environmental Management Company
P.O. Box 6012, Room K2256
San Ramon, CA 94583

RE: **Event of May 4 and May 11, 2007**
Groundwater Monitoring & Sampling Report
Chevron Facility #306535
(Former Unocal #5533)
16405 36th Avenue West
Lynnwood, Washington

Dear Mr. Inglis:

This report documents the most recent groundwater monitoring and sampling event performed by Gettler-Ryan Inc. (G-R) at the referenced site. All field work was conducted in accordance with G-R Standard Operating Procedure - Groundwater Sampling (attached).

Static groundwater levels were measured and the wells were checked for the presence of separate-phase hydrocarbons. Separate-phase hydrocarbons were not present in any well. Static water level data and groundwater elevations are presented in Table 1. A Groundwater Elevation/Concentration Map is included as Figure 1.

Groundwater samples were collected from the monitoring wells and submitted to a state certified laboratory for analyses. The field data sheets for this event are attached. Analytical results are presented in the table(s) listed below. Purge water was treated by filtering the water through granular activated carbon and was subsequently discharged. The chain of custody document and laboratory analytical reports are attached.

Please call if you have any questions or comments regarding this report. Thank you.

Sincerely,

Deanna L. Harding
Project Coordinator

Douglas J. Lee
Senior Geologist, L.G. No. 2660

State of Washington
2660
Licensed Geologist
Douglas J. Lee

Figure 1: Groundwater Elevation / Concentration Map
Table 1: Groundwater Monitoring Data and Analytical Results
Table 2: Groundwater Analytical Results-VOC
Table 3: Field Measurements and Analytical Results
Historical Data – Provided by ENSR
Attachments: Standard Operating Procedure - Groundwater Sampling
Field Data Sheets
Chain of Custody Document and Laboratory Analytical Reports

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3140 Gold Camp Drive, Suite 170 • **Rancho Cordova**, CA 95670 • (916) 631-1300 • Fax (916) 631-1317
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Table 1

Groundwater Monitoring Data and Analytical Results

Chevron Facility #306535

(Former Unocal #5533)

16405 36th Avenue West

Lynnwood, WA

WELL ID / DATE	TOC* (ft.)	DTW (ft.)	GWE (ft.)	TPH-D ♦ (ppb)	TPH-O ♦ (ppb)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)
HB-1										
04/23/05	101.34	6.77	94.57	ND(250)	ND(500)	34,600	1,550	112	3,210	3,920
07/30/05	101.34	8.35	92.99	ND(250)	ND(500)	28,100	1,530	66.3	3,050	2,480
11/05/05	101.34	7.32	94.02	Not Sampled	--	--	--	--	--	--
06/16/06	101.34	--	--	Not Sampled	--	--	--	--	--	--
10/27/06	101.34	--	--	Not Sampled	--	--	--	--	--	--
NOT MONITORED/SAMPLED										
MW-1										
ABANDONED	--	--	--	--	--	--	--	--	--	--
MW-2										
ABANDONED	--	--	--	--	--	--	--	--	--	--
MW-3										
04/23/05	103.97	3.60	100.37	399	1,340	ND(50.0)	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.00)
07/30/05	103.97	3.99	99.98	313	1,140	ND(50.0)	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)
11/05/05	103.97	2.76	101.21	253	510	ND(50.0)	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)
06/16/06	103.97	4.41	99.56	ND(250)	ND(500)	ND(50.0)	ND(0.500)	1.85	ND(0.500)	ND(1.00)
10/27/06	103.97	6.23	97.74	500	840	ND(250)	ND(4)	0.5[1]	ND(4)	ND(8)
05/04/07	**103.97**	**3.83**	**100.14**	**<1,600**	**13,000**	**<50**	**<0.5**	**<0.5**	**<0.5**	**<1.5**
MW-4										
04/23/05	103.28	4.80	98.48	ND(250)	ND(500)	ND(50.0)	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.00)
07/30/05	103.28	5.37	97.91	715	ND(500)	ND(50.0)	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)
11/05/05	103.28	4.71	98.57	ND(248)	ND(495)	ND(50.0)	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)
06/16/06	103.28	5.41	97.87	ND(253)	ND(505)	ND(50.0)	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)
10/27/06	103.28	6.01	97.27	140[1]	ND(480)	ND(250)	ND(4)	ND(4)	ND(4)	ND(8)
05/04/07	**103.28**	**3.88**	**99.40**	**2,400[1]**	**5,900**	**<50**	**<0.5**	**<0.5**	**<0.5**	**<1.5**
MW-5										
04/23/05	102.08	3.69	98.39	ND(250)	ND(500)	3,660	147	14.4	155	135
07/30/05	102.08	4.61	97.47	ND(250)	ND(500)	2,620	82.9	7.75	59.3	98.3

Table 1
Groundwater Monitoring Data and Analytical Results
Chevron Facility #306535
(Former Unocal #5533)
16405 36th Avenue West
Lynnwood, WA

WELL ID DATE	TOC* (ft.)	DTW (ft.)	GWE (ft.)	TPH-D ♦ (ppb)	TPH-O ♦ (ppb)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)
MW-5 (cont)										
11/05/05	102.08	3.76	98.32	ND(238)	ND(476)	2,080	71.2	5.26	32.4	3.15
06/16/06	102.08	4.45	97.63	ND(250)	ND(500)	7,200	115	19.4	324	483
10/27/06	102.08	5.60	96.48	350	ND(480)	2,400	230	10	3[1]	10[1]
05/11/07	102.08	**NOT MONITORED/SAMPLED - per ENSR**			--	--	--	--	--	--
MW-6										
04/23/05		WELL NOT FOUND		--	--	--	--	--	--	--
07/30/05	--	5.57	--	ND(250)	ND(500)	644	194	27.9	1.36	16.6
11/05/05	--	--	--	Not Sampled	--	--	--	--	--	--
06/16/06	--	5.42	--	ND(250)	ND(500)	2,140	526	128	5.76	35.0
10/27/06	--	6.58	--	ND(240)	ND(470)	190[1]	270	9	0.5[1]	6.6[1]
05/04/07	--	**NOT MONITORED/SAMPLED - per ENSR**			--	--	--	--	--	--
MW-7										
04/23/05	101.24	8.41	92.83	ND(250)	ND(500)	62.4	1.52	ND(0.50)	ND(0.50)	ND(1.00)
07/30/05	101.24	9.24	92.00	ND(250)	ND(500)	ND(50.0)	0.710	ND(0.500)	ND(0.500)	ND(1.00)
11/05/05	101.24	8.18	93.06	ND(281)	ND(562)	ND(50.0)	0.991	ND(0.500)	ND(0.500)	ND(1.00)
06/16/06	101.24	--	--	Not Sampled	--	--	--	--	--	--
10/27/06	101.24	--	--	Not Sampled	--	--	--	--	--	--
NOT MONITORED/SAMPLED										
MW-8										
04/23/05	101.33	7.19	94.14	ND(250)	ND(500)	ND(50.0)	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.00)
07/30/05	101.33	8.97	92.36	ND(250)	ND(500	ND(50.0)	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)
11/05/05	101.33	7.25	94.08	ND(250)	ND(500)	ND(50.0)	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)
06/16/06	101.33	--	--	Not Sampled	--	--	--	--	--	--
10/27/06	101.33	--	--	Not Sampled	--	--	--	--	--	--
NOT MONITORED/SAMPLED										
MW-9										
04/23/05	94.11	3.55	90.56	ND(250)	ND(500)	ND(50.0)	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.00)
07/30/05	94.11	4.59	89.52	ND(250)	ND(500)	ND(50.0)	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)

Groundwater Monitoring Data and Analytical Results

Chevron Facility #306535
(Former Unocal #5533)
16405 36th Avenue West
Lynnwood, WA

WELL ID / DATE		TOC* (ft.)	DTW (ft.)	GWE (ft.)	TPH-D ♦ (ppb)	TPH-O ♦ (ppb)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)
MW-9 (cont)											
11/05/05		94.11	3.85	90.26	ND(236)	ND(472)	ND(50.0)	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)
11/05/05	(D)	94.11	--	--	ND(236)	ND(472)	ND(50.0)	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)
06/16/06		94.11	2.85	91.26	ND(250)	ND(500)	ND(50.0)	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)
10/27/06		94.11	7.05	87.06	ND(240)	ND(470)	ND(250)	ND(4)	ND(4)	ND(4)	ND(8)
05/11/07		94.11	NOT MONITORED/SAMPLED - per ENSR			--	--	--	--	--	--
MW-10											
ABANDONED		--	--	--	--	--	--	--	--	--	--
MW-11											
ABANDONED		--	--	--	--	--	--	--	--	--	--
MW-11R											
06/16/06		--	2.80	--	ND(250)	ND(500)	ND(50.0)	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)
10/27/06		--	5.07	--	ND(240)	ND(480)	ND(250)	ND(4)	ND(4)	ND(4)	ND(8)
05/04/07		--	3.99	--	<79	<99	<50	<0.5	<0.5	<0.5	<1.5
MW-12											
04/23/05		102.27	7.46	94.81	266	ND(500)	18,500	296	42.5	1,890	1,210
07/30/05		102.27	7.41	94.86	NOT SAMPLED DUE TO THE PRESENCE OF SPH			--	--	--	--
11/05/05		102.27	6.90	95.37	349	ND(485)	14,300	237	34.5	1,860	726
06/16/06		102.27	--	--	Not Sampled	--	--	--	--	--	--
10/27/06		102.27	--	--	Not Sampled	--	--	--	--	--	--
NOT MONITORED/SAMPLED											
MW-13											
04/23/05		102.13	4.48	97.65	804	781	81,600	2,680	7,640	3,040	15,600
07/30/05		102.13	5.95	96.18	538	637	58,900	2,450	1,270	2,600	10,500
11/05/05		102.13	4.76	97.37	317	ND(505)	24,300	651	1,030	1,300	3,160
06/16/06		102.13	--	--	Not Sampled	--	--	--	--	--	--
10/27/06		102.13	--	--	Not Sampled	--	--	--	--	--	--
NOT MONITORED/SAMPLED											

Table 1
Groundwater Monitoring Data and Analytical Results
Chevron Facility #306535
(Former Unocal #5533)
16405 36th Avenue West
Lynnwood, WA

WELL ID / DATE	TOC* (ft.)	DTW (ft.)	GWE (ft.)	TPH-D ♦ (ppb)	TPH-O ♦ (ppb)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)
MW-14										
04/23/05	103.05	5.21	97.84	ND(250)	ND(500)	279	1.88	ND(0.500)	ND(0.500)	ND(1.00)
07/30/05	103.05	6.53	96.52	ND(250)	ND(500)	75.4	0.592	ND(0.500)	ND(0.500)	ND(1.00)
11/05/05	103.05	6.45	96.60	Not Sampled	--	--	--	--	--	--
06/16/06	103.05	--	--	Not Sampled	--	--	--	--	--	--
10/27/06	103.05	--	--	Not Sampled	--	--	--	--	--	--
NOT MONITORED/SAMPLED										
MW-15										
04/23/05	--	--	--	Not Sampled	--	--	--	--	--	--
07/30/05	--	--	--	Not Sampled	--	--	--	--	--	--
11/05/05	--	--	--	Not Sampled	--	--	--	--	--	--
06/16/06	--	5.81	--	ND(250)	ND(500)	ND(50.0)	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)
10/27/06	--	--	--	Not Sampled	--	--	--	--	--	--
NOT MONITORED/SAMPLED										
MW-16										
ABANDONED	--	--	--	--	--	--	--	--	--	--
MW-17										
ABANDONED	--	--	--	--	--	--	--	--	--	--
MW-18										
04/23/05	102.71	4.63	98.08	ND(250)	ND(500)	235	70.8	2.07	4.09	4.61
07/30/05	102.71	5.77	96.94	ND(250)	768	440	107	1.61	8.67	27.6
11/05/05	102.71	4.70	98.01	844	2,650	415	111	2.09	3.91	3.34
06/16/06	102.71	--	--	Not Sampled	--	--	--	--	--	--
10/27/06	102.71	--	--	Not Sampled	--	--	--	--	--	--
NOT MONITORED/SAMPLED										
MW-R-1										
06/16/06	--	2.99	--	ND(253)	ND(505)	ND(50.0)	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)
10/27/06	--	3.85	--	ND(240)	ND(470)	ND(250)	ND(4)	ND(4)	ND(4)	ND(8)
05/04/07[2]	--	2.68	--	<79	<99	<50	1.5[1]	<0.5	<0.5	<1.5

Table 1

Groundwater Monitoring Data and Analytical Results

Chevron Facility #306535

(Former Unocal #5533)

16405 36th Avenue West

Lynnwood, WA

WELL ID DATE	TOC* (ft.)	DTW (ft.)	GWE (ft.)	TPH-D ◆ (ppb)	TPH-O ◆ (ppb)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)
MW-R-2										
06/16/06	--	2.70	--	ND(250)	ND(500)	ND(50.0)	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)
10/27/06	--	4.59	--	ND(240)	ND(470)	ND(250)	ND(4)	0.9[1]	ND(4)	ND(8)
05/04/07[3]	--	1.75	--	<80	<100	<50	<0.5	<0.5	<0.5	<1.5
TRIP BLANK										
QA 05/04/07	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<1.5

	TPH-D	TPH-O	TPH-G	B	T	E	X
Standard Laboratory Reporting Limits:	250	250	50	0.5	0.5	0.5	1.5
MTCA Method A Cleanup Levels:	500	500	800/1,000	5	1,000	700	1,000
Current Method:	NWTPH-D + Ext.		NWTPH-G and EPA 8021B				

Table 1
Groundwater Monitoring Data and Analytical Results
Chevron Facility #306535
(Former Unocal #5533)
16405 36th Avenue West
Lynnwood, WA

EXPLANATIONS:

Groundwater monitoring data and laboratory analytical results prior to May 4, 2007, were compiled from reports provided by ENSR International.

TOC = Top of Casing
(ft.) = Feet
DTW = Depth to Water
GWE = Groundwater Elevation
TPH-D = Total Petroleum Hydrocarbons as Diesel
TPH-O = Total Petroleum Hydrocarbons as Heavey Oil-range
TPH-G = Total Petroleum Hydrocarbons as Gasoline
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylenes
(D) = Duplicate
(ppb) = Parts per billion
-- = Not Measured/Not Analyzed
ND = Not Detected
QA = Quality Assurance/Trip Blank

* TOC elevations are relative to a temporary benchmark onsite, not mean sea level. The temporary benchmark is the light pole numbered 164/36 #2 located at the southwest corner of intersection, top of bolt.

◆ Diesel- and heavy oil-range hydrocarbons analyzed by Northwest Method NWTPH-Dx with acid/silica gel cleanup.

1 Laboratory report indicates estimated value.
2 Laboratory reported well ID as MW-R1.
3 Laboratory reported well ID as MW-R2.

NOTES:

Prior to October 2006, laboratory chemical analyses were completed by North Creek Analytical (Bothell, WA).
Laboratory chemical analysis of samples collected on 10/27/06 were completed by Lancaser Laboratories (Lancaster, PA).

Table 2
Groundwater Analytical Results-VOC
Chevron Facility #306535
(Former Unocal #5533)
16405 36th Avenue West
Lynnwood, WA

Well Number	Date Sampled	Volatile Organic Compounds[1] (µg/L)											
		Acetone	n-Butylbenzene	sec-Butylbenzene	t-Butyl alcohol	1,2-Dibromoethane[3]	Ethanol	Isopropylbenzene	p-Isopropyltoluene	Methyl Tertiary Butyl Ether	n-Propylbenzene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene
MTCA Method A Cleanup Level		NA	NA	NA	NA	0.01	NA	NA	NA	20	NA	NA	NA
MW-3	10/27/06	ND(20)	ND(5)	ND(5)	ND(20)	ND(4)	ND(250)	ND(5)	ND(5)	ND(4)	ND(5)	ND(5)	ND(5)
MW-4	10/27/06	ND(20)	ND(5)	ND(5)	ND(20)	ND(4)	ND(250)	ND(5)	ND(5)	9	ND(5)	ND(5)	ND(5)
MW-5	10/27/06	15[2]	9	7	250	ND(4)	ND(250)	40	1[2]	23	170	13	120
MW-6	10/27/06	ND(20)	ND(5)	ND(5)	550	ND(4)	ND(250)	2[2]	ND(5)	0.5[2]	5[2]	ND(5)	ND(5)
MW-9	10/27/06	ND(20)	ND(5)	ND(5)	ND(20)	ND(4)	ND(250)	ND(5)	ND(5)	ND(4)	ND(5)	ND(5)	ND(5)
MW-11R	10/27/06	ND(20)	ND(5)	ND(5)	ND(20)	ND(4)	ND(250)	ND(5)	ND(5)	0.6[2]	ND(5)	ND(5)	ND(5)
R-1	10/27/06	ND(20)	ND(5)	ND(5)	ND(20)	ND(4)	ND(250)	ND(5)	ND(5)	ND(4)	ND(5)	ND(5)	ND(5)
R-2	10/27/06	ND(20)	ND(5)	ND(5)	ND(20)	ND(4)	83[2]	ND(5)	ND(5)	ND(4)	ND(5)	ND(5)	ND(5)

EXPLANATIONS:

Groundwater laboratory analytical results were compiled from reports provided by ENSR International.

[1] Volatile Organic Compounds analyzed by EPA Method 8260B.

[2] Estimated value.

[3] The laboratory reporting limit for this analyte is greater than the MTCA Method A cleanup level.

NA = Not available/not applicable.

µg/L = micrograms per liter

MTCA = Model Toxics Control Act

ND = Analyte was not detected. Prior to October 2006, number in parentheses is the method reporting limit. After October 2006, number in parentheses is the quantitation limit.

Prior to October 2006, laboratory chemical analyses were completed by North Creek Analytical (Bothell, WA). Laboratory chemical analysis of samples collected on 10/27/06 were completed by Lancaser Laboratories (Lancaster, PA).

Table 3

Field Measurements and Analytical Results

Chevron Facility #306535

(Former Unocal #5533)

16405 36th Avenue West

Lynnwood, WA

WELL ID/ DATE	Time	pH	Conductivity (µmhos/cm)	Temperature (°C/F°)	D.O. (mg/L)	ORP (mV)
MW-3						
05/04/07	1252	6.38	113	12.7	2.0	15
	1259	6.32	111	12.6	--	14
	1305	6.31	110	12.5	--	13
MW-4						
05/04/07	1222	6.91	161	12.7	0.36	-1
	1229	6.86	159	12.5	--	--
	1235	6.83	156	12.4	--	--
MW-5						
05/11/07	NOT MONITORED/SAMPLED - per ENSR			--	--	--
MW-6						
05/04/07	NOT MONITORED/SAMPLED - per ENSR			--	--	--
MW-9						
05/11/07	NOT MONITORED/SAMPLED - per ENSR			--	--	--
MW-11R						
05/04/07	1147	6.40	702	11.8	0.38	249
	1152	6.39	700	11.9	--	--
	1158	6.37	689	11.8	--	--
MW-R-1						
05/04/07	1103	6.30	608	11.9	0.84	232
	1110	6.32	606	11.8	--	--
	1117	6.31	597	11.8	--	--

Table 3

Field Measurements and Analytical Results

Chevron Facility #306535

(Former Unocal #5533)

16405 36th Avenue West

Lynnwood, WA

WELL ID/ DATE	Time	pH	Conductivity (µmhos/cm)	Temperature (°C/F°)	D.O. (mg/L)	ORP (mV)
MW-R-2						
05/04/07	1031	6.36	614	11.8	2.06	241
	1038	6.32	606	11.8	--	--
	1046	6.30	602	11.7	--	--

EXPLANATIONS:

pH = Potential Hydrogen Ions

(µmhos/cm) = Micromhos per cubic centimeter

(°C/F°) = Degrees Celsius/ Fahrenheit

D.O. = Dissolved Oxygen Concentrations

(mg/L) = Milligrams per liter

ORP = Oxidation Reduction Potential

(mV) = Millivolts

-- = Not Measured

HISTORICAL DATA

SUMMARY OF GROUNDWATER CHEMICAL ANALYTICAL DATA
BETX AND PETROLEUM HYDROCARBONS
FIELD PARAMETERS

Provided by ENSR

SUMMARY OF GROUNDWATER CHEMICAL ANALYTICAL DATA
BETX AND PETROLEUM HYDROCARBONS
FORMER UNOCAL SERVICE STATION #5533
16405 36TH AVE WEST, LYNNWOOD, WA
06940-367

Well Number	Date Sampled	BETX [1]				Gasoline-range Hydrocarbons [2] (µg/L)	Diesel-range Hydrocarbons [3] (µg/L)	Heavy Oil-range Hydrocarbons [3] (µg/L)
		B	E	T	X			
MTCA Method A Cleanup Level		5.0	700	1,000	1,000	800	500	500
HB-1	07/29/91	2,000	1,700	15,000	12,000	--		
	12/14/99	2,330	3,630	3,230	16,300	796,000		
	06/29/00	2,520	4,200	1,300	19,100	74,400		
	11/21/00	1,870	2,890	164	12,200	51,900		
	06/27/01	<0.500	1.99	1.90	8.07	433,000		
	12/17/01	2,480	4,130	305	17,100	54,500		
	06/10/02	2,450	4,130	235	14,000	66,600		
	12/12/02	2,000	3,770	194	13,700	45,100		
	04/23/05	1,550	3,210	112	3,920	34,600	<250	<500
	07/30/05	1,530	3,050	66.3	2,480	28,100	<250	<500
MW-1	Well Abandoned							
MW-2	Well Abandoned							
MW-03	December 1989	<0.5	<0.5	<0.5	<0.5	--	--	
	February 1991	<0.5	<0.5	<0.5	<0.5	<1,000	<1,000	
	June 1991	<0.5	<0.5	<0.5	<0.5	<1,000	<1,000	
	August 1991	--	--	--	--	--	--	
	12/13/1993	ND	ND	ND	ND	ND	--	
	01/26/00	<1	<1	<1	<3	<50	--	
	04/23/05	<0.50	<0.50	<0.50	<1.00	<50.0	399	1,340
	07/30/05	<0.500	<0.500	<0.500	<1.00	<50.0	313	1,140
MW-04	December 1989	9	5.2	<0.5	12	--	--	
	February 1991	260	500	7.6	640	6,000	<1,000	
	June 1991	160	200	0.6	130	2,000	<1,000	
	August 1991	--	--	--	--	--	--	
	12/13/1993	1,100	360	250	1,600	15,000	--	
	01/26/00	32	4	<1	<3	130	--	
	04/23/05	<0.50	<0.50	<0.50	<1.00	<50.0	<250	<500
	07/30/05	<0.500	<0.500	<0.500	<1.00	<50.0	715	<500

SUMMARY OF GROUNDWATER CHEMICAL ANALYTICAL DATA
BETX AND PETROLEUM HYDROCARBONS
FORMER UNOCAL SERVICE STATION #5533
16405 36TH AVE WEST, LYNNWOOD, WA
06940-367

Well Number	Date Sampled	BETX [1]				Gasoline-range Hydrocarbons [2] (µg/L)	Diesel-range Hydrocarbons [3] (µg/L)	Heavy Oil-range Hydrocarbons [3] (µg/L)
		B	E	T	X			
MTCA Method A Cleanup Level		5.0	700	1,000	1,000	800	500	500
HB-1	07/29/91	2,000	1,700	15,000	12,000	–		
MW-05	August 1991	280	130	23	140	<1,000	<1,000	
	01/26/00	<1	<1	<1	<3	<50	–	
	04/23/05	147	155	14.4	135	3,660	<250	<500
	07/30/05	82.9	59.3	7.75	98.3	2,620	<250	<500
MW-06	August 1991	290	300	39	320	3,000	<1,000	
	12/13/1993	21	0.85	4.5	6	210	–	
	01/26/00	<1	<1	<1	<3	<50	–	
	04/23/05	Well Not Found						
	07/30/05	194	1.36	27.9	16.6	644	<250	<500
MW-07	08/30/91	1.3	<0.5	<0.5	<0.5	<1,000	<1,000	
	12/14/99	268	164	9.55	322	2,340	–	
	06/29/00	252	115	9.66	203	1,640	–	
	11/21/00	279	202	8.16	239	2,290	–	
	06/27/01	188	67.0	4.81	62.5	2,100	–	
	12/17/01	391	425	10.8	32.0	3,160	–	
	06/10/02	547	441	17.1	45.0	3,860	–	
	12/12/02	650	664	24.7	23.9	4,240	–	
	04/23/05	1.52	<0.50	<0.50	<1.00	62.4	<250	<500
	07/30/05	0.710	<0.500	<0.500	<1.00	<50.0	<250	<500
MW-08	08/30/91	1.2	<0.5	0.6	<0.5	<1,000	<1,000	
	12/14/99	<0.500	<0.500	<0.500	<1.00	<50.0	–	
	06/29/00	70.0	19.0	1.26	<1.00	262	–	
	11/21/00	<0.500	<0.500	<0.500	<1.00	<50.0	–	
	06/27/01	21.6	1.46	0.625	1.36	179	–	
	12/17/01	<0.500	<0.500	<0.500	<1.00	<50.0	–	
	06/10/02	9.77	1.04	<0.500	<1.00	90.7	–	
	12/12/02	<0.500	<0.500	<0.500	<1.00	<50.0	–	
	04/23/05	<0.50	<0.50	<0.50	<1.00	<50.0	<250	<500
	07/30/05	<0.500	<0.500	<0.500	<1.00	<50.0	<250	<500

SUMMARY OF GROUNDWATER CHEMICAL ANALYTICAL DATA

BETX AND PETROLEUM HYDROCARBONS

FORMER UNOCAL SERVICE STATION #5533

16405 36TH AVE WEST, LYNNWOOD, WA

06940-367

Well Number	Date Sampled	BETX [1]				Gasoline-range Hydrocarbons [2] (µg/L)	Diesel-range Hydrocarbons [3] (µg/L)	Heavy Oil-range Hydrocarbons [3] (µg/L)
		B	E	T	X			
MTCA Method A Cleanup Level		5.0	700	1,000	1,000	800	500	500
HB-1	07/29/91	2,000	1,700	15,000	12,000	--		
MW-09	08/30/91	<0.5	<0.5	<0.5	<0.5	<1,000	<1,000	
	12/14/99	<0.500	<0.500	<0.500	<1.00	<50.0	--	
	06/29/00	<0.500	<0.500	<0.500	<1.00	<50.0	--	
	11/21/00	<0.500	<0.500	<0.500	<1.00	<50.0	--	
	06/27/01	<0.500	<0.500	<0.500	<1.00	<50.0	--	
	12/17/01	<0.500	<0.500	<0.500	<1.00	<50.0	--	
	06/10/02	<0.500	<0.500	<0.500	<1.00	<50.0	--	
	12/12/02	<0.500	<0.500	<0.500	<1.00	<50.0	--	
	04/23/05	<0.50	<0.50	<0.50	<1.00	<50.0	<250	<500
	07/30/05	<0.500	<0.500	<0.500	<1.00	<50.0	<250	<500
MW-10	Well Abandoned							
MW-11	Well Abandoned							
MW-12	08/30/91	2,100	1,900	2,800	10,000	49,000	<1,000	
	12/14/99	516	1,920	128	6,890	38,600	--	
	06/29/00	405	1,190	64.3	4,050	19,700	--	
	11/21/00	246	978	53.3	3,160	17,300	--	
	06/27/01	273	642	33.5	1,870	13,700	--	
	12/17/01	230	881	33.7	2,720	16,300	--	
	06/10/02	331	1,570	46.2	4,510	26,400	--	
	12/12/02	106	476	13.6	1,300	9,830	--	
	04/23/05	296	1,890	42.5	1,210	18,500	266	<500
	07/30/05	--	--	--	--	--	--	--
MW-13	08/30/91	2800	1,400	12,000	8,200	130,000	6,000	
	12/14/99	2590	3,430	4,530	13,000	82,000	--	
	06/29/00	1870	3,650	2,110	11,200	62,400	--	
	11/21/00	5140	4,430	12,200	18,800	104,000	--	
	06/27/01	2980	2,930	5,490	10,000	64,600	--	
	12/17/01	3840	3,640	10,200	16,600	82,000	--	
	06/10/02	3790	3,620	5,180	12,600	72,800	--	

SUMMARY OF GROUNDWATER CHEMICAL ANALYTICAL DATA
BETX AND PETROLEUM HYDROCARBONS
FORMER UNOCAL SERVICE STATION #5533
16405 36TH AVE WEST, LYNNWOOD, WA
06940-367

Well Number	Date Sampled	BETX [1]				Gasoline-range Hydrocarbons [2] (µg/L)	Diesel-range Hydrocarbons [3] (µg/L)	Heavy Oil-range Hydrocarbons [3] (µg/L)
		B	E	T	X			
MTCA Method A Cleanup Level		5.0	700	1,000	1,000	800	500	500
HB-1	07/29/91	2,000	1,700	15,000	12,000	--		
MW-13 (cont)	12/12/02	897	266	736	5,610	25,400	--	
	04/23/05	2,680	3,040	7,640	15,600	81,600	804	781
	07/30/05	2,450	2,600	1,270	10,500	58,900	538	637
MW-14	08/30/91	6.6	2.6	1.9	8.7	<1,000	<1,000	
	12/14/99	<0.500	<0.500	<0.500	<1.00	62.4	--	
	06/29/00	2.99	<0.500	<0.500	<1.00	<50.0	--	
	11/21/00	2.84	<0.500	<0.560	<1.00	854	--	
	06/27/01	<0.500	1.37	2.11	5.46	265	--	
	12/17/01	<0.500	<0.500	<0.500	<1.00	<50.0	--	
	06/10/02	1.95	<0.500	<0.500	<1.00	149	--	
	12/12/02	1.10	<0.500	<0.500	<1.00	101	--	
	04/23/05	1.88	<0.50	<0.50	<1.00	279	<250	<500
	07/30/05	0.592	<0.500	<0.500	<1.00	75.4	<250	<500
MW-15	Well Not Sampled							
MW-16	Well Abandoned							
MW-17	Well Abandoned							
MW-18	06/27/01	65.5	356	61.4	976	7,220	--	
	12/17/01	49.6	126	21.4	243	2,700	--	
	06/10/02	35.8	62.7	12.9	237	2,110	--	
	12/12/02	182	75.2	40.0	449	2,740	--	
	04/23/05	70.8	4.09	2.07	4.61	235	<250	<500
	07/30/05	107	8.67	1.61	27.6	440	<250	768

Notes:
[1] B = Benzene, E = Ethylbenzene, T = Toluene, X = Total Xylenes. Analyzed by EPA Method 8021B.
[2] Gasoline-range hydrocarbons analyzed by Northwest Method NWTPH-G or NWTPH-Gx.
[3] Diesel- and heavy oil-range hydrocarbons analyzed by Northwest Method NWTPH-D with acid/silica gel cleanup.
[4] MW-12 was not sampled due to the presence of phase-separated petroleum products.
µg/L = micrograms per liter
MTCA = Model Toxics Control Act
Analyses conducted by North Creek Analytical of Bothell, Washington.

TABLE 4

Summary of Groundwater Parameters
Former Unocal Service Station #5533
16405 36th Ave West, Lynnwood, WA
06940-367

Well Number	Date Sampled	pH[1]	Electrical Conductivity[2]	Oxidation Reduction Potential[3]	Dissolved Oxygen[4]	Temperature[5]	Ferrous Iron[6]	Total Alkalinity[7]	Nitrate-Nitrogen[8]	Total Organic Carbon[9]	Sulfate[10]
MW-3	11/05/05	6.38	0.26	-9.0	3.76	16.87	2.7	33.8	0.018	11.30	2.63
	06/16/06	6.88	52	-122.8	0.11	15.27	-	-	-	-	-
	10/27/06	6.32	0.054	-100.7	0.02	17.78	-	-	-	-	-
MW-4	11/05/05	-	-	-	-	-	-	313	ND(0.0100)	21.60	15.40
	06/16/06	7.13	533	-77.6	0.29	15.13	-	-	-	-	-
	10/27/06	6.80	0.445	-169.8	0.18	16.95	-	-	-	-	-
MW-5	06/16/06	6.85	546	-81.2	0.26	14.51	-	-	-	-	-
	10/27/06	6.46	0.556	-102.5	0.21	16.98	-	-	-	-	-
MW-6	06/16/06	6.78	469	-68.0	0.18	14.56	-	-	-	-	-
	10/27/06	6.38	0.502	-122.3	0.17	16.02	-	-	-	-	-
MW-7	11/05/05	6.35	1.07	-7.0	4.53	14.15	3.4	-	-	-	-
MW-9	11/05/05	6.17	1.03	35.0	NS	12.90	0.2	183	1.260	5.00	52.80
dup	11/05/05	-	-	-	-	-	-	184	1.060	4.90	50.20
	06/16/06	6.74	368	21.5	0.59	11.80	-	-	-	-	-
	10/27/06	7.03	0.381	159.8	2.03	12.87	-	-	-	-	-
MW-11R	06/16/06	6.78	578	0.8	0.52	12.60	-	-	-	-	-
	10/27/06	6.51	0.566	159.4	0.21	13.26	-	-	-	-	-
MW-12	11/05/05	5.90	1.21	5.0	NS	14.55	3.8	308	ND(0.0100)	39.80	ND(0.400)
MW-13	11/05/05	5.98	0.94	16.0	NS	13.42	2.4	285	ND(0.0100)	41.60	0.92
MW-15	06/16/06	7.03	619	-124.5	0.64	14.33	-	-	-	-	-
R-1	06/16/06	6.93	630	-16.5	0.25	12.47	-	-	-	-	-
	10/27/06	6.55	0.562	444.1	1.17	14.37	-	-	-	-	-
R-2	06/16/06	6.99	511	-12.8	0.79	12.32	-	-	-	-	-
	10/27/06	6.57	0.427	157.8	2.83	14.36	-	-	-	-	-

TABLE 4

Summary of Groundwater Parameters

Former Unocal Service Station #5533

16405 36th Ave West, Lynnwood, WA

06940-367

Notes:

[1]pH measured in the field with the Horiba U-22.

[2]Electrical conductivity (mS) was measured in the field with the Horiba U-22.

[3]Oxidation reduction potential (mV) was measured in the field with the Horiba U-22.

[4]Dissolved oxygen (mg/L) was measured in the field with the Horiba U-22.

[5]Temperature (C) was measured in the field with the Horiba U-22.

[6]Ferrous iron (mg/L) was measured in the field using the Hach® Ferrous Iron Field kit.

[7]Total alkalinity (mg/L) as calcium carbonate analyzed by EPA Method 310.0.

[8]Nitrate-Nitrogen (mg/L) as nitrogen analyzed by EPA Method 353.2.

[9]Total Organic Carbon (mg/L) analyzed by EPA Method 415.1.

[10]Sulfate (mg/L) analyzed by EPA Method 300.0.

- = analysis not performed

NS = Parameter did not stabilize

Laboratory chemical analyses were completed by North Creek Analytical (Bothell, WA).

On 06/16/2006, all parameters were measured with a YSI 556 MPS Multi-parameter meter.

On 10/27/2006, all parameters were measured with a YSI 556 MPS or a YSI 650 MDS Multi-parameter meter.

STANDARD OPERATING PROCEDURE - GROUNDWATER SAMPLING

Gettler-Ryan Inc. field personnel adhere to the following procedures for the collection and handling of groundwater samples prior to analysis by the analytical laboratory. Prior to sample collection, the type of analysis to be performed is determined. Loss prevention of volatile compounds is controlled and sample preservation for subsequent analysis is maintained.

Prior to sampling, the presence or absence of free-phase hydrocarbons is determined using an interface probe. Product thickness, if present, is measured to the nearest 0.01 foot and is noted in the field notes. In addition, all depth to water level measurements are collected with a static water level indicator and are also recorded in the field notes, prior to purging and sampling any wells.

After water levels are collected and prior to sampling, temperature, pH and electrical conductivity are measured. If purging is to occur, each well is purged a minimum of three well casing volumes of water using pre-cleaned pumps (stack, suction, Grundfos), or disposable bailers. The measurements are taken a minimum of three times during the purging. Purging continues until these parameters stabilize. Purge water is treated by filtering the water through granular activated carbon and is subsequently discharged to the ground surface at the site.

Groundwater samples are collected using disposable bailers. The water samples are transferred from the bailer into appropriate containers. Pre-preserved containers, supplied by analytical laboratories, are used for all samples. Duplicate samples are collected for the laboratory to use in maintaining quality assurance/quality control standards. The samples are labeled to include the job number, sample identification, collection date and time, analysis, preservation (if any), and the sample collector's initials. The water samples are placed in a cooler, maintained at 4°C for transport to the laboratory. Once collected in the field, all samples are maintained under chain of custody until delivered to the laboratory.

The chain of custody document includes the job number, type of preservation, if any, analysis requested, sample identification, date and time collected, and the sample collector's name. The chain of custody is signed and dated (including time of transfer) by each person who receives or surrenders the samples, beginning with the field personnel and ending with the laboratory personnel.

A laboratory supplied trip blank accompanies each sampling set. For sampling sets greater than 20 samples, 5% trip blanks are included. The trip blank is analyzed for some or all of the same compounds as the groundwater samples.

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility #: Chevron #306535 Job Number: 385520
Site Address: 16405 36Th Avenue West Event Date: 5-4-07 (inclusive)
City: Lynnwood,WA Sampler: BWN

Well ID MW-3 Date Monitored: 5-4 Well Condition: ~~OK~~ Casing too high
Well Diameter 2 in.
Total Depth 19.12 ft.
Depth to Water 3.83 ft.
15.29 xVF .17 = 2.6 x3 (case volume) = Estimated Purge Volume: 7.5 gal.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

Purge Equipment:
Disposable Bailer 1
Stainless Steel Bailer
Stack Pump
Suction Pump
Grundfos
Low-flow:
Other:

Sampling Equipment:
Disposable Bailer √
Pressure Bailer
Discrete Bailer
Low-flow:
Other:

Time Started: (2400 hrs)
Time Completed: (2400 hrs)
Depth to Product: ft
Depth to Water: ft
Hydrocarbon Thickness: ft
Visual Confirmation/Description:
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: gal
Amt Removed from Well: gal
Water Removed:
Product Transferred to:

Start Time (purge): 1245 Weather Conditions: Sunny
Sample Time/Date: 1311 5-4-07 Water Color: gray Odor: no
Purging Flow Rate: gpm. Sediment Description:
Did well de-water? no If yes, Time: Volume: gal.

Time (2400 hr.)	Volume (gal.)	pH	Conductivity (umhos/cm)	Temperature (C/F)	D.O. (mg/L)	ORP (mV)	Turbidity
1252	2.5	6.38	113	12.7	2.0	15	
1259	5	6.32	111	12.6		14	
1305	7.5	6.31	110	12.5		13	

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-3	3 x voa vial	YES	HCL	LANCASTER	NWTPH-Gx/BTEX (8021B)
MW-3	2 x amber	YES	HCL	LANCASTER	NWTPH-Dx

COMMENTS: Unable to place plug casing to high
Covered by rubber cap

Add/Replaced Lock: Add/Replaced Plug: Size:

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility #: Chevron #306535 Job Number: 385520
Site Address: 16405 36Th Avenue West Event Date: 5-4-07 (inclusive)
City: Lynnwood,WA Sampler: BWN

Well ID MW-4 Date Monitored: 5-4 Well Condition: OK
Well Diameter 2 in.
Total Depth 17.29 ft.
Depth to Water 3.88 ft.
13.41 xVF .17 = 2.3 x3 (case volume) = Estimated Purge Volume: 7 gal.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

Purge Equipment:
Disposable Bailer √
Stainless Steel Bailer
Stack Pump
Suction Pump
Grundfos
Low-flow:
Other:

Sampling Equipment:
Disposable Bailer √
Pressure Bailer
Discrete Bailer
Low-flow:
Other:

Time Started: (2400 hrs)
Time Completed: (2400 hrs)
Depth to Product: ft
Depth to Water: ft
Hydrocarbon Thickness: ft
Visual Confirmation/Description:

Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: gal
Amt Removed from Well: gal
Water Removed:
Product Transferred to:

Start Time (purge): 1215 Weather Conditions: Sunny
Sample Time/Date: 1240 / 5-4-07 Water Color: gray Odor: no
Purging Flow Rate: gpm. Sediment Description:
Did well de-water? no If yes, Time: Volume: gal.

Time (2400 hr.)	Volume (gal.)	pH	Conductivity (umhos/cm)	Temperature (C/F)	D.O. (mg/L)	ORP (mV)	Turbidity
1222	2.3	8.91	161	12.7	.36	-1	
1229	4.6	6.86	159	12.5			
1235	7	6.83	156	12.4			

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-4	3 x voa vial	YES	HCL	LANCASTER	NWTPH-Gx/BTEX (8021B)
MW-4	2 x amber	YES	HCL	LANCASTER	NWTPH-Dx

COMMENTS:

Add/Replaced Lock: X Add/Replaced Plug: Size:

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility #: Chevron #306535 Job Number: 385520
Site Address: 16405 36Th Avenue West Event Date: 5-11-07 (inclusive)
City: Lynnwood,WA Sampler: Ben Newton

Well ID MW-5 Date Monitored: _____ Well Condition: _____
Well Diameter _____ in.
Total Depth _____ ft.
Depth to Water _____ ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

_____ xVF _____ = _____ x3 (case volume) = Estimated Purge Volume: _____ gal.

Purge Equipment:
Disposable Bailer _____
Stainless Steel Bailer _____
Stack Pump _____
Suction Pump _____
Grundfos _____
Low-flow: _____
Other: _____

Sampling Equipment:
Disposable Bailer _____
Pressure Bailer _____
Discrete Bailer _____
Low-flow: _____
Other: _____

Time Started: _____ (2400 hrs)
Time Completed: _____ (2400 hrs)
Depth to Product: _____ ft
Depth to Water: _____ ft
Hydrocarbon Thickness: _____ ft
Visual Confirmation/Description: _____
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: _____ gal
Amt Removed from Well: _____ gal
Water Removed: _____
Product Transferred to: _____

Start Time (purge): _____ Weather Conditions: _____
Sample Time/Date: _____ / _____ Water Color: _____ Odor: _____
Purging Flow Rate: _____ gpm. Sediment Description: _____
Did well de-water? _____ If yes, Time: _____ Volume: _____ gal.

Time (2400 hr.)	Volume (gal.)	pH	Conductivity (u mhos/cm)	Temperature (C/F)	D.O. (mg/L)	ORP (mV)	Turbidity

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-	x voa vial	YES	HCL	LANCASTER	NWTPH-Gx/BTEX (8021B)
MW-	x amber	YES	HCL	LANCASTER	NWTPH-Dx

COMMENTS: Met w/ Art Cowburn + Morgan from ENSR they dug down 1 ft to locate the well. Not sampled per Art Cowburns advice

Add/Replaced Lock: _____ Add/Replaced Plug: _____ Size: _____

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility #: Chevron #306535 Job Number: 385520

Site Address: 16405 36Th Avenue West Event Date: 5-4-07 (inclusive)

City: Lynnwood,WA Sampler: BWN

Well ID MW- 6 Date Monitored: _____ Well Condition: See comments

Well Diameter _____ in.

Total Depth _____ ft.

Depth to Water _____ ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

_____ xVF _____ = _____ x3 (case volume) = Estimated Purge Volume: _____ gal.

Purge Equipment:

Disposable Bailer _____

Stainless Steel Bailer _____

Stack Pump _____

Suction Pump _____

Grundfos _____

Low-flow: _____

Other: _____

Sampling Equipment:

Disposable Bailer _____

Pressure Bailer _____

Discrete Bailer _____

Low-flow: _____

Other: _____

Time Started: _____ (2400 hrs)

Time Completed: _____ (2400 hrs)

Depth to Product: _____ ft

Depth to Water: _____ ft

Hydrocarbon Thickness: _____ ft

Visual Confirmation/Description: _____

Skimmer / Absorbant Sock (circle one)

Amt Removed from Skimmer: _____ gal

Amt Removed from Well: _____ gal

Water Removed: _____

Product Transferred to: _____

Start Time (purge): _____ Weather Conditions: _____

Sample Time/Date: _____ / _____ Water Color: _____ Odor: _____

Purging Flow Rate: _____ gpm. Sediment Description: _____

Did well de-water? _____ If yes, Time: _____ Volume: _____ gal.

Time (2400 hr.)	Volume (gal.)	pH	Conductivity (umhos/cm)	Temperature (C/F)	D.O. (mg/L)	ORP (mV)	Turbidity

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-	x voa vial	YES	HCL	LANCASTER	NWTPH-Gx/BTEX (8021B)
MW-	x amber	YES	HCL	LANCASTER	NWTPH-Dx

COMMENTS: Bolt stripped requires maintenance, not sampled per Art Cuhbany

Add/Replaced Lock: _____ Add/Replaced Plug: _____ Size: _____

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility #: Chevron #306535 Job Number: 385520
Site Address: 16405 36Th Avenue West Event Date: 5-11-07 (inclusive)
City: Lynnwood,WA Sampler: Ben Newton

Well ID MW- 9 Date Monitored: _____ Well Condition: _____
Well Diameter _____ in.
Total Depth _____ ft.
Depth to Water _____ ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

_____ xVF _____ = _____ x3 (case volume) = Estimated Purge Volume: _____ gal.

Purge Equipment:
Disposable Bailer _____
Stainless Steel Bailer _____
Stack Pump _____
Suction Pump _____
Grundfos _____
Low-flow: _____
Other: _____

Sampling Equipment:
Disposable Bailer _____
Pressure Bailer _____
Discrete Bailer _____
Low-flow: _____
Other: _____

Time Started: _____ (2400 hrs)
Time Completed: _____ (2400 hrs)
Depth to Product: _____ ft
Depth to Water: _____ ft
Hydrocarbon Thickness: _____ ft
Visual Confirmation/Description: _____
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: _____ gal
Amt Removed from Well: _____ gal
Water Removed: _____
Product Transferred to: _____

Start Time (purge): _____ Weather Conditions: _____
Sample Time/Date: / Water Color: _____ Odor: _____
Purging Flow Rate: _____ gpm. Sediment Description: _____
Did well de-water? _____ If yes, Time: _____ Volume: _____ gal.

Time (2400 hr.)	Volume (gal.)	pH	Conductivity (umhos/cm)	Temperature (C/F)	D.O. (mg/L)	ORP (mV)	Turbidity

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-	x voa vial	YES	HCL	LANCASTER	NWTPH-Gx/BTEX (8021B)
MW-	x amber	YES	HCL	LANCASTER	NWTPH-Dx

COMMENTS: Searched ~ 30 minutes in overgrown lot w/ Art Cowburn + Morgan from ENSR. Not sampled per Art C.'s advice

Add/Replaced Lock: _____ Add/Replaced Plug: _____ Size: _____

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility #: Chevron #306535 Job Number: 385520
Site Address: 16405 36Th Avenue West Event Date: 5-4-07 (inclusive)
City: Lynnwood,WA Sampler: BWN

Well ID MW-11R Date Monitored: 5-4 Well Condition: OK
Well Diameter 2 in.
Total Depth 13.82 ft.
Depth to Water 3.99 ft.
9.83 xVF .17 = 1.67 x3 (case volume) = Estimated Purge Volume: 5 gal.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

Purge Equipment: ✓
Disposable Bailer
Stainless Steel Bailer
Stack Pump
Suction Pump
Grundfos
Low-flow:
Other:

Sampling Equipment: ✓
Disposable Bailer
Pressure Bailer
Discrete Bailer
Low-flow:
Other:

Time Started: (2400 hrs)
Time Completed: (2400 hrs)
Depth to Product: ft
Depth to Water: ft
Hydrocarbon Thickness: ft
Visual Confirmation/Description:
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: gal
Amt Removed from Well: gal
Water Removed:
Product Transferred to:

Start Time (purge): 1142 Weather Conditions: Sunny
Sample Time/Date: 1205 15-4-07 Water Color: clear Odor: NO
Purging Flow Rate: gpm. Sediment Description:
Did well de-water? NO If yes, Time: Volume: gal.

Time (2400 hr.)	Volume (gal.)	pH	Conductivity (umhos/cm)	Temperature (C/F)	D.O. (mg/L)	ORP (mV)	Turbidity
1147	1.7	6.40	702	11.8	.38	249	
1152	3.4	6.39	700	11.9			
1158	5	6.37	689	11.8			

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-11R	3 x voa vial	YES	HCL	LANCASTER	NWTPH-Gx/BTEX (8021B)
MW-11R	2 x amber	YES	HCL	LANCASTER	NWTPH-Dx

COMMENTS:

Add/Replaced Lock: Add/Replaced Plug: Size:

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility #: Chevron #306535 Job Number: 385520
Site Address: 16405 36Th Avenue West Event Date: 5-4-07 (inclusive)
City: Lynnwood,WA Sampler: BWN

Well ID MW-R-1 Date Monitored: 5-4 Well Condition: ok
Well Diameter 4 in.
Total Depth 13.29 ft.
Depth to Water 2.68 ft.
10.61 xVF .66 = 7 x3 (case volume) = Estimated Purge Volume: 21 gal.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

Purge Equipment:
Disposable Bailer
Stainless Steel Bailer
Stack Pump √
Suction Pump
Grundfos
Low-flow:
Other:

Sampling Equipment: √
Disposable Bailer
Pressure Bailer
Discrete Bailer
Low-flow:
Other:

Time Started: (2400 hrs)
Time Completed: (2400 hrs)
Depth to Product: ft
Depth to Water: ft
Hydrocarbon Thickness: ft
Visual Confirmation/Description:
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: gal
Amt Removed from Well: gal
Water Removed:
Product Transferred to:

Start Time (purge): 1056 Weather Conditions: Sunny
Sample Time/Date: 1125 / 5-4-07 Water Color: Clear Odor: no
Purging Flow Rate: gpm. Sediment Description:
Did well de-water? no If yes, Time: Volume: gal.

Time (2400 hr.)	Volume (gal.)	pH	Conductivity (umhos/cm)	Temperature (C/F)	D.O. (mg/L)	ORP (mV)	Turbidity
		6.30					
1103	7	[illegible]	608	11.9	0.34	232	
1110	14	6.32	606	11.8			
1117	21	6.31	597	11.8			

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-R-1	3 x voa vial	YES	HCL	LANCASTER	NWTPH-Gx/BTEX (8021B)
MW-R-1	2 x amber	YES	HCL	LANCASTER	NWTPH-Dx

COMMENTS:

Add/Replaced Lock: X Add/Replaced Plug: Size:

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility #: Chevron #306535 Job Number: 385520

Site Address: 16405 36Th Avenue West Event Date: 5-4-07 (inclusive)

City: Lynnwood,WA Sampler: BWN

Well ID MW-R-2 Date Monitored: 5-4 Well Condition: ok

Well Diameter 4 in.

Total Depth 19.23 ft.

Depth to Water 1.75 ft.

12.48 xVF .66 = 8 x3 (case volume) = Estimated Purge Volume: 24 gal.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

Purge Equipment:

Disposable Bailer

Stainless Steel Bailer

Stack Pump 1

Suction Pump

Grundfos

Low-flow:

Other:

Sampling Equipment:

Disposable Bailer ✓

Pressure Bailer

Discrete Bailer

Low-flow:

Other:

Time Started: (2400 hrs)

Time Completed: (2400 hrs)

Depth to Product: ft

Depth to Water: ft

Hydrocarbon Thickness: ft

Visual Confirmation/Description:

Skimmer / Absorbant Sock (circle one)

Amt Removed from Skimmer: gal

Amt Removed from Well: gal

Water Removed:

Product Transferred to:

Start Time (purge): 1023 Weather Conditions: Sunny

Sample Time/Date: 1049 5-4-07 Water Color: clear Odor: no

Purging Flow Rate: gpm. Sediment Description:

Did well de-water? no If yes, Time: Volume: gal.

Time (2400 hr.)	Volume (gal.)	pH	Conductivity (umhos/cm)	Temperature (C/F)	D.O. (mg/L)	ORP (mV)	Turbidity
1031	8	6.36	614	11.8	2.06	241	
1038	16	6.32	606	11.8			
1046	24	6.30	602	11.7			

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-R-2	3 x voa vial	YES	HCL	LANCASTER	NWTPH-Gx/BTEX (8021B)
MW-R-2	2 x amber	YES	HCL	LANCASTER	NWTPH-Dx

COMMENTS:

Add/Replaced Lock: X

Add/Replaced Plug: Size:

Chevron Northwest Region Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. #: 12181 Sample #: 5049456-61 SCR#: Group# 1037328

Facility #: SS#306535-OML G-R#385520
Site Address: 16405 36TH AVENUE WEST, LYNNWOOD, WA
Chevron PM: DR Lead Consultant: ENSRDL
Consultant/Office: G-R, Inc., 6747 Sierra Court, Suite J, Dublin, Ca. 94568
Consultant Prj. Mgr.: Deanna L. Harding (deanna@grinc.com)
Consultant Phone #: 925-551-7555 Fax #: 925-551-7899
Sampler: Ben Newton
Service Order #: ☐ Non SAR:

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds
8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy s on highest hit
☐ Run ____ oxy s on all hits

Sample Identification	Date Collected	Time Collected	Grab	Composite	Matrix: Soil	Matrix: Water	Matrix: Oil ☐ Air ☐ Potable ☐ NPDES	Total Number of Containers	Analyses Requested / Preservation Codes: BTEX + 8021 ☒ 8260 ☐ Naphth ☐ (H)	8260 full scan	Oxygenates	TPH G (H)	TPH D (H)	Extended Rng. Silica Gel Cleanup	Lead Total ☐ Diss. ☐ Method	VPH/EPH	NWTPH H HCID ☐ quantification
QA	5-4-07	—	X			X		2	X			X					
MW-3		1311	X			X		5	X			X	X				
MW-4		1240	X			X		5	X			X	X				
MW-R1		1125	X			X		5	X			X	X				
MW-R2		1049	X			X		5	X			X	X				
MW-11R	↓	1205	X			X		5	X			X	X				

Comments / Remarks
NO MTBE!

Turnaround Time Requested (TAT) (please circle)
STD. TAT 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required) **EDF/EDD**
QC Summary Type I - Full
Type VI (Raw Data) Disk / EDD
WIP (RWQCB) Standard Format
Disk ____ Other.

	Date	Time
Relinquished by: Ben Newton	5/4/07	1333
Relinquished by:		
Relinquished by:		
Relinquished by Commercial Carrier: UPS FedEx Other		
Temperature Upon Receipt 4-4.5 C°		

	Date	Time
Received by:		
Received by:		
Received by:		
Received by:	5/4/07	0910
Custody Seals Intact? Yes No		

3468 Rev. 8/6/01

Lancaster Laboratories, Inc., 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300
Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

Lancaster Laboratories

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 1037328. Samples arrived at the laboratory on Wednesday, May 09, 2007. The PO# for this group is 0015014293 and the release number is ROUSE.

Client Description	Lancaster Labs Number
QA Water Sample	5049456
MW-3 Grab Water Sample	5049457
MW-4 Grab Water Sample	5049458
MW-R1 Grab Water Sample	5049459
MW-R2 Grab Water Sample	5049460
MW-11R Grab Water Sample	5049461

ELECTRONIC COPY TO	Gettler Ryan	Attn: Cheryl Hansen
ELECTRONIC COPY TO	ENSR-AECOM	Attn: Don Lance

Lancaster Laboratories

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Analysis Report

Questions? Contact your Client Services Representative
Megan A Moeller at (717) 656-2300

Respectfully Submitted,

Susan M. Goshert
Group Leader

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 5049456

QA Water Sample
Facility# 306535 Job# 385520
16405 36th Ave West-Lynnwood, WA

Collected:05/04/2007

Submitted: 05/09/2007 09:10
Reported: 05/21/2007 at 10:17
Discard: 06/21/2007

Account Number: 12181

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

36-QA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
05879	BTEX						
02161	Benzene	71-43-2	N.D.	0.5	2.0	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	2.0	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	2.0	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	5.0	ug/l	1
08274	TPH by NWTPH-Gx waters						
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	250.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
05879	BTEX	SW-846 8021B	1	05/10/2007 18:55	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	05/10/2007 18:55	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/10/2007 18:55	Linda C Pape	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 5049457

MW-3 Grab Water Sample
Facility# 306535 Job# 385520
16405 36th Ave West-Lynnwood, WA

Collected: 05/04/2007 13:11 by BN

Account Number: 12181

Submitted: 05/09/2007 09:10
Reported: 05/21/2007 at 10:17
Discard: 06/21/2007

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

36-M3

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel						
02095	Diesel Range Organics	n.a.	N.D.	1,600.	4,900.	ug/l	20
02096	Heavy Range Organics	n.a.	13,000.	2,000.	9,900.	ug/l	20
05879	BTEX						
02161	Benzene	71-43-2	N.D.	0.5	2.0	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	2.0	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	2.0	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	5.0	ug/l	1
08274	TPH by NWTPH-Gx waters						
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	250.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	05/16/2007 23:07	Matthew E Barton	20
05879	BTEX	SW-846 8021B	1	05/10/2007 23:49	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	05/10/2007 23:49	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/10/2007 23:49	Linda C Pape	1
02135	Extraction - DRO Water Special	ECY 97-602 WA EPH	1	05/10/2007 09:45	Kerrie A Greenfield	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 5049458

MW-4 Grab Water Sample
Facility# 306535 Job# 385520
16405 36th Ave West-Lynnwood, WA

Collected:05/04/2007 12:40 by BN

Account Number: 12181

Submitted: 05/09/2007 09:10
Reported: 05/21/2007 at 10:17
Discard: 06/21/2007

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

36-M4

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel						
02095	Diesel Range Organics	n.a.	2,400. J	790.	2,500.	ug/l	10
02096	Heavy Range Organics	n.a.	5,900.	990.	5,000.	ug/l	10
05879	BTEX						
02161	Benzene	71-43-2	N.D.	0.5	2.0	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	2.0	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	2.0	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	5.0	ug/l	1
08274	TPH by NWTPH-Gx waters						
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	250.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	05/17/2007 13:21	Matthew E Barton	10
05879	BTEX	SW-846 8021B	1	05/11/2007 00:10	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	05/11/2007 00:10	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/11/2007 00:10	Linda C Pape	1
02135	Extraction - DRO Water Special	ECY 97-602 WA EPH	1	05/10/2007 09:45	Kerrie A Greenfield	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Lancaster Laboratories Sample No. WW 5049461

MW-11R Grab Water Sample
Facility# 306535 Job# 385520
16405 36th Ave West-Lynnwood, WA

Collected:05/04/2007 12:05 by BN

Account Number: 12181

Submitted: 05/09/2007 09:10
Reported: 05/21/2007 at 10:17
Discard: 06/21/2007

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

36-11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel						
02095	Diesel Range Organics	n.a.	N.D.	79.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	99.	490.	ug/l	1
05879	BTEX						
02161	Benzene	71-43-2	N.D.	0.5	2.0	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	2.0	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	2.0	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	5.0	ug/l	1
08274	TPH by NWTPH-Gx waters						
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	250.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	05/16/2007 22:19	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	05/11/2007 01:12	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	05/11/2007 01:12	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/11/2007 01:12	Linda C Pape	1
02135	Extraction - DRO Water Special	ECY 97-602 WA EPH	1	05/10/2007 09:45	Kerrie A Greenfield	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 5049459

MW-R1 Grab Water Sample
Facility# 306535 Job# 385520
16405 36th Ave West-Lynnwood, WA

Collected: 05/04/2007 11:25 by BN

Account Number: 12181

Submitted: 05/09/2007 09:10
Reported: 05/21/2007 at 10:17
Discard: 06/21/2007

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

36-R1

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel							
02095	Diesel Range Organics	n.a.	N.D.		79.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.		99.	500.	ug/l	1
05879	BTEX							
02161	Benzene	71-43-2	1.5	J	0.5	2.0	ug/l	1
02164	Toluene	108-88-3	N.D.		0.5	2.0	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.		0.5	2.0	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.		1.5	5.0	ug/l	1
08274	TPH by NWTPH-Gx waters							
01648	TPH by NWTPH-Gx waters	n.a.	N.D.		50.	250.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	05/16/2007 21:06	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	05/11/2007 00:31	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	05/11/2007 00:31	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/11/2007 00:31	Linda C Pape	1
02135	Extraction - DRO Water Special	ECY 97-602 WA EPH	1	05/10/2007 09:45	Kerrie A Greenfield	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 5049460

MW-R2 Grab Water Sample
Facility# 306535 Job# 385520
16405 36th Ave West-Lynnwood, WA

Collected:05/04/2007 10:49 by BN

Account Number: 12181

Submitted: 05/09/2007 09:10
Reported: 05/21/2007 at 10:17
Discard: 06/21/2007

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

36-R2

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel						
02095	Diesel Range Organics	n.a.	N.D.	80.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	500.	ug/l	1
05879	BTEX						
02161	Benzene	71-43-2	N.D.	0.5	2.0	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	2.0	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	2.0	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	5.0	ug/l	1
08274	TPH by NWTPH-Gx waters						
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	250.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	05/16/2007 21:30	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	05/11/2007 00:51	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	05/11/2007 00:51	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/11/2007 00:51	Linda C Pape	1
02135	Extraction - DRO Water Special	ECY 97-602 WA EPH	1	05/10/2007 09:45	Kerrie A Greenfield	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

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Analysis Report

Quality Control Summary

Group Number: 1037328

Client Name: Chevron
Reported: 05/21/07 at 10:17 AM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 071300000A	Sample number(s): 5049457-5049461								
Diesel Range Organics	N.D.	80.	250.	ug/l	80	79	61-106	2	20
Heavy Range Organics	N.D.	100.	500.	ug/l					
Batch number: 07130B54A	Sample number(s): 5049456-5049461								
TPH by NWTPH-Gx waters	N.D.	50.	250.	ug/l	105	104	75-135	1	30
Benzene	N.D.	0.5	2.0	ug/l	98	97	86-119	1	30
Toluene	N.D.	0.5	2.0	ug/l	103	102	82-119	0	30
Ethylbenzene	N.D.	0.5	2.0	ug/l	105	105	81-119	0	30
Total Xylenes	N.D.	1.5	5.0	ug/l	107	107	82-120	0	30

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 07130B54A	Sample number(s): 5049456-5049461 UNSPK: P049449, P049504								
TPH by NWTPH-Gx waters	98		63-154						
Benzene	102		78-131						
Toluene	102		78-129						
Ethylbenzene	103		75-133						
Total Xylenes	104		84-131						

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 071300000A

	Orthoterphenyl
5049457	123
5049458	129
5049459	100
5049460	102
5049461	103
Blank	110
LCS	115

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Lancaster Laboratories
2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Quality Control Summary

Client Name: Chevron
Reported: 05/21/07 at 10:17 AM

Group Number: 1037328

Surrogate Quality Control

LCSD 114

Limits: 50-150

Analysis Name: BTEX
Batch number: 07130B54A

	Trifluorotoluene-P	Trifluorotoluene-F
5049456	86	97
5049457	86	96
5049458	87	97
5049459	87	98
5049460	86	96
5049461	86	91
Blank	85	96
LCS	87	85
LCSD	86	84
MS	87	82
Limits:	69-129	63-135

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected
TNTC	Too Numerous To Count
IU	International Units
umhos/cm	micromhos/cm
C	degrees Celsius
Cal	(diet) calories
meq	milliequivalents
g	gram(s)
ug	microgram(s)
ml	milliliter(s)
m3	cubic meter(s)
BMQL	Below Minimum Quantitation Level
MPN	Most Probable Number
CP Units	cobalt-chloroplatinate units
NTU	nephelometric turbidity units
F	degrees Fahrenheit
lb.	pound(s)
kg	kilogram(s)
mg	milligram(s)
l	liter(s)
ul	microliter(s)
fib >5 um/ml	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

WARRANTY AND LIMITS OF LIABILITY – In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL LANCASTER LABORATORIES BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF LANCASTER LABORATORIES AND (B) WHETHER LANCASTER LABORATORIES HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Lancaster Laboratories which includes any conditions that vary from the Standard Terms and Conditions of Lancaster Laboratories and we hereby object to any conflicting terms contained in any acceptance or order submitted by client.

Snohomish County Washington Online Government Information & Services

* R E A L * Property Information

County Home Assessor Home Treasurer Home Information on which Department to contact

Please view Disclaimer **If you have questions, comments or suggestions, please Contact Us.**

Date/Time:7/31/2007 12:22:00 PM Answers to Frequently Asked Questions about Parcel Data (opens as new window)

Return to Property Information Entry page

Parcel Number **00372700200103** Prev Parcel Reference **37270020010308**

View **Map of this parcel** (opens as new window)

General Information

Taxpayer Name || Address (contact the Treasurer if you have questions)

SK EXXON LLC || 16404 36TH AVE W - - - LYNNWOOD, WA 98037-7001

If the above mailing address is incorrect and you want to make a change, see the information on Name and Address Changes

Owner Name || Address (contact the Assessor if you have questions)

SK EXXON LLC || 16404 36TH AVE W - - - LYNNWOOD, WA 98037-7001

If the above name and address is incorrect due to a recent sale, please see the information on Name and Address Changes After a Sale

Street (Situs) Address (contact the Assessor if you have questions)

16404 36TH AVE W - - - LYNNWOOD, WA 98037-7001

Parcel Legal Description

ALDERWOOD MANOR 02 BLK 002 D-03 - BLDG ONLY-N 150FT OF E 125FT OF LOT 1

Go to top of page

Treasurer's Tax Information

Taxes For answers to questions about Taxes, please contact the Treasurer's office (opens as new window)

2007 Taxes for this parcel $3,526.19

(Taxes may include Surface Water Management and/or State Forest Fire Patrol fees. LID charges, if any, are not included.)

To obtain a duplicate tax statement, either download our Tax Statement Request form or call 425-388-3366 to request it by phone.

Go to top of page

Assessor's Property Data

Characteristics and Value Data below are for 2007 tax year.

Please contact the Treasurer's office **for answers to questions about Taxes** (opens as new window)

For questions ONLY about property characteristics or property values (NOT taxes), please contact the Assessor's Office

Property Values	Values do not reflect adjustments made due to an exemption, such as a senior or disabled persons exemption.

Reductions for exemptions are made on the property tax bill.

Tax Year	2007	Market Land	$0	Market Improvement	$339,200	Market Total	$339,200

Pending Property Values

Tax Year	2008	Market Land	$0	Market Improvement	$489,000	Market Total	$489,000

Go to top of page

Valuation and Property Tax History

View History (opens as new window)

Go to top of page

Property Characteristics

Tax Code Area (TCA) **02446** View Taxing Districts for this Parcel (opens as new window)

Use Code **549 Other Retail Trade - Food NEC**

Size Basis **ACRE** Size **0.00** (Size may include undivided interest in common tracts and road parcels)

Go to top of page

Property Structures

Type	Yr.Built	Structure Description
Commercial	**1965**	**TEXACO FOOD MART SERVICE CNTR** View Structure Data (opens as new window)

Go to top of page

Property Sales since 7/31/1999

Explanation of Sales Information (opens as new window)

Sales data is based solely upon excise affidavits processed by the Assessor.

Transfer Date	Receipt Date	Sales Price	Excise Number	Deed Type	Grantor (Seller)	Grantee (Buyer)	Other Parcels
2/29/2000	**3/6/2000**	**$720,000**	**255614**	**W**	**16404 36TH AVENUE WEST LLC**	**SK EXXON LLC**	**Yes**

Go to top of page

Property Maps Township/Range/Section/Quarter, links to maps

Neighborhood **5502000** Explanation of Neighborhood Code (opens as new window)

Township **27** Range **04** Section **10** Quarter **NW** Find parcel maps for this Township/Range/Section

View Map of this parcel (opens as new window)

ENSR
9521 Willows Road NE, Redmond, Washington 98052-3422
T 425.881.7700 F 425.883.4473 www.ensr.aecom.com

release 1696
Unocal #5533
Lynnwood

December 18, 2006

Mr. Darin Rouse
Chevron Environmental Management Company
6001 Bollinger Canyon Road, Room K2260
PO Box 6012
San Ramon, California 94583-2324

RECEIVED
2006
DEPT OF ECOLOGY

Subject: Groundwater Monitoring Report Fourth Quarter 2006
Former Unocal Service Station No. 5533
16405 36th Avenue West
Lynnwood, Washington, 98037

Chevron Site No: 306535
ENSR Project No: 06940-367
DOE Facility: 74865182
DOE Contact Name: Mr. Joe Hickey
Sampling Date: October 27, 2006

Dear Mr. Rouse,

This groundwater monitoring report is prepared for former Unocal Service Station No. 5533, Chevron Site No. 306535, located at 16405 36th Avenue West, Lynnwood, Washington (Figure 1). On October 27, 2006, eight groundwater monitoring wells (MW-3, MW-4, MW-5, MW-6, MW-9, MW-11R, R-1, and R-2) were gauged and sampled (Figure 2). The groundwater elevations and sample analytical results are presented in Tables 1 through 3.

Groundwater Flow Direction

Each well was gauged using an electronic water-level meter with water depths measured relative to the top of the well casing. Depths to groundwater ranged from 3.85 feet below ground surface (bgs) at monitoring well R-1, to 7.05 feet bgs at well MW-9. Groundwater elevations ranged from 87.06 feet at MW-9, to 97.74 feet at MW-3.

Groundwater elevations are relative to a temporary onsite benchmark. The location of the benchmark is a light pole numbered 164/36#2 on the southeast corner of the intersection of 164th Street SW and 36th Avenue West, top of bolt. According to measurements taken on October 27, 2006, groundwater beneath the site flows to the southeast (Figure 2). Cumulative groundwater measurements from April 23, 2005 to the present are presented in Table 1.

Sampling Methods

Groundwater samples for analysis were collected from groundwater monitoring wells MW-3, MW-4, MW-5, MW-6, MW-9, MW-11R, R-1, and R-2 following low-flow (minimal drawdown) groundwater sampling procedures. Purging and sampling were completed using a peristaltic pump. Wells were purged at a rate of 0.5 liters per minute or less, and water quality indicator parameters, including temperature, pH, specific conductance, oxidization reduction potential, dissolved oxygen, and turbidity were recorded at regular intervals and used to determine when formation water was representative for sampling. When these

entered
CP
1-4-07

parameters stabilized, samples were pumped directly into clean, laboratory-supplied containers. New silicone and polyethylene tubing was used at each well. Water quality indicator parameters did not stabilize at well MW-9. The volume of water present in well MW-9 was calculated using the well depth, casing diameter, and depth to groundwater measurements. Three well volumes were purged from MW-9 prior to sample collection. Each sample was labeled, placed into an iced cooler, and submitted by ENSR to Lancaster Laboratories (Lancaster, Pennsylvania) using standard chain-of-custody protocol. Cumulative field parameter data from November 5, 2005 to the present are presented in Table 4.

During the fourth quarter 2006 groundwater sampling event, collected purge water (approximately 20 gallons) was placed into one properly-labeled 55-gallon drum and transported by ENSR to Emerald Services' Seattle facility for treatment and disposal.

Analytical Methods

Groundwater samples were analyzed for volatile organic compounds (VOCs) including benzene, ethylbenzene, toluene, and total xylenes (BETX) by EPA Method 8260B, total petroleum hydrocarbons (TPH) as gasoline (TPH-G) by Northwest Method NWTPH-G, TPH as diesel (TPH-D), and TPH as heavy oil (TPH-O) by Northwest Method NWTPH-Dx with acid/silica gel cleanup (Table 2).

Analytical Results

The groundwater analytical results were compared with the Washington Model Toxics Control Act (MTCA) Method A Cleanup Levels. The analytical results are summarized as follows:

- Benzene was detected[1] in samples from wells MW-5 and MW-6 at concentrations greater than MTCA Method A cleanup levels.
- Ethylbenzene was detected in samples from wells MW-5 and MW-6 at concentrations less than cleanup levels.
- Toluene was detected in samples from wells MW-3, MW-5, MW-6, and R-2 at concentrations less that cleanup levels.
- Total xylenes were detected in samples from wells MW-5 and MW-6 at concentrations less than cleanup levels.
- Methyl tertiary butyl ether was detected in samples from well MW-5 at a concentration greater than the cleanup level. Other VOCs were detected in samples from wells MW-4, MW-5, MW-6, and R-2 at concentrations less than cleanup levels.
- TPH-G was detected in the sample from well MW-5 at a concentration greater than cleanup levels. TPH-G was detected in the sample from well MW-6 at a concentration less than cleanup levels.
- TPH-D was detected in the sample from well MW-3 at the MTCA Method A cleanup level. TPH-D was detected in samples from wells MW-4 and MW-5 at concentrations less than cleanup levels.
- TPH-O was not detected in the sample from well MW-3 at a concentration greater than cleanup levels.

All other groundwater analytical results were less than the laboratory reporting limits. A copy of the laboratory report by Lancaster Laboratories is attached. Analytical results are presented in Tables 2 and 3. BETX, TPH-G, TPH-D, and TPH-O analytical results are shown graphically on Figure 3.

[1] Detected means the analyte concentration exceeded the laboratory reporting limit.

Discussion

Analytical results from fourth quarter 2006 groundwater monitoring event, show petroleum constituents that exceed the MTCA Method A cleanup levels were present in groundwater samples from wells MW-3, MW-5, and MW-6. All other samples collected were less than the laboratory reporting limits and/or the MTCA Method A Cleanup Levels. ENSR anticipates discontinuing groundwater monitoring of wells MW-7, MW-8, MW-12, MW-13, MW-14, MW-15, MW-18, and HB-1 due to damage to the wells during road construction, and the safety concern presented by sampling wells located in the street (MW-12, MW-13, MW-14, and MW-15).

Limitations

The interpretations in this report represent our professional opinions and are based, in part, on the information supplied by others. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

Art Cowburn
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State of Washington 1272 Licensed Geologist
Akos Paul Fekete

Attachments

Table 1 – Summary of Groundwater Elevations
Table 2 – Summary of Groundwater Chemical Analytical Data – BETX and Petroleum Hydrocarbons
Table 3 – Summary of Groundwater Chemical Analytical Data – Volatile Organic Compounds
Table 4 – Summary of Groundwater Field Parameters
Figure 1 – Site Location Map
Figure 2 – Groundwater Monitoring Well Locations – October 27, 2006
Figure 3 – Summary of Groundwater Analytical Data – October 27, 2006
Laboratory Report/COC

Distribution

Mr. Darin Rouse, Chevron Project Manager
Mr. Joe Hickey, Agency Project Manager, DOE

Quality Assurance Review By:

Ashley Lunde
Environmental Technician III
alunde@ensr.aecom.com

TABLE 1
SUMMARY OF GROUNDWATER ELEVATIONS
FORMER UNOCAL SERVICE STATION #5533
16405 36TH AVENUE WEST, LYNNWOOD, WA
06940-367

Monitoring Well (Casing Elevation in feet)	Date Measured	Depth to Groundwater[a] (feet)	Groundwater Elevation[b] (feet)
HB-1	04/23/05	6.77	94.57
(101.34)	07/30/05	8.35	92.99
	11/05/05	7.32	94.02
	06/16/06	Not Sampled	
	10/27/06	Not Sampled	
MW-1	Well Abandoned		
MW-2	Well Abandoned		
MW-3	04/23/05	3.60	100.37
(103.97)	07/30/05	3.99	99.98
	11/05/05	2.76	101.21
	06/16/06	4.41	99.56
	10/27/06	6.23	97.74
MW-4	04/23/05	4.80	98.48
(103.28)	07/30/05	5.37	97.91
	11/05/05	4.71	98.57
	06/16/06	5.41	97.87
	10/27/06	6.01	97.27
MW-5	04/23/05	3.69	98.39
(102.08)	07/30/05	4.61	97.47
	11/05/05	3.76	98.32
	06/16/06	4.45	97.63
	10/27/06	5.60	96.48
MW-6	04/23/05	Well Not Found	
(NS)	07/30/05	5.57	NS
	11/05/05	Not Sampled	
	06/16/06	5.42	NS
	10/27/06	6.58	NS
MW-7	04/23/05	8.41	92.83
(101.24)	07/30/05	9.24	92.00
	11/05/05	8.18	93.06
	06/16/06	Not Sampled	
	10/27/06	Not Sampled	
MW-8	04/23/05	7.19	94.14
(101.33)	07/30/05	8.97	92.36
	11/05/05	7.25	94.08
	06/16/06	Not Sampled	
	10/27/06	Not Sampled	
MW-9	04/23/05	3.55	90.56
(94.11)	07/30/05	4.59	89.52
	11/05/05	3.85	90.26
	06/16/06	2.85	91.26
	10/27/06	7.05	87.06

TABLE 1
SUMMARY OF GROUNDWATER ELEVATIONS
FORMER UNOCAL SERVICE STATION #5533
16405 36TH AVENUE WEST, LYNNWOOD, WA
06940-367

Monitoring Well (Casing Elevation in feet)	Date Measured	Depth to Groundwater[a] (feet)	Groundwater Elevation[b] (feet)
MW-10	Well Abandoned		
MW-11	Well Abandoned		
MW-11R	06/16/06	2.80	NS
	10/27/06	5.07	NS
MW-12 (102.27)	04/23/05	7.46	94.81
	07/30/05	7.41	94.86
	11/05/05	6.90	95.37
	06/16/06	Not Sampled	
	10/27/06	Not Sampled	
MW-13 (102.13)	04/23/05	4.48	97.65
	07/30/05	5.95	96.18
	11/05/05	4.76	97.37
	06/16/06	Not Sampled	
	10/27/06	Not Sampled	
MW-14 (103.05)	04/23/05	5.21	97.84
	07/30/05	6.53	96.52
	11/05/05	6.45	96.60
	06/16/06	Not Sampled	
	10/27/06	Not Sampled	
MW-15	04/23/05	Not Sampled	
	07/30/05	Not Sampled	
	11/05/05	Not Sampled	
	06/16/06	5.81	NS
	10/27/06	Not Sampled	
MW-16	Well Abandoned		
MW-17	Well Abandoned		
MW-18 (102.71)	04/23/05	4.63	98.08
	07/30/05	5.77	96.94
	11/05/05	4.70	98.01
	06/16/06	Not Sampled	
	10/27/06	Not Sampled	
R-1	06/16/06	2.99	NS
	10/27/06	3.85	NS
R-2	06/16/06	2.70	NS
	10/27/06	4.59	NS

Notes:
[a] The depths to groundwater were measured from the top of the well casings.
[b] Groundwater elevations are relative to a temporary benchmark onsite, not mean sea level. The temporary benchmark is the light pole numbered 164/36 #2 located at the southwest corner of intersection, top of bolt.
NS = Well not surveyed.

TABLE 2
SUMMARY OF GROUNDWATER CHEMICAL ANALYTICAL DATA
BETX AND PETROLEUM HYDROCARBONS
FORMER UNOCAL SERVICE STATION #5533
16405 36TH AVE WEST, LYNNWOOD, WA
06940-367

Well Number	Date Sampled	BETX [1] (µg/L)				Gasoline-range Hydrocarbons [2] (µg/L)	Diesel-range Hydrocarbons [3] (µg/L)	Heavy Oil-range Hydrocarbons [3] (µg/L)
		B	E	T	X			
MTCA Method A Cleanup Level		**5.0**	**700**	**1,000**	**1,000**	**800**	**500**	**500**
HB-1	04/23/05	1,550	3,210	112	3,920	34,600	ND(250)	ND(500)
	07/30/05	1,530	3,050	66.3	2,480	28,100	ND(250)	ND(500)
	11/05/05	Not Sampled						
	06/16/06	Not Sampled						
	10/27/06	Not Sampled						
MW-1		Well Abandoned						
MW-2		Well Abandoned						
MW-3	04/23/05	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.00)	ND(50.0)	399	1,340
	07/30/05	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	313	1,140
	11/05/05	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	253	510
	06/16/06	ND(0.500)	ND(0.500)	1.85	ND(1.00)	ND(50.0)	ND(250)	ND(500)
	10/27/06	ND(4)	ND(4)	0.5[5]	ND(8)	ND(250)	500	840
MW-4	04/23/05	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.00)	ND(50.0)	ND(250)	ND(500)
	07/30/05	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	715	ND(500)
	11/05/05	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	ND(248)	ND(495)
	06/16/06	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	ND(253)	ND(505)
	10/27/06	ND(4)	ND(4)	ND(4)	ND(8)	ND(250)	140[5]	ND(480)
MW-5	04/23/05	147	155	14.4	135	3,660	ND(250)	ND(500)
	07/30/05	82.9	59.3	7.75	98.3	2,620	ND(250)	ND(500)
	11/05/05	71.2	32.4	5.26	3.15	2,080	ND(238)	ND(476)
	06/16/06	115	324	19.4	483	7,200	ND(250)	ND(500)
	10/27/06	230	3[5]	10	10[5]	2,400	350	ND(480)
MW-6	07/30/05	194	1.36	27.9	16.6	644	ND(250)	ND(500)
	11/05/05	Not Sampled						
	06/16/06	526	5.76	128	35.0	2,140	ND(250)	ND(500)
	10/27/06	270	0.5[5]	9	6.6[5]	190[5]	ND(240)	ND(470)
MW-7	04/23/05	1.52	ND(0.50)	ND(0.50)	ND(1.00)	62.4	ND(250)	ND(500)
	07/30/05	0.710	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	ND(250)	ND(500)

TABLE 2
SUMMARY OF GROUNDWATER CHEMICAL ANALYTICAL DATA
BETX AND PETROLEUM HYDROCARBONS

FORMER UNOCAL SERVICE STATION #5533
16405 36TH AVE WEST, LYNNWOOD, WA
06940-367

Well Number	Date Sampled	BETX [1] (µg/L)				Gasoline-range Hydrocarbons [2] (µg/L)	Diesel-range Hydrocarbons [3] (µg/L)	Heavy Oil-range Hydrocarbons [3] (µg/L)
		B	E	T	X			
MTCA Method A Cleanup Level		**5.0**	**700**	**1,000**	**1,000**	**800**	**500**	**500**
MW-7	11/05/05	0.991	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	ND(281)	ND(562)
(Continued)	06/16/06	Not Sampled						
	10/27/06	Not Sampled						
MW-8	04/23/05	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.00)	ND(50.0)	ND(250)	ND(500)
	07/30/05	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	ND(250)	ND(500
	11/05/05	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	ND(250)	ND(500)
	06/16/06	Not Sampled						
	10/27/06	Not Sampled						
MW-9	04/23/05	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.00)	ND(50.0)	ND(250)	ND(500)
	07/30/05	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	ND(250)	ND(500)
	11/05/05	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	ND(236)	ND(472)
Duplicate	11/05/05	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	ND(236)	ND(472)
	06/16/06	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	ND(250)	ND(500)
	10/27/06	ND(4)	ND(4)	ND(4)	ND(8)	ND(250)	ND(240)	ND(470)
MW-10	Well Abandoned							
MW-11	Well Abandoned							
MW-11R	06/16/06	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	ND(250)	ND(500)
	10/27/06	ND(4)	ND(4)	ND(4)	ND(8)	ND(250)	ND(240)	ND(480)
MW-12	04/23/05	296	1,890	42.5	1,210	18,500	266	ND(500)
	07/30/05[4]	–	–	–	–	–	–	–
	11/05/05	237	1,860	34.5	726	14,300	349	ND(485)
	06/16/06	Not Sampled						
	10/27/06	Not Sampled						
MW-13	04/23/05	2,680	3,040	7,640	15,600	81,600	804	781
	07/30/05	2,450	2,600	1,270	10,500	58,900	538	637
	11/05/05	651	1,300	1,030	3,160	24,300	317	ND(505)
	06/16/06	Not Sampled						
	10/27/06	Not Sampled						

TABLE 2
SUMMARY OF GROUNDWATER CHEMICAL ANALYTICAL DATA
BETX AND PETROLEUM HYDROCARBONS

FORMER UNOCAL SERVICE STATION #5533
16405 36TH AVE WEST, LYNNWOOD, WA
06940-367

Well Number	Date Sampled	BETX [1] (µg/L)				Gasoline-range Hydrocarbons [2] (µg/L)	Diesel-range Hydrocarbons [3] (µg/L)	Heavy Oil-range Hydrocarbons [3] (µg/L)
		B	E	T	X			
MTCA Method A Cleanup Level		**5.0**	**700**	**1,000**	**1,000**	**800**	**500**	**500**
MW-14	04/23/05	1.88	ND(0.500)	ND(0.500)	ND(1.00)	279	ND(250)	ND(500)
	07/30/05	0.592	ND(0.500)	ND(0.500)	ND(1.00)	75.4	ND(250)	ND(500)
	11/05/05	Not Sampled						
	06/16/06	Not Sampled						
	10/27/06	Not Sampled						
MW-15	04/23/05	Not Sampled						
	07/30/05	Not Sampled						
	11/05/05	Not Sampled						
	06/16/06	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	ND(250)	ND(500)
	10/27/06	Not Sampled						
MW-16		Well Abandoned						
MW-17		Well Abandoned						
MW-18	04/23/05	70.8	4.09	2.07	4.61	235	ND(250)	ND(500)
	07/30/05	107	8.67	1.61	27.6	440	ND(250)	768
	11/05/05	111	3.91	2.09	3.34	415	844	2,650
	06/16/06	Not Sampled						
	10/27/06	Not Sampled						
R-1	06/16/06	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	ND(253)	ND(505)
	10/27/06	ND(4)	ND(4)	ND(4)	ND(8)	ND(250)	ND(240)	ND(470)
R-2	06/16/06	ND(0.500)	ND(0.500)	ND(0.500)	ND(1.00)	ND(50.0)	ND(250)	ND(500)
	10/27/06	ND(4)	ND(4)	0.9[5]	ND(8)	ND(250)	ND(240)	ND(470)

Notes:

[1] B = Benzene, E = Ethylbenzene, T = Toluene, X = Total Xylenes. Analyzed by EPA Method 8021B.

[2] Gasoline-range hydrocarbons analyzed by Northwest Method NWTPH-G or NWTPH-Gx.

[3] Diesel- and heavy oil-range hydrocarbons analyzed by Northwest Method NWTPH-D with acid/silica gel cleanup.

[4] MW-12 was not sampled due to the presence of phase-separated petroleum products.

[5] Estimated value.

µg/L = micrograms per liter

MTCA = Model Toxics Control Act

ND = Analyte was not detected. Prior to October 2006, number in parentheses is the method reporting limit. After October 2006, number in parentheses is the quantitation limit.

Prior to October 2006, laboratory chemical analyses were completed by North Creek Analytical (Bothell, WA). Laboratory chemical analysis of samples collected on 10/27/06 were completed by Lancaser Laboratories (Lancaster, PA).

TABLE 3
SUMMARY OF GROUNDWATER CHEMICAL ANALYTICAL DATA
VOLATILE ORGANIC COMPOUNDS
FORMER UNOCAL SERVICE STATION #5533
16405 36TH AVE WEST, LYNNWOOD, WA
06940-367

Well Number	Date Sampled	Volatile Organic Compounds[1] (µg/L)											
		Acetone	n-Butylbenzene	sec-Butylbenzene	t-Butyl alcohol	1,2-Dibromoethane[3]	Ethanol	Isopropylbenzene	p-Isopropyltoluene	Methyl Tertiary Butyl Ether	n-Propylbenzene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene
MTCA Method A Cleanup Level		NA	NA	NA	NA	0.01	NA	NA	NA	20	NA	NA	NA
MW-3	10/27/06	ND(20)	ND(5)	ND(5)	ND(20)	ND(4)	ND(250)	ND(5)	ND(5)	ND(4)	ND(5)	ND(5)	ND(5)
MW-4	10/27/06	ND(20)	ND(5)	ND(5)	ND(20)	ND(4)	ND(250)	ND(5)	ND(5)	9	ND(5)	ND(5)	ND(5)
MW-5	10/27/06	15[2]	9	7	250	ND(4)	ND(250)	40	1[2]	23	170	13	120
MW-6	10/27/06	ND(20)	ND(5)	ND(5)	550	ND(4)	ND(250)	2[2]	ND(5)	0.5[2]	5[2]	ND(5)	ND(5)
MW-9	10/27/06	ND(20)	ND(5)	ND(5)	ND(20)	ND(4)	ND(250)	ND(5)	ND(5)	ND(4)	ND(5)	ND(5)	ND(5)
MW-11R	10/27/06	ND(20)	ND(5)	ND(5)	ND(20)	ND(4)	ND(250)	ND(5)	ND(5)	0.6[2]	ND(5)	ND(5)	ND(5)
R-1	10/27/06	ND(20)	ND(5)	ND(5)	ND(20)	ND(4)	ND(250)	ND(5)	ND(5)	ND(4)	ND(5)	ND(5)	ND(5)
R-2	10/27/06	ND(20)	ND(5)	ND(5)	ND(20)	ND(4)	83[2]	ND(5)	ND(5)	ND(4)	ND(5)	ND(5)	ND(5)

Notes:

[1] Volatile Organic Compounds analyzed by EPA Method 8260B.

[2] Estimated value.

[3] The laboratory reporting limit for this analyte is greater than the MTCA Method A cleanup level.

NA = Not available/not applicable.

µg/L = micrograms per liter

MTCA = Model Toxics Control Act

ND = Analyte was not detected. Prior to October 2006, number in parentheses is the method reporting limit. After October 2006, number in parentheses is the quantitation limit.

Prior to October 2006, laboratory chemical analyses were completed by North Creek Analytical (Bothell, WA). Laboratory chemical analysis of samples collected on 10/27/06 were completed by Lancaser Laboratories (Lancaster, PA).

TABLE 4
SUMMARY OF GROUNDWATER FIELD PARAMETERS
FORMER UNOCAL SERVICE STATION #5533
16405 36TH AVE WEST, LYNNWOOD, WA
06940-367

Well Number	Date Sampled	pH[1]	Electrical Conductivity[2]	Oxidation Reduction Potential[3]	Dissolved Oxygen[4]	Temperature[5]	Ferrous Iron[6]	Total Alkalinity[7]	Nitrate-Nitrogen[8]	Total Organic Carbon[9]	Sulfate[10]
MW-3	11/05/05	6.38	0.26	-9.0	3.76	16.87	2.7	33.8	0.018	11.30	2.63
	06/16/06	6.88	52	-122.8	0.11	15.27	-	-	-	-	-
	10/27/06	6.32	0.054	-100.7	0.02	17.78	-	-	-	-	-
MW-4	11/05/05	-	-	-	-	-	-	313	ND(0.0100)	21.60	15.40
	06/16/06	7.13	533	-77.6	0.29	15.13	-	-	-	-	-
	10/27/06	6.80	0.445	-169.8	0.18	16.95	-	-	-	-	-
MW-5	06/16/06	6.85	546	-81.2	0.26	14.51	-	-	-	-	-
	10/27/06	6.46	0.556	-102.5	0.21	16.98	-	-	-	-	-
MW-6	06/16/06	6.78	469	-68.0	0.18	14.56	-	-	-	-	-
	10/27/06	6.38	0.502	-122.3	0.17	16.02	-	-	-	-	-
MW-7	11/05/05	6.35	1.07	-7.0	4.53	14.15	3.4	-	-	-	-
MW-9	11/05/05	6.17	1.03	35.0	NS	12.90	0.2	183	1.260	5.00	52.80
dup	11/05/05	-	-	-	-	-	-	184	1.060	4.90	50.20
	06/16/06	6.74	368	21.5	0.59	11.80	-	-	-	-	-
	10/27/06	7.03	0.381	159.8	2.03	12.87	-	-	-	-	-
MW-11R	06/16/06	6.78	578	0.8	0.52	12.60	-	-	-	-	-
	10/27/06	6.51	0.566	159.4	0.21	13.26	-	-	-	-	-
MW-12	11/05/05	5.90	1.21	5.0	NS	14.55	3.8	308	ND(0.0100)	39.80	ND(0.400)
MW-13	11/05/05	5.98	0.94	16.0	NS	13.42	2.4	285	ND(0.0100)	41.60	0.92
MW-15	06/16/06	7.03	619	-124.5	0.64	14.33	-	-	-	-	-
R-1	06/16/06	6.93	630	-16.5	0.25	12.47	-	-	-	-	-
	10/27/06	6.55	0.562	444.1	1.17	14.37	-	-	-	-	-
R-2	06/16/06	6.99	511	-12.8	0.79	12.32	-	-	-	-	-
	10/27/06	6.57	0.427	157.8	2.83	14.36	-	-	-	-	-

Notes:

[1]pH measured in the field with the Horiba U-22.

[2]Electrical conductivity (mS) was measured in the field with the Horiba U-22.

[3]Oxidation reduction potential (mV) was measured in the field with the Horiba U-22.

[4]Dissolved oxygen (mg/L) was measured in the field with the Horiba U-22.

[5]Temperature (C) was measured in the field with the Horiba U-22.

[6]Ferrous iron (mg/L) was measured in the field using the Hach® Ferrous Iron Field kit.

[7]Total alkalinity (mg/L) as calcium carbonate analyzed by EPA Method 310.0.

[8]Nitrate-Nitrogen (mg/L) as nitrogen analyzed by EPA Method 353.2.

[9]Total Organic Carbon (mg/L) analyzed by EPA Method 415.1.

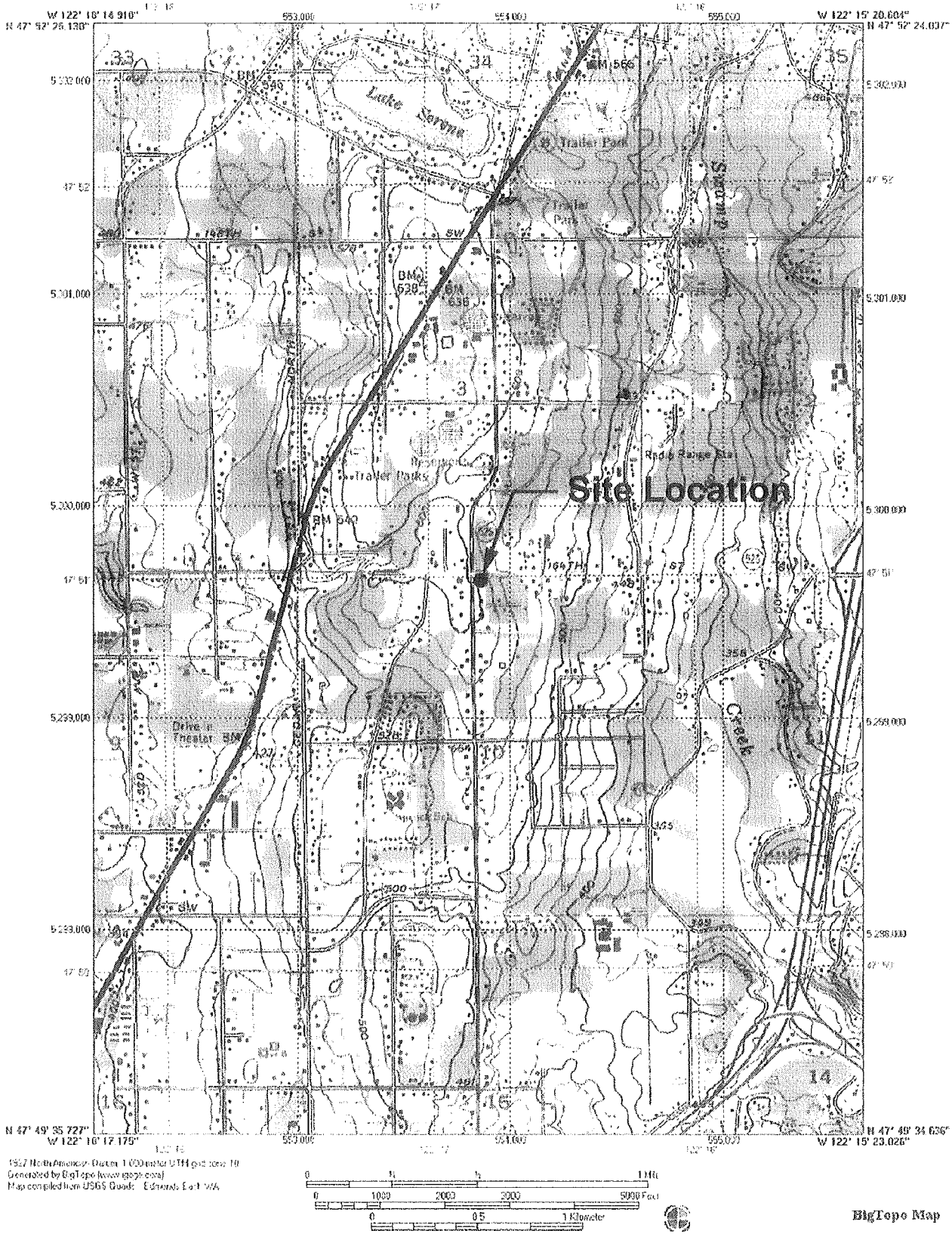
[10]Sulfate (mg/L) analyzed by EPA Method 300.0.

- = analysis not performed

NS = Parameter did not stabilize

Laboratory chemical analyses were completed by North Creek Analytical (Bothell, WA).

Lynnwood-06



FILENAME: 06940367130

ENSR

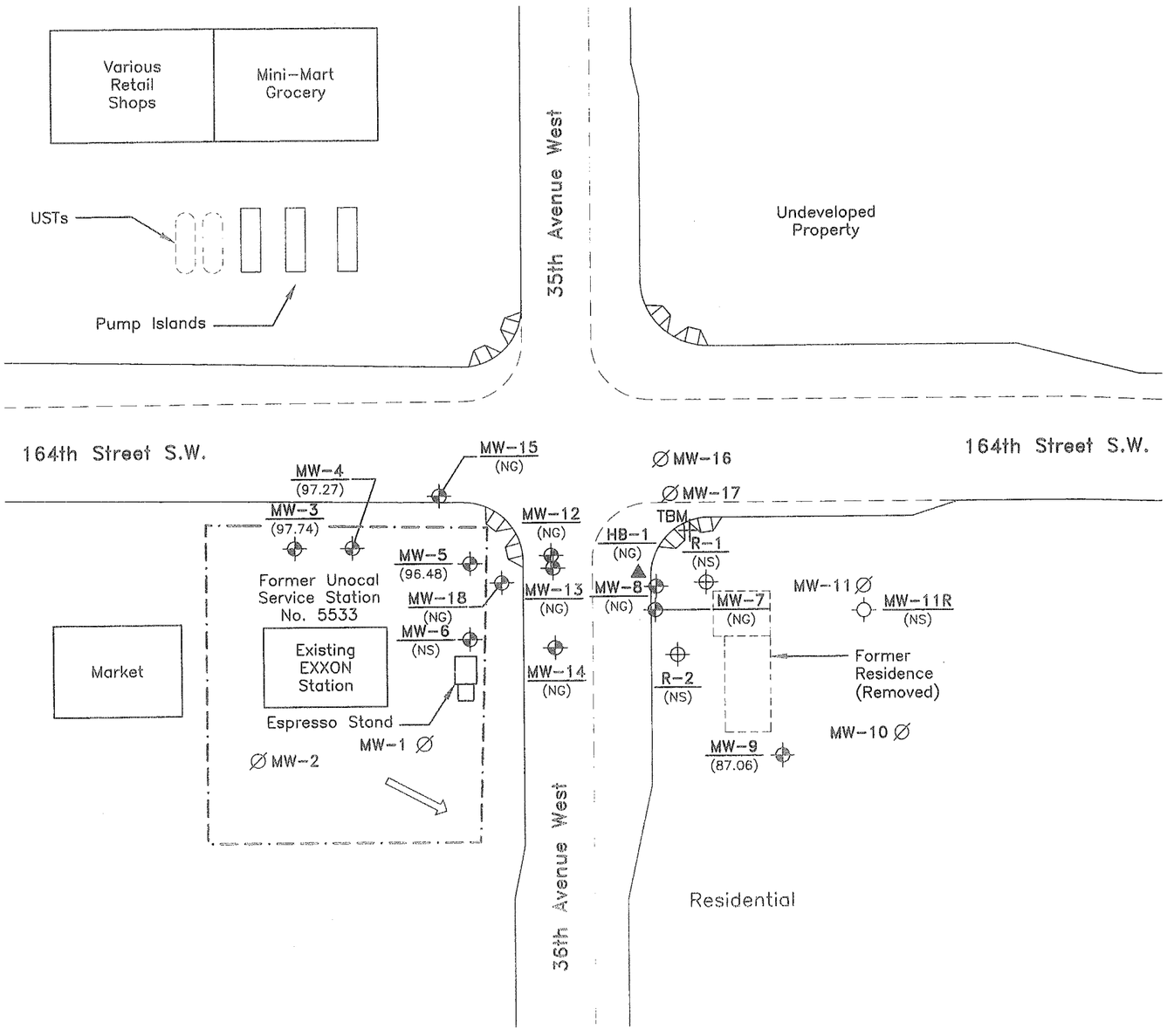
ENSR CORPORATION
9521 WILLOWS ROAD NE
REDMOND, WASHINGTON 98052
PHONE: (425) 881-7700
FAX: (425) 883-4473
WEB: HTTP://WWW.ENSR.AECOM.COM

SITE LOCATION MAP

Former Unocal Service Station No. 5533
16405 36th Avenue
Lynnwood, Washington

FIGURE NUMBER: 1

DRAWN BY:	DATE:	PROJECT NUMBER:	CHECKED BY:
KM	02/16/06	06940-367-130	AF



Legend

- MW-11R (NG) — ø2.0" Replacement Monitoring Well; Groundwater Elevation (Feet) 10/27/06 (Installed by ENSR January 12, 2006)
- R-1 (NG) — ø4.0" Remedial Monitoring Well; Groundwater Elevation (Feet) 10/27/06 (Installed by ENSR January 12, 2006)
- MW-9 (90.26) — ø4.0 Existing Groundwater Monitoring Well; Groundwater Elevation (Feet) 10/27/06
- MW-1 — Decommissioned Monitoring Well
- HB-1 (NG) — Existing Hand Auger Boring Location; Groundwater Elevation (Feet) 10/27/06
- Subject Property Boundary
- Pre-2003 Street Curb
- (NG) Not Gauged
- (NS) Not Surveyed
- UST Underground Storage Tank
- Approximate Groundwater Flow Direction
- TBM Temporary Benchmark; Assigned Elevation of 100.00 Ft.

80 60 40 20 0 40 80
Approximate Scale in Feet

Source: Snohomish County Department of Public Works
Drawing #3631dr02 01/20/03
Project #RC-1068, 164th Street S.W., Spruce Way to Ash Way

REVISIONS			
NO:	DESCRIPTION:	DATE:	BY:

DESIGNED BY: AL
DRAWN BY: KM
CHECKED BY: AL
APPROVED BY: DL

ENSR CORPORATION
9521 WILLOWS ROAD NE
REDMOND, WASHINGTON 98052
PHONE: (425) 881-7700
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WEB: HTTP://WWW.ENSR.AECOM.COM

GROUNDWATER MONITORING WELL LOCATIONS - OCTOBER 27, 2006

Chevron Site No. 306535
Former Unocal Service Station No. 5533
16405 36th Avenue West, Lynnwood, Washington

SCALE: as noted
DATE: 11/30/06
PROJECT NUMBER: 06940-367-OM1

FIGURE NUMBER: 2

FILENAME: 0694036713Z

MW-4	MTCA A	07/30/05	11/05/05	06/16/06	10/27/06
B	5	ND<0.500	ND<0.500	ND<0.500	ND<4
E	700	ND<0.500	ND<0.500	ND<0.500	ND<4
T	1,000	ND<0.500	ND<0.500	ND<0.500	ND<4
X	1,000	ND<1.00	ND<1.00	ND<1.00	ND<8
TPH-G	800	ND<50.0	ND<50.0	ND<50.0	ND<250
TPH-D	500	715	ND<248	ND<253	140
TPH-O	500	ND<500	ND<495	ND<505	ND<480

MW-15	MTCA A	07/30/05	11/05/05	06/16/06	10/27/06
B	5	---	---	ND<0.500	---
E	700	---	---	ND<0.500	---
T	1,000	---	---	ND<0.500	---
X	1,000	---	---	ND<1.00	---
TPH-G	800	---	---	ND<50.0	---
TPH-D	500	---	---	ND<250	---
TPH-O	500	---	---	ND<500	---

MW-18	MTCA A	07/30/05	11/05/05	06/16/06	10/27/06
B	5	107	111	---	---
E	700	8.67	3.91	---	---
T	1,000	1.61	2.09	---	---
X	1,000	27.6	3.34	---	---
TPH-G	800	440	415	---	---
TPH-D	500	<250	844	---	---
TPH-O	500	768	2,650	---	---

MW-5	MTCA A	07/30/05	11/05/05	06/16/06	10/27/06
B	5	82.9	71.2	115	230
E	700	59.3	32.4	324	3
T	1,000	7.75	5.26	19.4	10
X	1,000	98.3	3.15	483	10
TPH-G	800	2,620	2,080	7,200	2,400
TPH-D	500	ND<250	ND<238	ND<250	350
TPH-O	500	ND<500	ND<476	ND<500	ND<480

MW-12	MTCA A	07/30/05	11/05/05	06/16/06	10/27/06
B	5	LNAPL	237	---	---
E	700	Present	1,860	---	---
T	1,000		34.5	---	---
X	1,000		726	---	---
TPH-G	800		14,300	---	---
TPH-D	500		349	---	---
TPH-O	500		ND<485	---	---

MW-3	MTCA A	07/30/05	11/05/05	06/16/06	10/27/06
B	5	ND<0.500	ND<0.500	ND<0.500	ND<4
E	700	ND<0.500	ND<0.500	ND<0.500	ND<4
T	1,000	ND<0.500	ND<0.500	1.85	0.5
X	1,000	ND<1.00	ND<1.00	ND<1.00	ND<8
TPH-G	800	ND<50.0	ND<50.0	ND<50.0	ND<250
TPH-D	500	313	253	ND<250	500
TPH-O	500	1,140	510	ND<500	840

HB-1	MTCA A	07/30/05	11/05/05	06/16/06	10/27/06
B	5	1,530	Dry	---	---
E	700	3,050		---	---
T	1,000	66.3		---	---
X	1,000	2,480		---	---
TPH-G	800	28,100		---	---
TPH-D	500	ND<250		---	---
TPH-O	500	ND<500		---	---

R-1	MTCA A	06/16/06	10/27/06
B	5	ND<0.500	ND<4
E	700	ND<0.500	ND<4
T	1,000	ND<0.500	ND<4
X	1,000	ND<1.00	ND<8
TPH-G	800	ND<50.0	ND<250
TPH-D	500	ND<253	ND<240
TPH-O	500	ND<505	ND<470

R-2	MTCA A	06/16/06	10/27/06
B	5	ND<0.500	ND<4
E	700	ND<0.500	ND<4
T	1,000	ND<0.500	0.9
X	1,000	ND<1.00	ND<8
TPH-G	800	ND<50.0	ND<250
TPH-D	500	ND<250	ND<240
TPH-O	500	ND<500	ND<470

MW-11R	MTCA A	06/16/06	10/27/06
B	5	ND<0.500	ND<4
E	700	ND<0.500	ND<4
T	1,000	ND<0.500	ND<4
X	1,000	ND<1.00	ND<8
TPH-G	800	ND<50.0	ND<250
TPH-D	500	ND<250	ND<240
TPH-O	500	ND<500	ND<470

MW-9	MTCA A	07/30/05	11/05/05	06/16/06	10/27/06
B	5	ND<0.500	ND<0.500	ND<0.500	ND<4
E	700	ND<0.500	ND<0.500	ND<0.500	ND<4
T	1,000	ND<0.500	ND<0.500	ND<0.500	ND<4
X	1,000	ND<1.00	ND<1.00	ND<1.00	ND<8
TPH-G	800	ND<50.0	ND<50.0	ND<50.0	ND<250
TPH-D	500	ND<250	ND<236	ND<250	ND<240
TPH-O	500	ND<500	ND<472	ND<500	ND<470

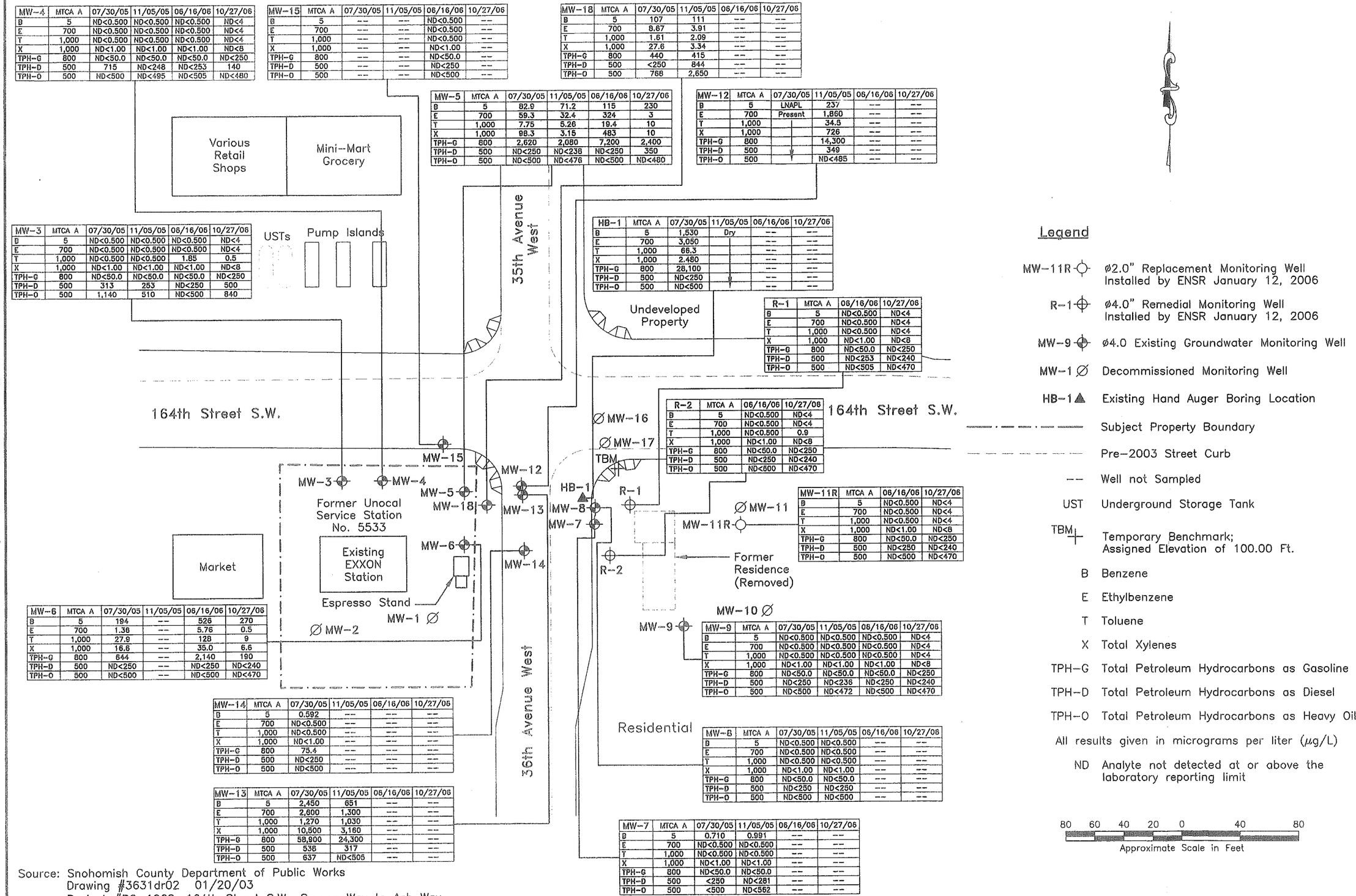
MW-6	MTCA A	07/30/05	11/05/05	06/16/06	10/27/06
B	5	194	---	526	270
E	700	1.38	---	5.76	0.5
T	1,000	27.9	---	128	9
X	1,000	16.6	---	35.0	6.6
TPH-G	800	644	---	2,140	190
TPH-D	500	ND<250	---	ND<250	ND<240
TPH-O	500	ND<500	---	ND<500	ND<470

MW-14	MTCA A	07/30/05	11/05/05	06/16/06	10/27/06
B	5	0.592	---	---	---
E	700	ND<0.500	---	---	---
T	1,000	ND<0.500	---	---	---
X	1,000	ND<1.00	---	---	---
TPH-G	800	75.4	---	---	---
TPH-D	500	ND<250	---	---	---
TPH-O	500	ND<500	---	---	---

MW-13	MTCA A	07/30/05	11/05/05	06/16/06	10/27/06
B	5	2,450	651	---	---
E	700	2,600	1,300	---	---
T	1,000	1,270	1,030	---	---
X	1,000	10,500	3,160	---	---
TPH-G	800	58,900	24,300	---	---
TPH-D	500	538	317	---	---
TPH-O	500	637	ND<505	---	---

MW-8	MTCA A	07/30/05	11/05/05	06/16/06	10/27/06
B	5	ND<0.500	ND<0.500	---	---
E	700	ND<0.500	ND<0.500	---	---
T	1,000	ND<0.500	ND<0.500	---	---
X	1,000	ND<1.00	ND<1.00	---	---
TPH-G	800	ND<50.0	ND<50.0	---	---
TPH-D	500	ND<250	ND<250	---	---
TPH-O	500	ND<500	ND<500	---	---

MW-7	MTCA A	07/30/05	11/05/05	06/16/06	10/27/06
B	5	0.710	0.991	---	---
E	700	ND<0.500	ND<0.500	---	---
T	1,000	ND<0.500	ND<0.500	---	---
X	1,000	ND<1.00	ND<1.00	---	---
TPH-G	800	ND<50.0	ND<50.0	---	---
TPH-D	500	<250	ND<281	---	---
TPH-O	500	<500	ND<562	---	---



Source: Snohomish County Department of Public Works
Drawing #3631dr02 01/20/03
Project #RC-1068, 164th Street S.W., Spruce Way to Ash Way

Legend

- MW-11R ⊕ ø2.0" Replacement Monitoring Well Installed by ENSR January 12, 2006
- R-1 ⊕ ø4.0" Remedial Monitoring Well Installed by ENSR January 12, 2006
- MW-9 ⊕ ø4.0 Existing Groundwater Monitoring Well
- MW-1 ∅ Decommissioned Monitoring Well
- HB-1 ▲ Existing Hand Auger Boring Location
- Subject Property Boundary
- Pre-2003 Street Curb
- -- Well not Sampled
- UST Underground Storage Tank
- TBM Temporary Benchmark; Assigned Elevation of 100.00 Ft.
- B Benzene
- E Ethylbenzene
- T Toluene
- X Total Xylenes
- TPH-G Total Petroleum Hydrocarbons as Gasoline
- TPH-D Total Petroleum Hydrocarbons as Diesel
- TPH-O Total Petroleum Hydrocarbons as Heavy Oil

All results given in micrograms per liter (µg/L)

ND Analyte not detected at or above the laboratory reporting limit

80 60 40 20 0 40 80
Approximate Scale in Feet

REVISIONS			
NO:	DESCRIPTION:	DATE:	BY:

DESIGNED BY: AL
DRAWN BY: KM
CHECKED BY: AL
APPROVED BY: DL

ENSR AECOM
ENSR CORPORATION
9521 WILLOWS ROAD NE
REDMOND, WASHINGTON 98052
PHONE: (425) 881-7700
FAX: (425) 883-4473
WEB: HTTP://WWW.ENSR.AECOM.COM

SUMMARY OF GROUNDWATER ANALYTICAL DATA - OCTOBER 27, 2006

Chevron Site No. 306535
Former Unocal Service Station No. 5533
16405 36th Avenue West, Lynnwood, Washington

SCALE: as noted
DATE: 11/30/06
PROJECT NUMBER: 06940-367-OM1

FIGURE NUMBER: 3

FILENAME: 06940367131

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared for:

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

425-881-7700

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 1012131. Samples arrived at the laboratory on Tuesday, October 31, 2006. The PO# for this group is 2044248 and the release number is ROUSE.

Client Description	Lancaster Labs Number
5533-MW3-102706 Grab Water Sample	4903588
5533-MW4-102706 Grab Water Sample	4903589
5533-MW5-102706 Grab Water Sample	4903590
5533-MW6-102706 Grab Water Sample	4903591
5533-MW9-102706 Grab Water Sample	4903592
5533-MW11R-102706 Grab Water Sample	4903593
5533-R1-102706 Grab Water Sample	4903594
5533-R2-102706 Grab Water Sample	4903595
Trip_Blank Water Sample	4903596

ELECTRONIC COPY TO ENSR-AECOM Attn: Art Cowburn

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax 717-656-2681 • www.lancasterlabs.com

Questions? Contact your Client Services Representative
Megan A Moeller at (717) 656-2300

Respectfully Submitted,

Maria S. Lord

Maria S. Lord
Senior Specialist

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax:717-656-2681 • www.lancasterlabs.com

Analysis Report

Lancaster Laboratories Sample No. WW 4903588

5533-MW3-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 13:15 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:47
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36L03

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel							
02095	Diesel Range Organics	n.a.	500.		76.	240.	ug/l	1
02096	Heavy Range Organics	n.a.	840.		95.	470.	ug/l	1
08274	TPH by NWTPH-Gx waters							
01648	TPH by NWTPH-Gx waters	n.a.	N.D.		48.	250.	ug/l	1
05382	EPA SW846/8260 (water)							
05384	Dichlorodifluoromethane	75-71-8	N.D.		2.	5.	ug/l	1
05385	Chloromethane	74-87-3	N.D.		1.	5.	ug/l	1
05386	Vinyl Chloride	75-01-4	N.D.		1.	5.	ug/l	1
05387	Bromomethane	74-83-9	N.D.		1.	5.	ug/l	1
05388	Chloroethane	75-00-3	N.D.		1.	5.	ug/l	1
05389	Trichlorofluoromethane	75-69-4	N.D.		2.	5.	ug/l	1
05390	1,1-Dichloroethene	75-35-4	N.D.		0.8	5.	ug/l	1
05391	Methylene Chloride	75-09-2	N.D.		2.	5.	ug/l	1
05392	trans-1,2-Dichloroethene	156-60-5	N.D.		0.8	5.	ug/l	1
05393	1,1-Dichloroethane	75-34-3	N.D.		1.	5.	ug/l	1
05394	2,2-Dichloropropane	594-20-7	N.D.		1.	5.	ug/l	1
05395	cis-1,2-Dichloroethene	156-59-2	N.D.		0.8	5.	ug/l	1
05396	Chloroform	67-66-3	N.D.		0.8	5.	ug/l	1
05397	Bromochloromethane	74-97-5	N.D.		1.	5.	ug/l	1
05398	1,1,1-Trichloroethane	71-55-6	N.D.		0.8	5.	ug/l	1
05399	Carbon Tetrachloride	56-23-5	N.D.		1.	5.	ug/l	1
05400	1,1-Dichloropropene	563-58-6	N.D.		1.	5.	ug/l	1
05401	Benzene	71-43-2	N.D.		0.5	4.	ug/l	1
05402	1,2-Dichloroethane	107-06-2	N.D.		0.5	4.	ug/l	1
05403	Trichloroethene	79-01-6	N.D.		1.	5.	ug/l	1
05404	1,2-Dichloropropane	78-87-5	N.D.		1.	5.	ug/l	1
05405	Dibromomethane	74-95-3	N.D.		1.	5.	ug/l	1
05406	Bromodichloromethane	75-27-4	N.D.		1.	5.	ug/l	1
05407	Toluene	108-88-3	0.5	J	0.5	4.	ug/l	1
05408	1,1,2-Trichloroethane	79-00-5	N.D.		0.8	5.	ug/l	1
05409	Tetrachloroethene	127-18-4	N.D.		0.8	5.	ug/l	1
05410	1,3-Dichloropropane	142-28-9	N.D.		1.	5.	ug/l	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories Sample No. WW 4903588

5533-MW3-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 13:15 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:47
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36L03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
05411	Dibromochloromethane	124-48-1	N.D.	1.	5.	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.	0.5	4.	ug/l	1
05413	Chlorobenzene	108-90-7	N.D.	0.8	5.	ug/l	1
05414	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	1.	5.	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.5	4.	ug/l	1
05416	m+p-Xylene	1330-20-7	N.D.	0.5	4.	ug/l	1
05417	o-Xylene	95-47-6	N.D.	0.5	4.	ug/l	1
05418	Styrene	100-42-5	N.D.	1.	5.	ug/l	1
05419	Bromoform	75-25-2	N.D.	1.	5.	ug/l	1
05420	Isopropylbenzene	98-82-8	N.D.	1.	5.	ug/l	1
05421	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	1.	5.	ug/l	1
05422	Bromobenzene	108-86-1	N.D.	1.	5.	ug/l	1
05423	1,2,3-Trichloropropane	96-18-4	N.D.	1.	5.	ug/l	1
05424	n-Propylbenzene	103-65-1	N.D.	1.	5.	ug/l	1
05425	2-Chlorotoluene	95-49-8	N.D.	1.	5.	ug/l	1
05426	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.	5.	ug/l	1
05427	4-Chlorotoluene	106-43-4	N.D.	1.	5.	ug/l	1
05428	tert-Butylbenzene	98-06-6	N.D.	1.	5.	ug/l	1
05429	1,2,4-Trimethylbenzene	95-63-6	N.D.	1.	5.	ug/l	1
05430	sec-Butylbenzene	135-98-8	N.D.	1.	5.	ug/l	1
05431	p-Isopropyltoluene	99-87-6	N.D.	1.	5.	ug/l	1
05432	1,3-Dichlorobenzene	541-73-1	N.D.	1.	5.	ug/l	1
05433	1,4-Dichlorobenzene	106-46-7	N.D.	1.	5.	ug/l	1
05434	n-Butylbenzene	104-51-8	N.D.	1.	5.	ug/l	1
05435	1,2-Dichlorobenzene	95-50-1	N.D.	1.	5.	ug/l	1
05436	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	2.	5.	ug/l	1
05437	1,2,4-Trichlorobenzene	120-82-1	N.D.	1.	5.	ug/l	1
05438	Hexachlorobutadiene	87-68-3	N.D.	2.	5.	ug/l	1
05439	Naphthalene	91-20-3	N.D.	1.	5.	ug/l	1
05440	1,2,3-Trichlorobenzene	87-61-6	N.D.	1.	5.	ug/l	1
08202	EPA SW 846/8260 - Water						
01587	Ethanol	64-17-5	N.D.	50.	250.	ug/l	1
02010	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.5	4.	ug/l	1
02011	di-Isopropyl ether	108-20-3	N.D.	0.5	4.	ug/l	1
02013	Ethyl t-butyl ether	637-92-3	N.D.	0.5	4.	ug/l	1
02014	t-Amyl methyl ether	994-05-8	N.D.	0.5	4.	ug/l	1
02015	t-Butyl alcohol	75-65-0	N.D.	5.	20.	ug/l	1
06302	Acetone	67-64-1	N.D.	6.	20.	ug/l	1
06303	Carbon Disulfide	75-15-0	N.D.	1.	5.	ug/l	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories Sample No. WW 4903588

5533-MW3-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 13:15 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:47
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36L03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
06305	2-Butanone	78-93-3	N.D.	3.	10.	ug/l	1
06306	trans-1,3-Dichloropropene	10061-02-6	N.D.	1.	5.	ug/l	1
06307	cis-1,3-Dichloropropene	10061-01-5	N.D.	1.	5.	ug/l	1
06308	4-Methyl-2-pentanone	108-10-1	N.D.	3.	10.	ug/l	1
06309	2-Hexanone	591-78-6	N.D.	3.	10.	ug/l	1
07583	2-Chloroethyl Vinyl Ether	110-75-8	N.D.	2.	10.	ug/l	1
	2-Chloroethyl vinyl ether is an acid labile compound and may not be recovered in an acid preserved sample.						
08203	Freon 113	76-13-1	N.D.	2.	10.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY97-602 NWTPH-Dx modified	1	11/07/2006 03:20	Robert I Pusch	1
08274	TPH by NWTPH-Gx waters	ECY97-602 NWTPH-Gx modified	1	11/01/2006 14:31	Steven A Skiles	1
05382	EPA SW846/8260 (water)	SW-846 8260B	1	11/02/2006 22:45	Lauren C Marzario	1
08202	EPA SW 846/8260 - Water	SW-846 8260B	1	11/02/2006 22:45	Lauren C Marzario	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/01/2006 14:31	Steven A Skiles	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/02/2006 22:45	Lauren C Marzario	1
02135	Extraction - DRO Water Special	ECY97-602 NWTPH-Dx 06/97	1	11/02/2006 08:00	Tracy L Schickel	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4903589

5533-MW4-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 13:35 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36L04

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel							
02095	Diesel Range Organics	n.a.	140.	J	76.	240.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.		96.	480.	ug/l	1
08274	TPH by NWTPH-Gx waters							
01648	TPH by NWTPH-Gx waters	n.a.	N.D.		48.	250.	ug/l	1
05382	EPA SW846/8260 (water)							
05384	Dichlorodifluoromethane	75-71-8	N.D.		2.	5.	ug/l	1
05385	Chloromethane	74-87-3	N.D.		1.	5.	ug/l	1
05386	Vinyl Chloride	75-01-4	N.D.		1.	5.	ug/l	1
05387	Bromomethane	74-83-9	N.D.		1.	5.	ug/l	1
05388	Chloroethane	75-00-3	N.D.		1.	5.	ug/l	1
05389	Trichlorofluoromethane	75-69-4	N.D.		2.	5.	ug/l	1
05390	1,1-Dichloroethene	75-35-4	N.D.		0.8	5.	ug/l	1
05391	Methylene Chloride	75-09-2	N.D.		2.	5.	ug/l	1
05392	trans-1,2-Dichloroethene	156-60-5	N.D.		0.8	5.	ug/l	1
05393	1,1-Dichloroethane	75-34-3	N.D.		1.	5.	ug/l	1
05394	2,2-Dichloropropane	594-20-7	N.D.		1.	5.	ug/l	1
05395	cis-1,2-Dichloroethene	156-59-2	N.D.		0.8	5.	ug/l	1
05396	Chloroform	67-66-3	N.D.		0.8	5.	ug/l	1
05397	Bromochloromethane	74-97-5	N.D.		1.	5.	ug/l	1
05398	1,1,1-Trichloroethane	71-55-6	N.D.		0.8	5.	ug/l	1
05399	Carbon Tetrachloride	56-23-5	N.D.		1.	5.	ug/l	1
05400	1,1-Dichloropropene	563-58-6	N.D.		1.	5.	ug/l	1
05401	Benzene	71-43-2	N.D.		0.5	4.	ug/l	1
05402	1,2-Dichloroethane	107-06-2	N.D.		0.5	4.	ug/l	1
05403	Trichloroethene	79-01-6	N.D.		1.	5.	ug/l	1
05404	1,2-Dichloropropane	78-87-5	N.D.		1.	5.	ug/l	1
05405	Dibromomethane	74-95-3	N.D.		1.	5.	ug/l	1
05406	Bromodichloromethane	75-27-4	N.D.		1.	5.	ug/l	1
05407	Toluene	108-88-3	N.D.		0.5	4.	ug/l	1
05408	1,1,2-Trichloroethane	79-00-5	N.D.		0.8	5.	ug/l	1
05409	Tetrachloroethene	127-18-4	N.D.		0.8	5.	ug/l	1
05410	1,3-Dichloropropane	142-28-9	N.D.		1.	5.	ug/l	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories Sample No. WW 4903589

5533-MW4-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 13:35 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36L04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
05411	Dibromochloromethane	124-48-1	N.D.	1.	5.	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.	0.5	4.	ug/l	1
05413	Chlorobenzene	108-90-7	N.D.	0.8	5.	ug/l	1
05414	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	1.	5.	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.5	4.	ug/l	1
05416	m+p-Xylene	1330-20-7	N.D.	0.5	4.	ug/l	1
05417	o-Xylene	95-47-6	N.D.	0.5	4.	ug/l	1
05418	Styrene	100-42-5	N.D.	1.	5.	ug/l	1
05419	Bromoform	75-25-2	N.D.	1.	5.	ug/l	1
05420	Isopropylbenzene	98-82-8	N.D.	1.	5.	ug/l	1
05421	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	1.	5.	ug/l	1
05422	Bromobenzene	108-86-1	N.D.	1.	5.	ug/l	1
05423	1,2,3-Trichloropropane	96-18-4	N.D.	1.	5.	ug/l	1
05424	n-Propylbenzene	103-65-1	N.D.	1.	5.	ug/l	1
05425	2-Chlorotoluene	95-49-8	N.D.	1.	5.	ug/l	1
05426	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.	5.	ug/l	1
05427	4-Chlorotoluene	106-43-4	N.D.	1.	5.	ug/l	1
05428	tert-Butylbenzene	98-06-6	N.D.	1.	5.	ug/l	1
05429	1,2,4-Trimethylbenzene	95-63-6	N.D.	1.	5.	ug/l	1
05430	sec-Butylbenzene	135-98-8	N.D.	1.	5.	ug/l	1
05431	p-Isopropyltoluene	99-87-6	N.D.	1.	5.	ug/l	1
05432	1,3-Dichlorobenzene	541-73-1	N.D.	1.	5.	ug/l	1
05433	1,4-Dichlorobenzene	106-46-7	N.D.	1.	5.	ug/l	1
05434	n-Butylbenzene	104-51-8	N.D.	1.	5.	ug/l	1
05435	1,2-Dichlorobenzene	95-50-1	N.D.	1.	5.	ug/l	1
05436	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	2.	5.	ug/l	1
05437	1,2,4-Trichlorobenzene	120-82-1	N.D.	1.	5.	ug/l	1
05438	Hexachlorobutadiene	87-68-3	N.D.	2.	5.	ug/l	1
05439	Naphthalene	91-20-3	N.D.	1.	5.	ug/l	1
05440	1,2,3-Trichlorobenzene	87-61-6	N.D.	1.	5.	ug/l	1
08202	EPA SW 846/8260 - Water						
01587	Ethanol	64-17-5	N.D.	50.	250.	ug/l	1
02010	Methyl Tertiary Butyl Ether	1634-04-4	9.	0.5	4.	ug/l	1
02011	di-Isopropyl ether	108-20-3	N.D.	0.5	4.	ug/l	1
02013	Ethyl t-butyl ether	637-92-3	N.D.	0.5	4.	ug/l	1
02014	t-Amyl methyl ether	994-05-8	N.D.	0.5	4.	ug/l	1
02015	t-Butyl alcohol	75-65-0	N.D.	5.	20.	ug/l	1
06302	Acetone	67-64-1	N.D.	6.	20.	ug/l	1
06303	Carbon Disulfide	75-15-0	N.D.	1.	5.	ug/l	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories Sample No. WW 4903589

5533-MW4-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 13:35 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36L04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
06305	2-Butanone	78-93-3	N.D.	3.	10.	ug/l	1
06306	trans-1,3-Dichloropropene	10061-02-6	N.D.	1.	5.	ug/l	1
06307	cis-1,3-Dichloropropene	10061-01-5	N.D.	1.	5.	ug/l	1
06308	4-Methyl-2-pentanone	108-10-1	N.D.	3.	10.	ug/l	1
06309	2-Hexanone	591-78-6	N.D.	3.	10.	ug/l	1
07583	2-Chloroethyl Vinyl Ether	110-75-8	N.D.	2.	10.	ug/l	1
	2-Chloroethyl vinyl ether is an acid labile compound and may not be recovered in an acid preserved sample.						
08203	Freon 113	76-13-1	N.D.	2.	10.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY97-602 NWTPH-Dx modified	1	11/16/2006 09:01	Robert I Pusch	1
08274	TPH by NWTPH-Gx waters	ECY97-602 NWTPH-Gx modified	1	11/01/2006 15:04	Steven A Skiles	1
05382	EPA SW846/8260 (water)	SW-846 8260B	1	11/02/2006 23:08	Lauren C Marzario	1
08202	EPA SW 846/8260 - Water	SW-846 8260B	1	11/02/2006 23:08	Lauren C Marzario	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/01/2006 15:04	Steven A Skiles	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/02/2006 23:08	Lauren C Marzario	1
02135	Extraction - DRO Water Special	ECY97-602 NWTPH-Dx 06/97	2	11/08/2006 17:30	Elaine F Stoltzfus	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4903590

5533-MW5-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 14:30 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36L05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel						
02095	Diesel Range Organics	n.a.	350.	76.	240.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	95.	480.	ug/l	1
08274	TPH by NWTPH-Gx waters						
01648	TPH by NWTPH-Gx waters	n.a.	2,400.	48.	250.	ug/l	1
05382	EPA SW846/8260 (water)						
05384	Dichlorodifluoromethane	75-71-8	N.D.	2.	5.	ug/l	1
05385	Chloromethane	74-87-3	N.D.	1.	5.	ug/l	1
05386	Vinyl Chloride	75-01-4	N.D.	1.	5.	ug/l	1
05387	Bromomethane	74-83-9	N.D.	1.	5.	ug/l	1
05388	Chloroethane	75-00-3	N.D.	1.	5.	ug/l	1
05389	Trichlorofluoromethane	75-69-4	N.D.	2.	5.	ug/l	1
05390	1,1-Dichloroethene	75-35-4	N.D.	0.8	5.	ug/l	1
05391	Methylene Chloride	75-09-2	N.D.	2.	5.	ug/l	1
05392	trans-1,2-Dichloroethene	156-60-5	N.D.	0.8	5.	ug/l	1
05393	1,1-Dichloroethane	75-34-3	N.D.	1.	5.	ug/l	1
05394	2,2-Dichloropropane	594-20-7	N.D.	1.	5.	ug/l	1
05395	cis-1,2-Dichloroethene	156-59-2	N.D.	0.8	5.	ug/l	1
05396	Chloroform	67-66-3	N.D.	0.8	5.	ug/l	1
05397	Bromochloromethane	74-97-5	N.D.	1.	5.	ug/l	1
05398	1,1,1-Trichloroethane	71-55-6	N.D.	0.8	5.	ug/l	1
05399	Carbon Tetrachloride	56-23-5	N.D.	1.	5.	ug/l	1
05400	1,1-Dichloropropene	563-58-6	N.D.	1.	5.	ug/l	1
05401	Benzene	71-43-2	230.	0.5	4.	ug/l	1
05402	1,2-Dichloroethane	107-06-2	N.D.	0.5	4.	ug/l	1
05403	Trichloroethene	79-01-6	N.D.	1.	5.	ug/l	1
05404	1,2-Dichloropropane	78-87-5	N.D.	1.	5.	ug/l	1
05405	Dibromomethane	74-95-3	N.D.	1.	5.	ug/l	1
05406	Bromodichloromethane	75-27-4	N.D.	1.	5.	ug/l	1
05407	Toluene	108-88-3	10.	0.5	4.	ug/l	1
05408	1,1,2-Trichloroethane	79-00-5	N.D.	0.8	5.	ug/l	1
05409	Tetrachloroethene	127-18-4	N.D.	0.8	5.	ug/l	1
05410	1,3-Dichloropropane	142-28-9	N.D.	1.	5.	ug/l	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories Sample No. WW 4903590

5533-MW5-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 14:30 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36L05

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
05411	Dibromochloromethane	124-48-1	N.D.		1.	5.	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.		0.5	4.	ug/l	1
05413	Chlorobenzene	108-90-7	N.D.		0.8	5.	ug/l	1
05414	1,1,1,2-Tetrachloroethane	630-20-6	N.D.		1.	5.	ug/l	1
05415	Ethylbenzene	100-41-4	3.	J	0.5	4.	ug/l	1
05416	m+p-Xylene	1330-20-7	9.		0.5	4.	ug/l	1
05417	o-Xylene	95-47-6	1.	J	0.5	4.	ug/l	1
05418	Styrene	100-42-5	N.D.		1.	5.	ug/l	1
05419	Bromoform	75-25-2	N.D.		1.	5.	ug/l	1
05420	Isopropylbenzene	98-82-8	40.		1.	5.	ug/l	1
05421	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		1.	5.	ug/l	1
05422	Bromobenzene	108-86-1	N.D.		1.	5.	ug/l	1
05423	1,2,3-Trichloropropane	96-18-4	N.D.		1.	5.	ug/l	1
05424	n-Propylbenzene	103-65-1	170.		1.	5.	ug/l	1
05425	2-Chlorotoluene	95-49-8	N.D.		1.	5.	ug/l	1
05426	1,3,5-Trimethylbenzene	108-67-8	120.		1.	5.	ug/l	1
05427	4-Chlorotoluene	106-43-4	N.D.		1.	5.	ug/l	1
05428	tert-Butylbenzene	98-06-6	N.D.		1.	5.	ug/l	1
05429	1,2,4-Trimethylbenzene	95-63-6	13.		1.	5.	ug/l	1
05430	sec-Butylbenzene	135-98-8	7.		1.	5.	ug/l	1
05431	p-Isopropyltoluene	99-87-6	1.	J	1.	5.	ug/l	1
05432	1,3-Dichlorobenzene	541-73-1	N.D.		1.	5.	ug/l	1
05433	1,4-Dichlorobenzene	106-46-7	N.D.		1.	5.	ug/l	1
05434	n-Butylbenzene	104-51-8	9.		1.	5.	ug/l	1
05435	1,2-Dichlorobenzene	95-50-1	N.D.		1.	5.	ug/l	1
05436	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		2.	5.	ug/l	1
05437	1,2,4-Trichlorobenzene	120-82-1	N.D.		1.	5.	ug/l	1
05438	Hexachlorobutadiene	87-68-3	N.D.		2.	5.	ug/l	1
05439	Naphthalene	91-20-3	N.D.		1.	5.	ug/l	1
05440	1,2,3-Trichlorobenzene	87-61-6	N.D.		1.	5.	ug/l	1
08202	EPA SW 846/8260 - Water							
01587	Ethanol	64-17-5	N.D.		50.	250.	ug/l	1
02010	Methyl Tertiary Butyl Ether	1634-04-4	23.		0.5	4.	ug/l	1
02011	di-Isopropyl ether	108-20-3	N.D.		0.5	4.	ug/l	1
02013	Ethyl t-butyl ether	637-92-3	N.D.		0.5	4.	ug/l	1
02014	t-Amyl methyl ether	994-05-8	N.D.		0.5	4.	ug/l	1
02015	t-Butyl alcohol	75-65-0	250.		5.	20.	ug/l	1
06302	Acetone	67-64-1	15.	J	6.	20.	ug/l	1
06303	Carbon Disulfide	75-15-0	N.D.		1.	5.	ug/l	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4903590

5533-MW5-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 14:30 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36L05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
06305	2-Butanone	78-93-3	N.D.	3.	10.	ug/l	1
06306	trans-1,3-Dichloropropene	10061-02-6	N.D.	1.	5.	ug/l	1
06307	cis-1,3-Dichloropropene	10061-01-5	N.D.	1.	5.	ug/l	1
06308	4-Methyl-2-pentanone	108-10-1	N.D.	3.	10.	ug/l	1
06309	2-Hexanone	591-78-6	N.D.	3.	10.	ug/l	1
07583	2-Chloroethyl Vinyl Ether	110-75-8	N.D.	2.	10.	ug/l	1
	2-Chloroethyl vinyl ether is an acid labile compound and may not be recovered in an acid preserved sample.						
08203	Freon 113	76-13-1	N.D.	2.	10.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY97-602 NWTPH-Dx modified	1	11/07/2006 02:22	Robert I Pusch	1
08274	TPH by NWTPH-Gx waters	ECY97-602 NWTPH-Gx modified	1	11/01/2006 15:36	Steven A Skiles	1
05382	EPA SW846/8260 (water)	SW-846 8260B	1	11/02/2006 23:32	Lauren C Marzario	1
08202	EPA SW 846/8260 - Water	SW-846 8260B	1	11/02/2006 23:32	Lauren C Marzario	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/01/2006 15:36	Steven A Skiles	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/02/2006 23:32	Lauren C Marzario	1
02135	Extraction - DRO Water Special	ECY97-602 NWTPH-Dx 06/97	1	11/02/2006 08:00	Tracy L Schickel	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4903591

5533-MW6-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 14:35 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36L06

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel							
02095	Diesel Range Organics	n.a.	N.D.		75.	240.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.		94.	470.	ug/l	1
08274	TPH by NWTPH-Gx waters							
01648	TPH by NWTPH-Gx waters	n.a.	190.	J	48.	250.	ug/l	1
05382	EPA SW846/8260 (water)							
05384	Dichlorodifluoromethane	75-71-8	N.D.		2.	5.	ug/l	1
05385	Chloromethane	74-87-3	N.D.		1.	5.	ug/l	1
05386	Vinyl Chloride	75-01-4	N.D.		1.	5.	ug/l	1
05387	Bromomethane	74-83-9	N.D.		1.	5.	ug/l	1
05388	Chloroethane	75-00-3	N.D.		1.	5.	ug/l	1
05389	Trichlorofluoromethane	75-69-4	N.D.		2.	5.	ug/l	1
05390	1,1-Dichloroethene	75-35-4	N.D.		0.8	5.	ug/l	1
05391	Methylene Chloride	75-09-2	N.D.		2.	5.	ug/l	1
05392	trans-1,2-Dichloroethene	156-60-5	N.D.		0.8	5.	ug/l	1
05393	1,1-Dichloroethane	75-34-3	N.D.		1.	5.	ug/l	1
05394	2,2-Dichloropropane	594-20-7	N.D.		1.	5.	ug/l	1
05395	cis-1,2-Dichloroethene	156-59-2	N.D.		0.8	5.	ug/l	1
05396	Chloroform	67-66-3	N.D.		0.8	5.	ug/l	1
05397	Bromochloromethane	74-97-5	N.D.		1.	5.	ug/l	1
05398	1,1,1-Trichloroethane	71-55-6	N.D.		0.8	5.	ug/l	1
05399	Carbon Tetrachloride	56-23-5	N.D.		1.	5.	ug/l	1
05400	1,1-Dichloropropene	563-58-6	N.D.		1.	5.	ug/l	1
05401	Benzene	71-43-2	270.		0.5	4.	ug/l	1
05402	1,2-Dichloroethane	107-06-2	N.D.		0.5	4.	ug/l	1
05403	Trichloroethene	79-01-6	N.D.		1.	5.	ug/l	1
05404	1,2-Dichloropropane	78-87-5	N.D.		1.	5.	ug/l	1
05405	Dibromomethane	74-95-3	N.D.		1.	5.	ug/l	1
05406	Bromodichloromethane	75-27-4	N.D.		1.	5.	ug/l	1
05407	Toluene	108-88-3	9.		0.5	4.	ug/l	1
05408	1,1,2-Trichloroethane	79-00-5	N.D.		0.8	5.	ug/l	1
05409	Tetrachloroethene	127-18-4	N.D.		0.8	5.	ug/l	1
05410	1,3-Dichloropropane	142-28-9	N.D.		1.	5.	ug/l	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories Sample No. WW 4903591

5533-MW6-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 14:35 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36L06

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
05411	Dibromochloromethane	124-48-1	N.D.		1.	5.	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.		0.5	4.	ug/l	1
05413	Chlorobenzene	108-90-7	N.D.		0.8	5.	ug/l	1
05414	1,1,1,2-Tetrachloroethane	630-20-6	N.D.		1.	5.	ug/l	1
05415	Ethylbenzene	100-41-4	0.5	J	0.5	4.	ug/l	1
05416	m+p-Xylene	1330-20-7	6.		0.5	4.	ug/l	1
05417	o-Xylene	95-47-6	0.6	J	0.5	4.	ug/l	1
05418	Styrene	100-42-5	N.D.		1.	5.	ug/l	1
05419	Bromoform	75-25-2	N.D.		1.	5.	ug/l	1
05420	Isopropylbenzene	98-82-8	2.	J	1.	5.	ug/l	1
05421	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		1.	5.	ug/l	1
05422	Bromobenzene	108-86-1	N.D.		1.	5.	ug/l	1
05423	1,2,3-Trichloropropane	96-18-4	N.D.		1.	5.	ug/l	1
05424	n-Propylbenzene	103-65-1	5.	J	1.	5.	ug/l	1
05425	2-Chlorotoluene	95-49-8	N.D.		1.	5.	ug/l	1
05426	1,3,5-Trimethylbenzene	108-67-8	N.D.		1.	5.	ug/l	1
05427	4-Chlorotoluene	106-43-4	N.D.		1.	5.	ug/l	1
05428	tert-Butylbenzene	98-06-6	N.D.		1.	5.	ug/l	1
05429	1,2,4-Trimethylbenzene	95-63-6	N.D.		1.	5.	ug/l	1
05430	sec-Butylbenzene	135-98-8	N.D.		1.	5.	ug/l	1
05431	p-Isopropyltoluene	99-87-6	N.D.		1.	5.	ug/l	1
05432	1,3-Dichlorobenzene	541-73-1	N.D.		1.	5.	ug/l	1
05433	1,4-Dichlorobenzene	106-46-7	N.D.		1.	5.	ug/l	1
05434	n-Butylbenzene	104-51-8	N.D.		1.	5.	ug/l	1
05435	1,2-Dichlorobenzene	95-50-1	N.D.		1.	5.	ug/l	1
05436	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		2.	5.	ug/l	1
05437	1,2,4-Trichlorobenzene	120-82-1	N.D.		1.	5.	ug/l	1
05438	Hexachlorobutadiene	87-68-3	N.D.		2.	5.	ug/l	1
05439	Naphthalene	91-20-3	N.D.		1.	5.	ug/l	1
05440	1,2,3-Trichlorobenzene	87-61-6	N.D.		1.	5.	ug/l	1
08202	EPA SW 846/8260 - Water							
01587	Ethanol	64-17-5	N.D.		50.	250.	ug/l	1
02010	Methyl Tertiary Butyl Ether	1634-04-4	0.5	J	0.5	4.	ug/l	1
02011	di-Isopropyl ether	108-20-3	N.D.		0.5	4.	ug/l	1
02013	Ethyl t-butyl ether	637-92-3	N.D.		0.5	4.	ug/l	1
02014	t-Amyl methyl ether	994-05-8	N.D.		0.5	4.	ug/l	1
02015	t-Butyl alcohol	75-65-0	550.		5.	20.	ug/l	1
06302	Acetone	67-64-1	N.D.		6.	20.	ug/l	1
06303	Carbon Disulfide	75-15-0	N.D.		1.	5.	ug/l	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4903591

5533-MW6-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 14:35 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36L06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
06305	2-Butanone	78-93-3	N.D.	3.	10.	ug/l	1
06306	trans-1,3-Dichloropropene	10061-02-6	N.D.	1.	5.	ug/l	1
06307	cis-1,3-Dichloropropene	10061-01-5	N.D.	1.	5.	ug/l	1
06308	4-Methyl-2-pentanone	108-10-1	N.D.	3.	10.	ug/l	1
06309	2-Hexanone	591-78-6	N.D.	3.	10.	ug/l	1
07583	2-Chloroethyl Vinyl Ether	110-75-8	N.D.	2.	10.	ug/l	1
	2-Chloroethyl vinyl ether is an acid labile compound and may not be recovered in an acid preserved sample.						
08203	Freon 113	76-13-1	N.D.	2.	10.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY97-602 NWTPH-Dx modified	1	11/07/2006 02:02	Robert I Pusch	1
08274	TPH by NWTPH-Gx waters	ECY97-602 NWTPH-Gx modified	1	11/01/2006 16:09	Steven A Skiles	1
05382	EPA SW846/8260 (water)	SW-846 8260B	1	11/03/2006 00:18	Lauren C Marzario	1
08202	EPA SW 846/8260 - Water	SW-846 8260B	1	11/03/2006 00:18	Lauren C Marzario	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/01/2006 16:09	Steven A Skiles	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/03/2006 00:18	Lauren C Marzario	1
02135	Extraction - DRO Water Special	ECY97-602 NWTPH-Dx 06/97	1	11/02/2006 08:00	Tracy L Schickel	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4903592

5533-MW9-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 11:00 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36L09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel						
02095	Diesel Range Organics	n.a.	N.D.	76.	240.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	95.	470.	ug/l	1
08274	TPH by NWTPH-Gx waters						
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	250.	ug/l	1
05382	EPA SW846/8260 (water)						
05384	Dichlorodifluoromethane	75-71-8	N.D.	2.	5.	ug/l	1
05385	Chloromethane	74-87-3	N.D.	1.	5.	ug/l	1
05386	Vinyl Chloride	75-01-4	N.D.	1.	5.	ug/l	1
05387	Bromomethane	74-83-9	N.D.	1.	5.	ug/l	1
05388	Chloroethane	75-00-3	N.D.	1.	5.	ug/l	1
05389	Trichlorofluoromethane	75-69-4	N.D.	2.	5.	ug/l	1
05390	1,1-Dichloroethene	75-35-4	N.D.	0.8	5.	ug/l	1
05391	Methylene Chloride	75-09-2	N.D.	2.	5.	ug/l	1
05392	trans-1,2-Dichloroethene	156-60-5	N.D.	0.8	5.	ug/l	1
05393	1,1-Dichloroethane	75-34-3	N.D.	1.	5.	ug/l	1
05394	2,2-Dichloropropane	594-20-7	N.D.	1.	5.	ug/l	1
05395	cis-1,2-Dichloroethene	156-59-2	N.D.	0.8	5.	ug/l	1
05396	Chloroform	67-66-3	N.D.	0.8	5.	ug/l	1
05397	Bromochloromethane	74-97-5	N.D.	1.	5.	ug/l	1
05398	1,1,1-Trichloroethane	71-55-6	N.D.	0.8	5.	ug/l	1
05399	Carbon Tetrachloride	56-23-5	N.D.	1.	5.	ug/l	1
05400	1,1-Dichloropropene	563-58-6	N.D.	1.	5.	ug/l	1
05401	Benzene	71-43-2	N.D.	0.5	4.	ug/l	1
05402	1,2-Dichloroethane	107-06-2	N.D.	0.5	4.	ug/l	1
05403	Trichloroethene	79-01-6	N.D.	1.	5.	ug/l	1
05404	1,2-Dichloropropane	78-87-5	N.D.	1.	5.	ug/l	1
05405	Dibromomethane	74-95-3	N.D.	1.	5.	ug/l	1
05406	Bromodichloromethane	75-27-4	N.D.	1.	5.	ug/l	1
05407	Toluene	108-88-3	N.D.	0.5	4.	ug/l	1
05408	1,1,2-Trichloroethane	79-00-5	N.D.	0.8	5.	ug/l	1
05409	Tetrachloroethene	127-18-4	N.D.	0.8	5.	ug/l	1
05410	1,3-Dichloropropane	142-28-9	N.D.	1.	5.	ug/l	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories Sample No. WW 4903592

5533-MW9-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 11:00 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36L09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
05411	Dibromochloromethane	124-48-1	N.D.	1.	5.	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.	0.5	4.	ug/l	1
05413	Chlorobenzene	108-90-7	N.D.	0.8	5.	ug/l	1
05414	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	1.	5.	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.5	4.	ug/l	1
05416	m+p-Xylene	1330-20-7	N.D.	0.5	4.	ug/l	1
05417	o-Xylene	95-47-6	N.D.	0.5	4.	ug/l	1
05418	Styrene	100-42-5	N.D.	1.	5.	ug/l	1
05419	Bromoform	75-25-2	N.D.	1.	5.	ug/l	1
05420	Isopropylbenzene	98-82-8	N.D.	1.	5.	ug/l	1
05421	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	1.	5.	ug/l	1
05422	Bromobenzene	108-86-1	N.D.	1.	5.	ug/l	1
05423	1,2,3-Trichloropropane	96-18-4	N.D.	1.	5.	ug/l	1
05424	n-Propylbenzene	103-65-1	N.D.	1.	5.	ug/l	1
05425	2-Chlorotoluene	95-49-8	N.D.	1.	5.	ug/l	1
05426	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.	5.	ug/l	1
05427	4-Chlorotoluene	106-43-4	N.D.	1.	5.	ug/l	1
05428	tert-Butylbenzene	98-06-6	N.D.	1.	5.	ug/l	1
05429	1,2,4-Trimethylbenzene	95-63-6	N.D.	1.	5.	ug/l	1
05430	sec-Butylbenzene	135-98-8	N.D.	1.	5.	ug/l	1
05431	p-Isopropyltoluene	99-87-6	N.D.	1.	5.	ug/l	1
05432	1,3-Dichlorobenzene	541-73-1	N.D.	1.	5.	ug/l	1
05433	1,4-Dichlorobenzene	106-46-7	N.D.	1.	5.	ug/l	1
05434	n-Butylbenzene	104-51-8	N.D.	1.	5.	ug/l	1
05435	1,2-Dichlorobenzene	95-50-1	N.D.	1.	5.	ug/l	1
05436	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	2.	5.	ug/l	1
05437	1,2,4-Trichlorobenzene	120-82-1	N.D.	1.	5.	ug/l	1
05438	Hexachlorobutadiene	87-68-3	N.D.	2.	5.	ug/l	1
05439	Naphthalene	91-20-3	N.D.	1.	5.	ug/l	1
05440	1,2,3-Trichlorobenzene	87-61-6	N.D.	1.	5.	ug/l	1
08202	EPA SW 846/8260 - Water						
01587	Ethanol	64-17-5	N.D.	50.	250.	ug/l	1
02010	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.5	4.	ug/l	1
02011	di-Isopropyl ether	108-20-3	N.D.	0.5	4.	ug/l	1
02013	Ethyl t-butyl ether	637-92-3	N.D.	0.5	4.	ug/l	1
02014	t-Amyl methyl ether	994-05-8	N.D.	0.5	4.	ug/l	1
02015	t-Butyl alcohol	75-65-0	N.D.	5.	20.	ug/l	1
06302	Acetone	67-64-1	N.D.	6.	20.	ug/l	1
06303	Carbon Disulfide	75-15-0	N.D.	1.	5.	ug/l	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4903592

5533-MW9-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 11:00 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36L09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
06305	2-Butanone	78-93-3	N.D.	3.	10.	ug/l	1
06306	trans-1,3-Dichloropropene	10061-02-6	N.D.	1.	5.	ug/l	1
06307	cis-1,3-Dichloropropene	10061-01-5	N.D.	1.	5.	ug/l	1
06308	4-Methyl-2-pentanone	108-10-1	N.D.	3.	10.	ug/l	1
06309	2-Hexanone	591-78-6	N.D.	3.	10.	ug/l	1
07583	2-Chloroethyl Vinyl Ether	110-75-8	N.D.	2.	10.	ug/l	1
	2-Chloroethyl vinyl ether is an acid labile compound and may not be recovered in an acid preserved sample.						
08203	Freon 113	76-13-1	N.D.	2.	10.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY97-602 NWTPH-Dx modified	1	11/07/2006 01:43	Robert I Pusch	1
08274	TPH by NWTPH-Gx waters	ECY97-602 NWTPH-Gx modified	1	11/01/2006 16:42	Steven A Skiles	1
05382	EPA SW846/8260 (water)	SW-846 8260B	1	11/03/2006 00:42	Lauren C Marzario	1
08202	EPA SW 846/8260 - Water	SW-846 8260B	1	11/03/2006 00:42	Lauren C Marzario	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/01/2006 16:42	Steven A Skiles	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/03/2006 00:42	Lauren C Marzario	1
02135	Extraction - DRO Water Special	ECY97-602 NWTPH-Dx 06/97	1	11/02/2006 08:00	Tracy L Schickel	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4903593

5533-MW11R-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 11:55 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36L11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel						
02095	Diesel Range Organics	n.a.	N.D.	76.	240.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	95.	480.	ug/l	1
08274	TPH by NWTPH-Gx waters						
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	250.	ug/l	1
05382	EPA SW846/8260 (water)						
05384	Dichlorodifluoromethane	75-71-8	N.D.	2.	5.	ug/l	1
05385	Chloromethane	74-87-3	N.D.	1.	5.	ug/l	1
05386	Vinyl Chloride	75-01-4	N.D.	1.	5.	ug/l	1
05387	Bromomethane	74-83-9	N.D.	1.	5.	ug/l	1
05388	Chloroethane	75-00-3	N.D.	1.	5.	ug/l	1
05389	Trichlorofluoromethane	75-69-4	N.D.	2.	5.	ug/l	1
05390	1,1-Dichloroethene	75-35-4	N.D.	0.8	5.	ug/l	1
05391	Methylene Chloride	75-09-2	N.D.	2.	5.	ug/l	1
05392	trans-1,2-Dichloroethene	156-60-5	N.D.	0.8	5.	ug/l	1
05393	1,1-Dichloroethane	75-34-3	N.D.	1.	5.	ug/l	1
05394	2,2-Dichloropropane	594-20-7	N.D.	1.	5.	ug/l	1
05395	cis-1,2-Dichloroethene	156-59-2	N.D.	0.8	5.	ug/l	1
05396	Chloroform	67-66-3	N.D.	0.8	5.	ug/l	1
05397	Bromochloromethane	74-97-5	N.D.	1.	5.	ug/l	1
05398	1,1,1-Trichloroethane	71-55-6	N.D.	0.8	5.	ug/l	1
05399	Carbon Tetrachloride	56-23-5	N.D.	1.	5.	ug/l	1
05400	1,1-Dichloropropene	563-58-6	N.D.	1.	5.	ug/l	1
05401	Benzene	71-43-2	N.D.	0.5	4.	ug/l	1
05402	1,2-Dichloroethane	107-06-2	N.D.	0.5	4.	ug/l	1
05403	Trichloroethene	79-01-6	N.D.	1.	5.	ug/l	1
05404	1,2-Dichloropropane	78-87-5	N.D.	1.	5.	ug/l	1
05405	Dibromomethane	74-95-3	N.D.	1.	5.	ug/l	1
05406	Bromodichloromethane	75-27-4	N.D.	1.	5.	ug/l	1
05407	Toluene	108-88-3	N.D.	0.5	4.	ug/l	1
05408	1,1,2-Trichloroethane	79-00-5	N.D.	0.8	5.	ug/l	1
05409	Tetrachloroethene	127-18-4	N.D.	0.8	5.	ug/l	1
05410	1,3-Dichloropropane	142-28-9	N.D.	1.	5.	ug/l	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories Sample No. WW 4903593

5533-MW11R-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 11:55 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36L11

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
05411	Dibromochloromethane	124-48-1	N.D.		1.	5.	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.		0.5	4.	ug/l	1
05413	Chlorobenzene	108-90-7	N.D.		0.8	5.	ug/l	1
05414	1,1,1,2-Tetrachloroethane	630-20-6	N.D.		1.	5.	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.		0.5	4.	ug/l	1
05416	m+p-Xylene	1330-20-7	N.D.		0.5	4.	ug/l	1
05417	o-Xylene	95-47-6	N.D.		0.5	4.	ug/l	1
05418	Styrene	100-42-5	N.D.		1.	5.	ug/l	1
05419	Bromoform	75-25-2	N.D.		1.	5.	ug/l	1
05420	Isopropylbenzene	98-82-8	N.D.		1.	5.	ug/l	1
05421	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		1.	5.	ug/l	1
05422	Bromobenzene	108-86-1	N.D.		1.	5.	ug/l	1
05423	1,2,3-Trichloropropane	96-18-4	N.D.		1.	5.	ug/l	1
05424	n-Propylbenzene	103-65-1	N.D.		1.	5.	ug/l	1
05425	2-Chlorotoluene	95-49-8	N.D.		1.	5.	ug/l	1
05426	1,3,5-Trimethylbenzene	108-67-8	N.D.		1.	5.	ug/l	1
05427	4-Chlorotoluene	106-43-4	N.D.		1.	5.	ug/l	1
05428	tert-Butylbenzene	98-06-6	N.D.		1.	5.	ug/l	1
05429	1,2,4-Trimethylbenzene	95-63-6	N.D.		1.	5.	ug/l	1
05430	sec-Butylbenzene	135-98-8	N.D.		1.	5.	ug/l	1
05431	p-Isopropyltoluene	99-87-6	N.D.		1.	5.	ug/l	1
05432	1,3-Dichlorobenzene	541-73-1	N.D.		1.	5.	ug/l	1
05433	1,4-Dichlorobenzene	106-46-7	N.D.		1.	5.	ug/l	1
05434	n-Butylbenzene	104-51-8	N.D.		1.	5.	ug/l	1
05435	1,2-Dichlorobenzene	95-50-1	N.D.		1.	5.	ug/l	1
05436	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		2.	5.	ug/l	1
05437	1,2,4-Trichlorobenzene	120-82-1	N.D.		1.	5.	ug/l	1
05438	Hexachlorobutadiene	87-68-3	N.D.		2.	5.	ug/l	1
05439	Naphthalene	91-20-3	N.D.		1.	5.	ug/l	1
05440	1,2,3-Trichlorobenzene	87-61-6	N.D.		1.	5.	ug/l	1
08202	EPA SW 846/8260 - Water							
01587	Ethanol	64-17-5	N.D.		50.	250.	ug/l	1
02010	Methyl Tertiary Butyl Ether	1634-04-4	0.6	J	0.5	4.	ug/l	1
02011	di-Isopropyl ether	108-20-3	N.D.		0.5	4.	ug/l	1
02013	Ethyl t-butyl ether	637-92-3	N.D.		0.5	4.	ug/l	1
02014	t-Amyl methyl ether	994-05-8	N.D.		0.5	4.	ug/l	1
02015	t-Butyl alcohol	75-65-0	N.D.		5.	20.	ug/l	1
06302	Acetone	67-64-1	N.D.		6.	20.	ug/l	1
06303	Carbon Disulfide	75-15-0	N.D.		1.	5.	ug/l	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4903593

5533-MW11R-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 11:55 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36L11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
06305	2-Butanone	78-93-3	N.D.	3.	10.	ug/l	1
06306	trans-1,3-Dichloropropene	10061-02-6	N.D.	1.	5.	ug/l	1
06307	cis-1,3-Dichloropropene	10061-01-5	N.D.	1.	5.	ug/l	1
06308	4-Methyl-2-pentanone	108-10-1	N.D.	3.	10.	ug/l	1
06309	2-Hexanone	591-78-6	N.D.	3.	10.	ug/l	1
07583	2-Chloroethyl Vinyl Ether	110-75-8	N.D.	2.	10.	ug/l	1
	2-Chloroethyl vinyl ether is an acid labile compound and may not be recovered in an acid preserved sample.						
08203	Freon 113	76-13-1	N.D.	2.	10.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY97-602 NWTPH-Dx modified	1	11/04/2006 01:47	Robert I Pusch	1
08274	TPH by NWTPH-Gx waters	ECY97-602 NWTPH-Gx modified	1	11/01/2006 17:14	Steven A Skiles	1
05382	EPA SW846/8260 (water)	SW-846 8260B	1	11/03/2006 01:05	Lauren C Marzario	1
08202	EPA SW 846/8260 - Water	SW-846 8260B	1	11/03/2006 01:05	Lauren C Marzario	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/01/2006 17:14	Steven A Skiles	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/03/2006 01:05	Lauren C Marzario	1
02135	Extraction - DRO Water Special	ECY97-602 NWTPH-Dx 06/97	1	11/02/2006 11:00	Mariam G Attalla	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4903594

5533-R1-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 12:05 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36LR1

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel						
02095	Diesel Range Organics	n.a.	N.D.	75.	240.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	94.	470.	ug/l	1
08274	TPH by NWTPH-Gx waters						
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	250.	ug/l	1
05382	EPA SW846/8260 (water)						
05384	Dichlorodifluoromethane	75-71-8	N.D.	2.	5.	ug/l	1
05385	Chloromethane	74-87-3	N.D.	1.	5.	ug/l	1
05386	Vinyl Chloride	75-01-4	N.D.	1.	5.	ug/l	1
05387	Bromomethane	74-83-9	N.D.	1.	5.	ug/l	1
05388	Chloroethane	75-00-3	N.D.	1.	5.	ug/l	1
05389	Trichlorofluoromethane	75-69-4	N.D.	2.	5.	ug/l	1
05390	1,1-Dichloroethene	75-35-4	N.D.	0.8	5.	ug/l	1
05391	Methylene Chloride	75-09-2	N.D.	2.	5.	ug/l	1
05392	trans-1,2-Dichloroethene	156-60-5	N.D.	0.8	5.	ug/l	1
05393	1,1-Dichloroethane	75-34-3	N.D.	1.	5.	ug/l	1
05394	2,2-Dichloropropane	594-20-7	N.D.	1.	5.	ug/l	1
05395	cis-1,2-Dichloroethene	156-59-2	N.D.	0.8	5.	ug/l	1
05396	Chloroform	67-66-3	N.D.	0.8	5.	ug/l	1
05397	Bromochloromethane	74-97-5	N.D.	1.	5.	ug/l	1
05398	1,1,1-Trichloroethane	71-55-6	N.D.	0.8	5.	ug/l	1
05399	Carbon Tetrachloride	56-23-5	N.D.	1.	5.	ug/l	1
05400	1,1-Dichloropropene	563-58-6	N.D.	1.	5.	ug/l	1
05401	Benzene	71-43-2	N.D.	0.5	4.	ug/l	1
05402	1,2-Dichloroethane	107-06-2	N.D.	0.5	4.	ug/l	1
05403	Trichloroethene	79-01-6	N.D.	1.	5.	ug/l	1
05404	1,2-Dichloropropane	78-87-5	N.D.	1.	5.	ug/l	1
05405	Dibromomethane	74-95-3	N.D.	1.	5.	ug/l	1
05406	Bromodichloromethane	75-27-4	N.D.	1.	5.	ug/l	1
05407	Toluene	108-88-3	N.D.	0.5	4.	ug/l	1
05408	1,1,2-Trichloroethane	79-00-5	N.D.	0.8	5.	ug/l	1
05409	Tetrachloroethene	127-18-4	N.D.	0.8	5.	ug/l	1
05410	1,3-Dichloropropane	142-28-9	N.D.	1.	5.	ug/l	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories Sample No. WW 4903594

5533-R1-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 12:05 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36LR1

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
05411	Dibromochloromethane	124-48-1	N.D.	1.	5.	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.	0.5	4.	ug/l	1
05413	Chlorobenzene	108-90-7	N.D.	0.8	5.	ug/l	1
05414	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	1.	5.	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.5	4.	ug/l	1
05416	m+p-Xylene	1330-20-7	N.D.	0.5	4.	ug/l	1
05417	o-Xylene	95-47-6	N.D.	0.5	4.	ug/l	1
05418	Styrene	100-42-5	N.D.	1.	5.	ug/l	1
05419	Bromoform	75-25-2	N.D.	1.	5.	ug/l	1
05420	Isopropylbenzene	98-82-8	N.D.	1.	5.	ug/l	1
05421	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	1.	5.	ug/l	1
05422	Bromobenzene	108-86-1	N.D.	1.	5.	ug/l	1
05423	1,2,3-Trichloropropane	96-18-4	N.D.	1.	5.	ug/l	1
05424	n-Propylbenzene	103-65-1	N.D.	1.	5.	ug/l	1
05425	2-Chlorotoluene	95-49-8	N.D.	1.	5.	ug/l	1
05426	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.	5.	ug/l	1
05427	4-Chlorotoluene	106-43-4	N.D.	1.	5.	ug/l	1
05428	tert-Butylbenzene	98-06-6	N.D.	1.	5.	ug/l	1
05429	1,2,4-Trimethylbenzene	95-63-6	N.D.	1.	5.	ug/l	1
05430	sec-Butylbenzene	135-98-8	N.D.	1.	5.	ug/l	1
05431	p-Isopropyltoluene	99-87-6	N.D.	1.	5.	ug/l	1
05432	1,3-Dichlorobenzene	541-73-1	N.D.	1.	5.	ug/l	1
05433	1,4-Dichlorobenzene	106-46-7	N.D.	1.	5.	ug/l	1
05434	n-Butylbenzene	104-51-8	N.D.	1.	5.	ug/l	1
05435	1,2-Dichlorobenzene	95-50-1	N.D.	1.	5.	ug/l	1
05436	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	2.	5.	ug/l	1
05437	1,2,4-Trichlorobenzene	120-82-1	N.D.	1.	5.	ug/l	1
05438	Hexachlorobutadiene	87-68-3	N.D.	2.	5.	ug/l	1
05439	Naphthalene	91-20-3	N.D.	1.	5.	ug/l	1
05440	1,2,3-Trichlorobenzene	87-61-6	N.D.	1.	5.	ug/l	1
08202	EPA SW 846/8260 - Water						
01587	Ethanol	64-17-5	N.D.	50.	250.	ug/l	1
02010	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.5	4.	ug/l	1
02011	di-Isopropyl ether	108-20-3	N.D.	0.5	4.	ug/l	1
02013	Ethyl t-butyl ether	637-92-3	N.D.	0.5	4.	ug/l	1
02014	t-Amyl methyl ether	994-05-8	N.D.	0.5	4.	ug/l	1
02015	t-Butyl alcohol	75-65-0	N.D.	5.	20.	ug/l	1
06302	Acetone	67-64-1	N.D.	6.	20.	ug/l	1
06303	Carbon Disulfide	75-15-0	N.D.	1.	5.	ug/l	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4903594

5533-R1-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 12:05 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36LR1

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
06305	2-Butanone	78-93-3	N.D.	3.	10.	ug/l	1
06306	trans-1,3-Dichloropropene	10061-02-6	N.D.	1.	5.	ug/l	1
06307	cis-1,3-Dichloropropene	10061-01-5	N.D.	1.	5.	ug/l	1
06308	4-Methyl-2-pentanone	108-10-1	N.D.	3.	10.	ug/l	1
06309	2-Hexanone	591-78-6	N.D.	3.	10.	ug/l	1
07583	2-Chloroethyl Vinyl Ether	110-75-8	N.D.	2.	10.	ug/l	1
	2-Chloroethyl vinyl ether is an acid labile compound and may not be recovered in an acid preserved sample.						
08203	Freon 113	76-13-1	N.D.	2.	10.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY97-602 NWTPH-Dx modified	1	11/04/2006 02:07	Robert I Pusch	1
08274	TPH by NWTPH-Gx waters	ECY97-602 NWTPH-Gx modified	1	11/01/2006 18:25	Steven A Skiles	1
05382	EPA SW846/8260 (water)	SW-846 8260B	1	11/06/2006 12:19	Anita M Dale	1
08202	EPA SW 846/8260 - Water	SW-846 8260B	1	11/06/2006 12:19	Anita M Dale	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/01/2006 18:25	Steven A Skiles	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/06/2006 12:19	Anita M Dale	1
02135	Extraction - DRO Water Special	ECY97-602 NWTPH-Dx 06/97	1	11/02/2006 11:00	Mariam G Attalla	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4903595

5533-R2-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 10:45 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36LR2

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel							
02095	Diesel Range Organics	n.a.	N.D.		76.	240.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.		94.	470.	ug/l	1
08274	TPH by NWTPH-Gx waters							
01648	TPH by NWTPH-Gx waters	n.a.	N.D.		48.	250.	ug/l	1
05382	EPA SW846/8260 (water)							
05384	Dichlorodifluoromethane	75-71-8	N.D.		2.	5.	ug/l	1
05385	Chloromethane	74-87-3	N.D.		1.	5.	ug/l	1
05386	Vinyl Chloride	75-01-4	N.D.		1.	5.	ug/l	1
05387	Bromomethane	74-83-9	N.D.		1.	5.	ug/l	1
05388	Chloroethane	75-00-3	N.D.		1.	5.	ug/l	1
05389	Trichlorofluoromethane	75-69-4	N.D.		2.	5.	ug/l	1
05390	1,1-Dichloroethene	75-35-4	N.D.		0.8	5.	ug/l	1
05391	Methylene Chloride	75-09-2	N.D.		2.	5.	ug/l	1
05392	trans-1,2-Dichloroethene	156-60-5	N.D.		0.8	5.	ug/l	1
05393	1,1-Dichloroethane	75-34-3	N.D.		1.	5.	ug/l	1
05394	2,2-Dichloropropane	594-20-7	N.D.		1.	5.	ug/l	1
05395	cis-1,2-Dichloroethene	156-59-2	N.D.		0.8	5.	ug/l	1
05396	Chloroform	67-66-3	N.D.		0.8	5.	ug/l	1
05397	Bromochloromethane	74-97-5	N.D.		1.	5.	ug/l	1
05398	1,1,1-Trichloroethane	71-55-6	N.D.		0.8	5.	ug/l	1
05399	Carbon Tetrachloride	56-23-5	N.D.		1.	5.	ug/l	1
05400	1,1-Dichloropropene	563-58-6	N.D.		1.	5.	ug/l	1
05401	Benzene	71-43-2	N.D.		0.5	4.	ug/l	1
05402	1,2-Dichloroethane	107-06-2	N.D.		0.5	4.	ug/l	1
05403	Trichloroethene	79-01-6	N.D.		1.	5.	ug/l	1
05404	1,2-Dichloropropane	78-87-5	N.D.		1.	5.	ug/l	1
05405	Dibromomethane	74-95-3	N.D.		1.	5.	ug/l	1
05406	Bromodichloromethane	75-27-4	N.D.		1.	5.	ug/l	1
05407	Toluene	108-88-3	0.9	J	0.5	4.	ug/l	1
05408	1,1,2-Trichloroethane	79-00-5	N.D.		0.8	5.	ug/l	1
05409	Tetrachloroethene	127-18-4	N.D.		0.8	5.	ug/l	1
05410	1,3-Dichloropropane	142-28-9	N.D.		1.	5.	ug/l	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories Sample No. WW 4903595

5533-R2-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 10:45 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36LR2

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
05411	Dibromochloromethane	124-48-1	N.D.		1.	5.	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.		0.5	4.	ug/l	1
05413	Chlorobenzene	108-90-7	N.D.		0.8	5.	ug/l	1
05414	1,1,1,2-Tetrachloroethane	630-20-6	N.D.		1.	5.	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.		0.5	4.	ug/l	1
05416	m+p-Xylene	1330-20-7	N.D.		0.5	4.	ug/l	1
05417	o-Xylene	95-47-6	N.D.		0.5	4.	ug/l	1
05418	Styrene	100-42-5	N.D.		1.	5.	ug/l	1
05419	Bromoform	75-25-2	N.D.		1.	5.	ug/l	1
05420	Isopropylbenzene	98-82-8	N.D.		1.	5.	ug/l	1
05421	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		1.	5.	ug/l	1
05422	Bromobenzene	108-86-1	N.D.		1.	5.	ug/l	1
05423	1,2,3-Trichloropropane	96-18-4	N.D.		1.	5.	ug/l	1
05424	n-Propylbenzene	103-65-1	N.D.		1.	5.	ug/l	1
05425	2-Chlorotoluene	95-49-8	N.D.		1.	5.	ug/l	1
05426	1,3,5-Trimethylbenzene	108-67-8	N.D.		1.	5.	ug/l	1
05427	4-Chlorotoluene	106-43-4	N.D.		1.	5.	ug/l	1
05428	tert-Butylbenzene	98-06-6	N.D.		1.	5.	ug/l	1
05429	1,2,4-Trimethylbenzene	95-63-6	N.D.		1.	5.	ug/l	1
05430	sec-Butylbenzene	135-98-8	N.D.		1.	5.	ug/l	1
05431	p-Isopropyltoluene	99-87-6	N.D.		1.	5.	ug/l	1
05432	1,3-Dichlorobenzene	541-73-1	N.D.		1.	5.	ug/l	1
05433	1,4-Dichlorobenzene	106-46-7	N.D.		1.	5.	ug/l	1
05434	n-Butylbenzene	104-51-8	N.D.		1.	5.	ug/l	1
05435	1,2-Dichlorobenzene	95-50-1	N.D.		1.	5.	ug/l	1
05436	1,2-Dibromo-3-chloropropane	96-12-8	N.D.		2.	5.	ug/l	1
05437	1,2,4-Trichlorobenzene	120-82-1	N.D.		1.	5.	ug/l	1
05438	Hexachlorobutadiene	87-68-3	N.D.		2.	5.	ug/l	1
05439	Naphthalene	91-20-3	N.D.		1.	5.	ug/l	1
05440	1,2,3-Trichlorobenzene	87-61-6	N.D.		1.	5.	ug/l	1
08202	EPA SW 846/8260 - Water							
01587	Ethanol	64-17-5	83.	J	50.	250.	ug/l	1
02010	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.5	4.	ug/l	1
02011	di-Isopropyl ether	108-20-3	N.D.		0.5	4.	ug/l	1
02013	Ethyl t-butyl ether	637-92-3	N.D.		0.5	4.	ug/l	1
02014	t-Amyl methyl ether	994-05-8	N.D.		0.5	4.	ug/l	1
02015	t-Butyl alcohol	75-65-0	N.D.		5.	20.	ug/l	1
06302	Acetone	67-64-1	N.D.		6.	20.	ug/l	1
06303	Carbon Disulfide	75-15-0	N.D.		1.	5.	ug/l	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4903595

5533-R2-102706 Grab Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006 10:45 by DR

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36LR2

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
06305	2-Butanone	78-93-3	N.D.	3.	10.	ug/l	1
06306	trans-1,3-Dichloropropene	10061-02-6	N.D.	1.	5.	ug/l	1
06307	cis-1,3-Dichloropropene	10061-01-5	N.D.	1.	5.	ug/l	1
06308	4-Methyl-2-pentanone	108-10-1	N.D.	3.	10.	ug/l	1
06309	2-Hexanone	591-78-6	N.D.	3.	10.	ug/l	1
07583	2-Chloroethyl Vinyl Ether	110-75-8	N.D.	2.	10.	ug/l	1
	2-Chloroethyl vinyl ether is an acid labile compound and may not be recovered in an acid preserved sample.						
08203	Freon 113	76-13-1	N.D.	2.	10.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY97-602 NWTPH-Dx modified	1	11/04/2006 02:26	Robert I Pusch	1
08274	TPH by NWTPH-Gx waters	ECY97-602 NWTPH-Gx modified	1	11/01/2006 20:36	Steven A Skiles	1
05382	EPA SW846/8260 (water)	SW-846 8260B	1	11/06/2006 12:42	Anita M Dale	1
08202	EPA SW 846/8260 - Water	SW-846 8260B	1	11/06/2006 12:42	Anita M Dale	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/01/2006 20:36	Steven A Skiles	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/06/2006 12:42	Anita M Dale	1
02135	Extraction - DRO Water Special	ECY97-602 NWTPH-Dx 06/97	1	11/02/2006 11:00	Mariam G Attalla	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4903596

Trip Blank Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36LQA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
05382	EPA SW846/8260 (water)						
05384	Dichlorodifluoromethane	75-71-8	N.D.	2.	5.	ug/l	1
05385	Chloromethane	74-87-3	N.D.	1.	5.	ug/l	1
05386	Vinyl Chloride	75-01-4	N.D.	1.	5.	ug/l	1
05387	Bromomethane	74-83-9	N.D.	1.	5.	ug/l	1
05388	Chloroethane	75-00-3	N.D.	1.	5.	ug/l	1
05389	Trichlorofluoromethane	75-69-4	N.D.	2.	5.	ug/l	1
05390	1,1-Dichloroethene	75-35-4	N.D.	0.8	5.	ug/l	1
05391	Methylene Chloride	75-09-2	N.D.	2.	5.	ug/l	1
05392	trans-1,2-Dichloroethene	156-60-5	N.D.	0.8	5.	ug/l	1
05393	1,1-Dichloroethane	75-34-3	N.D.	1.	5.	ug/l	1
05394	2,2-Dichloropropane	594-20-7	N.D.	1.	5.	ug/l	1
05395	cis-1,2-Dichloroethene	156-59-2	N.D.	0.8	5.	ug/l	1
05396	Chloroform	67-66-3	N.D.	0.8	5.	ug/l	1
05397	Bromochloromethane	74-97-5	N.D.	1.	5.	ug/l	1
05398	1,1,1-Trichloroethane	71-55-6	N.D.	0.8	5.	ug/l	1
05399	Carbon Tetrachloride	56-23-5	N.D.	1.	5.	ug/l	1
05400	1,1-Dichloropropene	563-58-6	N.D.	1.	5.	ug/l	1
05401	Benzene	71-43-2	N.D.	0.5	4.	ug/l	1
05402	1,2-Dichloroethane	107-06-2	N.D.	0.5	4.	ug/l	1
05403	Trichloroethene	79-01-6	N.D.	1.	5.	ug/l	1
05404	1,2-Dichloropropane	78-87-5	N.D.	1.	5.	ug/l	1
05405	Dibromomethane	74-95-3	N.D.	1.	5.	ug/l	1
05406	Bromodichloromethane	75-27-4	N.D.	1.	5.	ug/l	1
05407	Toluene	108-88-3	N.D.	0.5	4.	ug/l	1
05408	1,1,2-Trichloroethane	79-00-5	N.D.	0.8	5.	ug/l	1
05409	Tetrachloroethene	127-18-4	N.D.	0.8	5.	ug/l	1
05410	1,3-Dichloropropane	142-28-9	N.D.	1.	5.	ug/l	1
05411	Dibromochloromethane	124-48-1	N.D.	1.	5.	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.	0.5	4.	ug/l	1
05413	Chlorobenzene	108-90-7	N.D.	0.8	5.	ug/l	1
05414	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	1.	5.	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.5	4.	ug/l	1
05416	m+p-Xylene	1330-20-7	N.D.	0.5	4.	ug/l	1
05417	o-Xylene	95-47-6	N.D.	0.5	4.	ug/l	1
05418	Styrene	100-42-5	N.D.	1.	5.	ug/l	1
05419	Bromoform	75-25-2	N.D.	1.	5.	ug/l	1
05420	Isopropylbenzene	98-82-8	N.D.	1.	5.	ug/l	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories Sample No. WW 4903596

Trip_Blank Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36LQA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor
05421	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	1.	5.	ug/l	1
05422	Bromobenzene	108-86-1	N.D.	1.	5.	ug/l	1
05423	1,2,3-Trichloropropane	96-18-4	N.D.	1.	5.	ug/l	1
05424	n-Propylbenzene	103-65-1	N.D.	1.	5.	ug/l	1
05425	2-Chlorotoluene	95-49-8	N.D.	1.	5.	ug/l	1
05426	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.	5.	ug/l	1
05427	4-Chlorotoluene	106-43-4	N.D.	1.	5.	ug/l	1
05428	tert-Butylbenzene	98-06-6	N.D.	1.	5.	ug/l	1
05429	1,2,4-Trimethylbenzene	95-63-6	N.D.	1.	5.	ug/l	1
05430	sec-Butylbenzene	135-98-8	N.D.	1.	5.	ug/l	1
05431	p-Isopropyltoluene	99-87-6	N.D.	1.	5.	ug/l	1
05432	1,3-Dichlorobenzene	541-73-1	N.D.	1.	5.	ug/l	1
05433	1,4-Dichlorobenzene	106-46-7	N.D.	1.	5.	ug/l	1
05434	n-Butylbenzene	104-51-8	N.D.	1.	5.	ug/l	1
05435	1,2-Dichlorobenzene	95-50-1	N.D.	1.	5.	ug/l	1
05436	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	2.	5.	ug/l	1
05437	1,2,4-Trichlorobenzene	120-82-1	N.D.	1.	5.	ug/l	1
05438	Hexachlorobutadiene	87-68-3	N.D.	2.	5.	ug/l	1
05439	Naphthalene	91-20-3	N.D.	1.	5.	ug/l	1
05440	1,2,3-Trichlorobenzene	87-61-6	N.D.	1.	5.	ug/l	1
08202	EPA SW 846/8260 - Water						
01587	Ethanol	64-17-5	N.D.	50.	250.	ug/l	1
02010	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.5	4.	ug/l	1
02011	di-Isopropyl ether	108-20-3	N.D.	0.5	4.	ug/l	1
02013	Ethyl t-butyl ether	637-92-3	N.D.	0.5	4.	ug/l	1
02014	t-Amyl methyl ether	994-05-8	N.D.	0.5	4.	ug/l	1
02015	t-Butyl alcohol	75-65-0	N.D.	5.	20.	ug/l	1
06302	Acetone	67-64-1	N.D.	6.	20.	ug/l	1
06303	Carbon Disulfide	75-15-0	N.D.	1.	5.	ug/l	1
06305	2-Butanone	78-93-3	N.D.	3.	10.	ug/l	1
06306	trans-1,3-Dichloropropene	10061-02-6	N.D.	1.	5.	ug/l	1
06307	cis-1,3-Dichloropropene	10061-01-5	N.D.	1.	5.	ug/l	1
06308	4-Methyl-2-pentanone	108-10-1	N.D.	3.	10.	ug/l	1
06309	2-Hexanone	591-78-6	N.D.	3.	10.	ug/l	1
07583	2-Chloroethyl Vinyl Ether	110-75-8	N.D.	2.	10.	ug/l	1
	2-Chloroethyl vinyl ether is an acid labile compound and may not be recovered in an acid preserved sample.						
08203	Freon 113	76-13-1	N.D.	2.	10.	ug/l	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Lancaster Laboratories Sample No. WW 4903596

Trip_Blank Water Sample
Facility# 306535
16404 36th Ave.-Lynnwood, WA

Collected:10/27/2006

Account Number: 12094

Submitted: 10/31/2006 11:20
Reported: 11/16/2006 at 21:48
Discard: 12/17/2006

Chevron c/o ENSR-AECOM
9521 Willows Road NE
Redmond WA 98052

36LQA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Units	Dilution Factor

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
05382	EPA SW846/8260 (water)	SW-846 8260B	1	11/06/2006 13:06	Anita M Dale	1
08202	EPA SW 846/8260 - Water	SW-846 8260B	1	11/06/2006 13:06	Anita M Dale	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/06/2006 13:06	Anita M Dale	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

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Analysis Report

Quality Control Summary

Client Name: Chevron c/o ENSR-AECOM
Reported: 11/16/06 at 09:48 PM

Group Number: 1012131

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 06303A07B	Sample number(s): 4903588-4903595								
TPH by NWTPH-Gx waters	N.D.	48.	250.	ug/l	89	94	70-130	5	30
Batch number: 063050024A	Sample number(s): 4903588,4903590-4903592								
Diesel Range Organics	N.D.	80.	250.	ug/l	83	88	51-113	6	20
Heavy Range Organics	N.D.	100.	500.	ug/l					
Batch number: 063050027A	Sample number(s): 4903593-4903595								
Diesel Range Organics	N.D.	80.	250.	ug/l	79	78	51-113	2	20
Heavy Range Organics	N.D.	100.	500.	ug/l					
Batch number: 063120000A	Sample number(s): 4903589								
Diesel Range Organics	N.D.	80.	250.	ug/l	75	71	51-113	5	20
Heavy Range Organics	N.D.	100.	500.	ug/l					
Batch number: W063061AA	Sample number(s): 4903588-4903593								
Ethanol	N.D.	50.	250.	ug/l	89		35-168		
Methyl Tertiary Butyl Ether	N.D.	0.5	5.	ug/l	89		73-119		
di-Isopropyl ether	N.D.	0.8	5.	ug/l	90		70-123		
Ethyl t-butyl ether	N.D.	0.8	5.	ug/l	90		74-120		
t-Amyl methyl ether	N.D.	0.8	5.	ug/l	89		79-113		
t-Butyl alcohol	N.D.	10.	80.	ug/l	92		69-127		
Dichlorodifluoromethane	N.D.	2.	5.	ug/l	99		39-160		
Chloromethane	N.D.	1.	5.	ug/l	90		56-134		
Vinyl Chloride	N.D.	1.	5.	ug/l	87		62-123		
Bromomethane	N.D.	1.	5.	ug/l	84		47-129		
Chloroethane	N.D.	1.	5.	ug/l	84		57-125		
Trichlorofluoromethane	N.D.	2.	5.	ug/l	102		67-136		
1,1-Dichloroethene	N.D.	0.8	5.	ug/l	100		79-130		
Methylene Chloride	N.D.	2.	5.	ug/l	92		85-120		
trans-1,2-Dichloroethene	N.D.	0.8	5.	ug/l	91		83-117		
1,1-Dichloroethane	N.D.	1.	5.	ug/l	91		83-127		
2,2-Dichloropropane	N.D.	1.	5.	ug/l	94		74-130		
cis-1,2-Dichloroethene	N.D.	0.8	5.	ug/l	91		84-117		
Chloroform	N.D.	0.8	5.	ug/l	90		86-124		
Bromochloromethane	N.D.	1.	5.	ug/l	92		83-121		
1,1,1-Trichloroethane	N.D.	0.8	5.	ug/l	93		83-127		
Carbon Tetrachloride	N.D.	1.	5.	ug/l	94		77-130		
1,1-Dichloropropene	N.D.	1.	5.	ug/l	92		84-116		
Benzene	N.D.	0.5	5.	ug/l	91		85-117		
1,2-Dichloroethane	N.D.	1.	5.	ug/l	93		77-132		
Trichloroethene	N.D.	1.	5.	ug/l	91		87-117		
1,2-Dichloropropane	N.D.	1.	5.	ug/l	92		80-117		
Dibromomethane	N.D.	1.	5.	ug/l	93		87-117		
Bromodichloromethane	N.D.	1.	5.	ug/l	96		83-121		
Toluene	N.D.	0.7	5.	ug/l	91		85-115		
1,1,2-Trichloroethane	N.D.	0.8	5.	ug/l	90		86-113		

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron c/o ENSR-AECOM Group Number: 1012131
Reported: 11/16/06 at 09:48 PM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Tetrachloroethene	N.D.	0.8	5.	ug/l	90		74-125		
1,3-Dichloropropane	N.D.	1.	5.	ug/l	92		84-119		
Dibromochloromethane	N.D.	1.	5.	ug/l	95		78-119		
1,2-Dibromoethane	N.D.	1.	5.	ug/l	93		81-114		
Chlorobenzene	N.D.	0.8	5.	ug/l	90		85-115		
1,1,1,2-Tetrachloroethane	N.D.	1.	5.	ug/l	92		83-114		
Ethylbenzene	N.D.	0.8	5.	ug/l	92		82-119		
m+p-Xylene	N.D.	0.8	5.	ug/l	92		83-113		
o-Xylene	N.D.	0.8	5.	ug/l	91		83-113		
Styrene	N.D.	1.	5.	ug/l	90		82-111		
Bromoform	N.D.	1.	5.	ug/l	88		69-118		
Isopropylbenzene	N.D.	1.	5.	ug/l	93		80-120		
1,1,2,2-Tetrachloroethane	N.D.	1.	5.	ug/l	93		72-119		
Bromobenzene	N.D.	1.	5.	ug/l	92		82-110		
1,2,3-Trichloropropane	N.D.	1.	5.	ug/l	96		78-117		
n-Propylbenzene	N.D.	1.	5.	ug/l	94		78-119		
2-Chlorotoluene	N.D.	1.	5.	ug/l	91		78-115		
1,3,5-Trimethylbenzene	N.D.	1.	5.	ug/l	93		78-116		
4-Chlorotoluene	N.D.	1.	5.	ug/l	92		80-112		
tert-Butylbenzene	N.D.	1.	5.	ug/l	91		74-114		
1,2,4-Trimethylbenzene	N.D.	1.	5.	ug/l	92		78-117		
sec-Butylbenzene	N.D.	1.	5.	ug/l	96		72-120		
p-Isopropyltoluene	N.D.	1.	5.	ug/l	96		72-118		
1,3-Dichlorobenzene	N.D.	1.	5.	ug/l	92		81-114		
1,4-Dichlorobenzene	N.D.	1.	5.	ug/l	92		84-116		
n-Butylbenzene	N.D.	1.	5.	ug/l	92		69-128		
1,2-Dichlorobenzene	N.D.	1.	5.	ug/l	91		81-112		
1,2-Dibromo-3-chloropropane	N.D.	2.	5.	ug/l	90		55-127		
1,2,4-Trichlorobenzene	N.D.	1.	5.	ug/l	91		65-114		
Hexachlorobutadiene	N.D.	2.	5.	ug/l	91		62-119		
Naphthalene	N.D.	1.	5.	ug/l	92		61-116		
1,2,3-Trichlorobenzene	N.D.	1.	5.	ug/l	92		67-114		
Acetone	N.D.	6.	20.	ug/l	158		27-217		
Carbon Disulfide	N.D.	1.	5.	ug/l	93		69-119		
2-Butanone	N.D.	3.	10.	ug/l	119		52-163		
trans-1,3-Dichloropropene	N.D.	1.	5.	ug/l	89		79-114		
cis-1,3-Dichloropropene	N.D.	1.	5.	ug/l	88		78-114		
4-Methyl-2-pentanone	N.D.	3.	10.	ug/l	94		70-130		
2-Hexanone	N.D.	3.	10.	ug/l	104		61-140		
2-Chloroethyl Vinyl Ether	N.D.	2.	10.	ug/l	91		66-125		
Freon 113	N.D.	2.	10.	ug/l	105		66-125		
Batch number: W063061AB	Sample number(s): 4903594-4903596								
Ethanol	N.D.	50.	250.	ug/l	89		35-168		
Methyl Tertiary Butyl Ether	N.D.	0.5	4.	ug/l	89		73-119		
di-Isopropyl ether	N.D.	0.5	4.	ug/l	90		70-123		
Ethyl t-butyl ether	N.D.	0.5	4.	ug/l	90		74-120		
t-Amyl methyl ether	N.D.	0.5	4.	ug/l	89		79-113		
t-Butyl alcohol	N.D.	5.	20.	ug/l	92		69-127		
Dichlorodifluoromethane	N.D.	2.	5.	ug/l	99		39-160		
Chloromethane	N.D.	1.	5.	ug/l	90		56-134		
Vinyl Chloride	N.D.	1.	5.	ug/l	87		62-123		
Bromomethane	N.D.	1.	5.	ug/l	84		47-129		
Chloroethane	N.D.	1.	5.	ug/l	84		57-125		
Trichlorofluoromethane	N.D.	2.	5.	ug/l	102		67-136		

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron c/o ENSR-AECOM Group Number: 1012131
Reported: 11/16/06 at 09:48 PM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
1,1-Dichloroethene	N.D.	0.8	5.	ug/l	100		79-130		
Methylene Chloride	N.D.	2.	5.	ug/l	92		85-120		
trans-1,2-Dichloroethene	N.D.	0.8	5.	ug/l	91		83-117		
1,1-Dichloroethane	N.D.	1.	5.	ug/l	91		83-127		
2,2-Dichloropropane	N.D.	1.	5.	ug/l	94		74-130		
cis-1,2-Dichloroethene	N.D.	0.8	5.	ug/l	91		84-117		
Chloroform	N.D.	0.8	5.	ug/l	90		86-124		
Bromochloromethane	N.D.	1.	5.	ug/l	92		83-121		
1,1,1-Trichloroethane	N.D.	0.8	5.	ug/l	93		83-127		
Carbon Tetrachloride	N.D.	1.	5.	ug/l	94		77-130		
1,1-Dichloropropene	N.D.	1.	5.	ug/l	92		84-116		
Benzene	N.D.	0.5	4.	ug/l	91		85-117		
1,2-Dichloroethane	N.D.	0.5	4.	ug/l	93		77-132		
Trichloroethene	N.D.	1.	5.	ug/l	91		87-117		
1,2-Dichloropropane	N.D.	1.	5.	ug/l	92		80-117		
Dibromomethane	N.D.	1.	5.	ug/l	93		87-117		
Bromodichloromethane	N.D.	1.	5.	ug/l	96		83-121		
Toluene	N.D.	0.5	4.	ug/l	91		85-115		
1,1,2-Trichloroethane	N.D.	0.8	5.	ug/l	90		86-113		
Tetrachloroethene	N.D.	0.8	5.	ug/l	90		74-125		
1,3-Dichloropropane	N.D.	1.	5.	ug/l	92		84-119		
Dibromochloromethane	N.D.	1.	5.	ug/l	95		78-119		
1,2-Dibromoethane	N.D.	0.5	4.	ug/l	93		81-114		
Chlorobenzene	N.D.	0.8	5.	ug/l	90		85-115		
1,1,1,2-Tetrachloroethane	N.D.	1.	5.	ug/l	92		83-114		
Ethylbenzene	N.D.	0.5	4.	ug/l	92		82-119		
m+p-Xylene	N.D.	0.5	4.	ug/l	92		83-113		
o-Xylene	N.D.	0.5	4.	ug/l	91		83-113		
Styrene	N.D.	1.	5.	ug/l	90		82-111		
Bromoform	N.D.	1.	5.	ug/l	88		69-118		
Isopropylbenzene	N.D.	1.	5.	ug/l	93		80-120		
1,1,2,2-Tetrachloroethane	N.D.	1.	5.	ug/l	93		72-119		
Bromobenzene	N.D.	1.	5.	ug/l	92		82-110		
1,2,3-Trichloropropane	N.D.	1.	5.	ug/l	96		78-117		
n-Propylbenzene	N.D.	1.	5.	ug/l	94		78-119		
2-Chlorotoluene	N.D.	1.	5.	ug/l	91		78-115		
1,3,5-Trimethylbenzene	N.D.	1.	5.	ug/l	93		78-116		
4-Chlorotoluene	N.D.	1.	5.	ug/l	92		80-112		
tert-Butylbenzene	N.D.	1.	5.	ug/l	91		74-114		
1,2,4-Trimethylbenzene	N.D.	1.	5.	ug/l	92		78-117		
sec-Butylbenzene	N.D.	1.	5.	ug/l	96		72-120		
p-Isopropyltoluene	N.D.	1.	5.	ug/l	96		72-118		
1,3-Dichlorobenzene	N.D.	1.	5.	ug/l	92		81-114		
1,4-Dichlorobenzene	N.D.	1.	5.	ug/l	92		84-116		
n-Butylbenzene	N.D.	1.	5.	ug/l	92		69-128		
1,2-Dichlorobenzene	N.D.	1.	5.	ug/l	91		81-112		
1,2-Dibromo-3-chloropropane	N.D.	2.	5.	ug/l	90		55-127		
1,2,4-Trichlorobenzene	N.D.	1.	5.	ug/l	91		65-114		
Hexachlorobutadiene	N.D.	2.	5.	ug/l	91		62-119		
Naphthalene	N.D.	1.	5.	ug/l	92		61-116		
1,2,3-Trichlorobenzene	N.D.	1.	5.	ug/l	92		67-114		
Acetone	N.D.	6.	20.	ug/l	158		27-217		
Carbon Disulfide	N.D.	1.	5.	ug/l	93		69-119		
2-Butanone	N.D.	3.	10.	ug/l	119		52-163		
trans-1,3-Dichloropropene	N.D.	1.	5.	ug/l	89		79-114		

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron c/o ENSR-AECOM Group Number: 1012131
Reported: 11/16/06 at 09:48 PM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
cis-1,3-Dichloropropene	N.D.	1.	5.	ug/l	88		78-114		
4-Methyl-2-pentanone	N.D.	3.	10.	ug/l	94		70-130		
2-Hexanone	N.D.	3.	10.	ug/l	104		61-140		
2-Chloroethyl Vinyl Ether	N.D.	2.	10.	ug/l	91		66-125		
Freon 113	N.D.	2.	10.	ug/l	105		66-125		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 06303A07B	Sample number(s): 4903588-4903595 UNSPK: P901653								
TPH by NWTPH-Gx waters	42*		63-154						
Batch number: W063061AA	Sample number(s): 4903588-4903593 UNSPK: P900997								
Ethanol	85	91	34-161	5	30				
Methyl Tertiary Butyl Ether	89	88	69-127	1	30				
di-Isopropyl ether	93	93	75-130	0	30				
Ethyl t-butyl ether	91	92	78-119	1	30				
t-Amyl methyl ether	90	90	72-125	1	30				
t-Butyl alcohol	90	90	64-130	0	30				
Dichlorodifluoromethane	106	101	48-186	5	30				
Chloromethane	98	95	59-148	3	30				
Vinyl Chloride	97	94	67-142	3	30				
Bromomethane	86	88	52-141	2	30				
Chloroethane	93	91	63-142	2	30				
Trichlorofluoromethane	109	106	75-163	2	30				
1,1-Dichloroethene	109	106	87-145	3	30				
Methylene Chloride	91	90	79-133	1	30				
trans-1,2-Dichloroethene	98	98	82-133	0	30				
1,1-Dichloroethane	96	95	85-135	0	30				
2,2-Dichloropropane	98	96	79-146	2	30				
cis-1,2-Dichloroethene	94	95	83-126	1	30				
Chloroform	96	95	82-131	0	30				
Bromochloromethane	95	95	82-129	0	30				
1,1,1-Trichloroethane	97	98	81-142	1	30				
Carbon Tetrachloride	100	98	82-149	2	30				
1,1-Dichloropropene	99	98	86-134	1	30				
Benzene	98	97	83-128	1	30				
1,2-Dichloroethane	91	91	70-143	0	30				
Trichloroethene	94	93	83-136	1	30				
1,2-Dichloropropane	97	94	83-129	2	30				
Dibromomethane	93	89	82-128	4	30				
Bromodichloromethane	96	95	80-129	2	30				
Toluene	97	95	83-127	2	30				
1,1,2-Trichloroethane	89	90	77-125	2	30				
Tetrachloroethene	96	94	78-133	1	30				
1,3-Dichloropropane	90	92	82-121	1	30				
Dibromochloromethane	95	94	82-119	1	30				
1,2-Dibromoethane	89	91	78-120	2	30				

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron c/o ENSR-AECOM Group Number: 1012131
Reported: 11/16/06 at 09:48 PM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Chlorobenzene	93	93	83-120	0	30				
1,1,1,2-Tetrachloroethane	94	94	83-119	0	30				
Ethylbenzene	96	96	82-129	0	30				
m+p-Xylene	97	95	82-130	2	30				
o-Xylene	95	95	82-130	1	30				
Styrene	94	94	69-131	0	30				
Bromoform	87	84	64-119	4	30				
Isopropylbenzene	100	98	81-130	3	30				
1,1,2,2-Tetrachloroethane	87	85	73-121	3	30				
Bromobenzene	92	94	83-121	3	30				
1,2,3-Trichloropropane	87	85	73-125	2	30				
n-Propylbenzene	99	99	74-138	1	30				
2-Chlorotoluene	95	95	78-121	0	30				
1,3,5-Trimethylbenzene	98	97	77-124	1	30				
4-Chlorotoluene	95	96	81-123	0	30				
tert-Butylbenzene	97	95	76-128	2	30				
1,2,4-Trimethylbenzene	95	95	80-125	0	30				
sec-Butylbenzene	102	100	73-137	2	30				
p-Isopropyltoluene	99	98	72-128	1	30				
1,3-Dichlorobenzene	94	92	79-123	2	30				
1,4-Dichlorobenzene	94	93	81-122	1	30				
n-Butylbenzene	96	95	67-141	1	30				
1,2-Dichlorobenzene	92	91	82-117	1	30				
1,2-Dibromo-3-chloropropane	77	76	52-137	1	30				
1,2,4-Trichlorobenzene	92	89	60-121	2	30				
Hexachlorobutadiene	97	94	51-135	3	30				
Naphthalene	85	84	50-124	0	30				
1,2,3-Trichlorobenzene	93	90	65-127	3	30				
Acetone	76	73	48-143	4	30				
Carbon Disulfide	100	98	74-135	2	30				
2-Butanone	79	78	57-137	2	30				
trans-1,3-Dichloropropene	90	89	77-123	1	30				
cis-1,3-Dichloropropene	88	88	80-126	0	30				
4-Methyl-2-pentanone	85	83	68-133	2	30				
2-Hexanone	82	82	60-135	0	30				
2-Chloroethyl Vinyl Ether	0*	0*	1-166	0	30				
Freon 113	112	112	78-146	0	30				
Batch number: W063061AB	Sample number(s): 4903594-4903596 UNSPK: P900997								
Ethanol	85	91	34-161	5	30				
Methyl Tertiary Butyl Ether	89	88	69-127	1	30				
di-Isopropyl ether	93	93	75-130	0	30				
Ethyl t-butyl ether	91	92	78-119	1	30				
t-Amyl methyl ether	90	90	72-125	1	30				
t-Butyl alcohol	90	90	64-130	0	30				
Dichlorodifluoromethane	106	101	48-186	5	30				
Chloromethane	98	95	59-148	3	30				
Vinyl Chloride	97	94	67-142	3	30				
Bromomethane	86	88	52-141	2	30				
Chloroethane	93	91	63-142	2	30				
Trichlorofluoromethane	109	106	75-163	2	30				
1,1-Dichloroethene	109	106	87-145	3	30				

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron c/o ENSR-AECOM Group Number: 1012131
Reported: 11/16/06 at 09:48 PM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Methylene Chloride	91	90	79-133	1	30				
trans-1,2-Dichloroethene	98	98	82-133	0	30				
1,1-Dichloroethane	96	95	85-135	0	30				
2,2-Dichloropropane	98	96	79-146	2	30				
cis-1,2-Dichloroethene	94	95	83-126	1	30				
Chloroform	96	95	82-131	0	30				
Bromochloromethane	95	95	82-129	0	30				
1,1,1-Trichloroethane	97	98	81-142	1	30				
Carbon Tetrachloride	100	98	82-149	2	30				
1,1-Dichloropropene	99	98	86-134	1	30				
Benzene	98	97	83-128	1	30				
1,2-Dichloroethane	91	91	70-143	0	30				
Trichloroethene	94	93	83-136	1	30				
1,2-Dichloropropane	97	94	83-129	2	30				
Dibromomethane	93	89	82-128	4	30				
Bromodichloromethane	96	95	80-129	2	30				
Toluene	97	95	83-127	2	30				
1,1,2-Trichloroethane	89	90	77-125	2	30				
Tetrachloroethene	96	94	78-133	1	30				
1,3-Dichloropropane	90	92	82-121	1	30				
Dibromochloromethane	95	94	82-119	1	30				
1,2-Dibromoethane	89	91	78-120	2	30				
Chlorobenzene	93	93	83-120	0	30				
1,1,1,2-Tetrachloroethane	94	94	83-119	0	30				
Ethylbenzene	96	96	82-129	0	30				
m+p-Xylene	97	95	82-130	2	30				
o-Xylene	95	95	82-130	1	30				
Styrene	94	94	69-131	0	30				
Bromoform	87	84	64-119	4	30				
Isopropylbenzene	100	98	81-130	3	30				
1,1,2,2-Tetrachloroethane	87	85	73-121	3	30				
Bromobenzene	92	94	83-121	3	30				
1,2,3-Trichloropropane	87	85	73-125	2	30				
n-Propylbenzene	99	99	74-138	1	30				
2-Chlorotoluene	95	95	78-121	0	30				
1,3,5-Trimethylbenzene	98	97	77-124	1	30				
4-Chlorotoluene	95	96	81-123	0	30				
tert-Butylbenzene	97	95	76-128	2	30				
1,2,4-Trimethylbenzene	95	95	80-125	0	30				
sec-Butylbenzene	102	100	73-137	2	30				
p-Isopropyltoluene	99	98	72-128	1	30				
1,3-Dichlorobenzene	94	92	79-123	2	30				
1,4-Dichlorobenzene	94	93	81-122	1	30				
n-Butylbenzene	96	95	67-141	1	30				
1,2-Dichlorobenzene	92	91	82-117	1	30				
1,2-Dibromo-3-chloropropane	77	76	52-137	1	30				
1,2,4-Trichlorobenzene	92	89	60-121	2	30				
Hexachlorobutadiene	97	94	51-135	3	30				
Naphthalene	85	84	50-124	0	30				
1,2,3-Trichlorobenzene	93	90	65-127	3	30				
Acetone	76	73	48-143	4	30				
Carbon Disulfide	100	98	74-135	2	30				

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron c/o ENSR-AECOM Group Number: 1012131
Reported: 11/16/06 at 09:48 PM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
2-Butanone	79	78	57-137	2	30				
trans-1,3-Dichloropropene	90	89	77-123	1	30				
cis-1,3-Dichloropropene	88	88	80-126	0	30				
4-Methyl-2-pentanone	85	83	68-133	2	30				
2-Hexanone	82	82	60-135	0	30				
2-Chloroethyl Vinyl Ether	0*	0*	1-166	0	30				
Freon 113	112	112	78-146	0	30				

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 06303A07B

	Trifluorotoluene-F
4903588	89
4903589	83
4903590	111
4903591	96
4903592	83
4903593	89
4903594	91
4903595	85
Blank	89
LCS	92
LCSD	96
MS	92
Limits:	63-135

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 063050024A

	Orthoterphenyl
4903588	120
4903590	121
4903591	108
4903592	102
Blank	107
LCS	106
LCSD	113
Limits:	50-150

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 063050027A

	Orthoterphenyl

*- Outside of specification
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Quality Control Summary

Client Name: Chevron c/o ENSR-AECOM Group Number: 1012131
Reported: 11/16/06 at 09:48 PM

Surrogate Quality Control

4903593	108
4903594	104
4903595	101
Blank	98
LCS	99
LCSD	99
Limits:	50-150

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 063120000A

	Orthoterphenyl
4903589	93
Blank	94
LCS	111
LCSD	106
Limits:	50-150

Analysis Name: EPA SW846/8260 (water)
Batch number: W063061AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4903588	84	82	83	79
4903589	84	81	84	78
4903590	84	81	85	82
4903591	84	81	84	80
4903592	84	79	84	78
4903593	85	81	84	78
Blank	85	81	83	78
LCS	84	84	85	82
MS	83	84	86	81
MSD	85	81	86	83
Limits:	80-116	77-113	80-113	78-113

Analysis Name: EPA SW846/8260 (water)
Batch number: W063061AB

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4903594	90	92	90	85
4903595	91	93	89	85
4903596	89	91	89	84
Blank	88	94	90	86
LCS	84	84	85	82
MS	83	84	86	81
MSD	85	81	86	83
Limits:	80-116	77-113	80-113	78-113

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron Northwest Region Analysis Request/Chain of Custody

222622

Lancaster Laboratories
Where quality is a science.

Acct. #: 12094 For Lancaster Laboratories use only Sample #: 490358896 SCR#:

C#1012131

Facility #: 306535
Site Address: 16409 36th AVE W, LYNNWOOD, WA
Chevron PM: DARRIN ROUSE Lead Consultant: ENSR
Consultant/Office: ENSR
Consultant Prj. Mgr.: ART COWBURN
Consultant Phone #: 425 881 7700 Fax #: 425 8834473
Sampler: D. ROAR A. LUNDE
Service Order #: 204-4248 ☐ Non SAR:

Analyses Requested

Preservation Codes

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy s on highest hit
☐ Run ____ oxy s on all hits

Sample Identification	Date Collected	Time Collected	Grab	Composite	Matrix: Soil	Water	Oil ☐ Air ☐	Total Number of Containers	BTEX + MTBE 8021 ☐ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates	TPH G	TPH D ☒ Extended Rng. ☒ Silica Gel Cleanup	Lead Total ☐ Dis. ☐ Method	VPH/EPH	NWTPH H HCID ☐ quantification	
5533-MW3-102706	10-27-06	1315	X			X		8		X		X	X				
5533-MW4-102706	10-27-06	1335	X			X		8		X		X	X				
5533-MW5-102706	10-27-06	1430	X			X		8		X		X	X				
5533-MW6-102706	10-27-06	1435	X			X		8		X		X	X				
5533-MW9-102706	10-27-06	1100	X			X		7		X		X	X				
5533-MW11R-102706	10-27-06	1155	X			X		8		X		X	X				
5533-R1-102706	10-27-06	1205	X			X		8		X		X	X				
5533-R2-102706	10-27-06	1045	X			X		8		X		X	X				
TRIP BLANK	—	—				X		2		X							

Comments / Remarks

Turnaround Time Requested (TAT) (please circle)
STD. TAT 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)
QC Summary Type I - Full
Type VI (Raw Data) Disk / EDD
WIP (RWQCB) Standard Format
Disk _____ Other.

Relinquished by:	Date	Time	Received by:	Date	Time
	10/30/06	1553	FED EX		
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by Commercial Carrier: UPS FedEx Other			Received by:	11/31/06	1120
Temperature Upon Receipt 1.0-2.2 C°			Custody Seals Intact? Yes No		

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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About ENSR

[illegible] companies and [illegible] consulting, engineering, remediation, and environmental health and safety solutions. ENSR is a recipient of the BP HSSE Diamond Award, Texron Environmental Remediation Partner in Excellence Award, and Environmental Business Journal awards. As an AECOM company, ENSR is part of a global network and management company with 24,000 employees worldwide serving the transportation, [illegible] and engineering markets.

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Massachusetts
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800.722.2440

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