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LETTER OF TRANSMITTAL

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Project #

TO: HCDEH
100 H St., Suite 100
Eureka, CA 95501
ATTN: Mr. Mark Verhey

DATE: June 29, 2005
JOB NO.: 3472.04
PROJECT: Former Totem Pole Market

TRANSMITTED BY: ☒ Mail ☐ Delivered In Person ☐ Fax

No. Copies		Description
1	1.	Subsurface Investigation Status & Groundwater Monitoring Report
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	6.	

REMARKS:

THIS MATERIAL SENT FOR: ☒ As Requested ☒ Information ☐ Approval ☐

cc: Valerie Ellis

By: V.T. Sullivan
Vincent T. Sullivan

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SUBSURFACE INVESTIGATION STATUS REPORT AND GROUNDWATER MONITORING REPORT

Boring and Monitoring Well Installation and First Quarter 2005 Monitoring Results

Former Totem Pole Market
508 South Fortuna Boulevard, Fortuna, California

LOP No. 12028

Prepared for:
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June 2005
Project No. 3472.04

SUBSURFACE INVESTIGATION STATUS AND GROUNDWATER MONITORING REPORT

Boring and Monitoring Well Installation & First Quarter 2005 Monitoring Results

Former Totem Pole Market; 508 South Fortuna Boulevard, Fortuna, California

LOP No. 12028; LACO ASSOCIATES Project No. 3472.04

EXECUTIVE SUMMARY

The installation of borings and monitoring wells was completed at the subject site in Fortuna, California (Figure 1) in February 2005. The work was performed in general accordance with the January 2004 *Letter Workplan: Monitoring Well and Boring Installation,* prepared by LACO and approved by the Humboldt County Division of Environmental Health (HCDEH). Results of the investigation provide evidence supporting the delineation of gasoline range material soil and groundwater, and a two aquifer model separated by a confining layer. Reconstruction of the monitoring well network to evaluate groundwater quality within the discrete water bearing zones is recommended. An evaluation of dissolved gasoline range material decay rates and a feasibility analysis for excavation of gasoline impacted soil is also included.

INTRODUCTION

Two 1,000-gallon gasoline and one 550-gallon waste oil underground storage tanks (USTs) were filled with concrete in 1988. Site characterization began in 1990 and groundwater monitoring was initiated in 1996. Approximately 180 cubic yards of gasoline impacted soil and the USTs were excavated in 1994. Results of fieldwork to complete site characterization and install additional monitoring wells are presented, including sampling and drilling methodologies, laboratory results, interpretation of findings, and recommendations for future work at the site.

BORING INSTALLATION

Field Methods

On February 2, 2005, LACO installed borings (B10 through B12) at the subject site (Figure 2). Borings were installed to a depth of 20 feet below ground surface (bgs) using a direct-push rig fitted with a piston-rod soil sampler. Drilling rods and sampling equipment were decontaminated before and after each use with an Alconox solution and clean water rinse. Soil lithology was classified in accordance with ASTM D-2488 criteria. Boring logs are included as Attachment 1.

Soil samples were generally collected at 4, 8, 12, 16 and 20 feet bgs and placed in laboratory-supplied brass tubes, sealed with Teflon, and capped. A groundwater sample was collected from

boring B10 between 16 to 20 feet bgs using a screen-point sampler interval and disposable tubing equipped with a check ball pump. Samples were stored in ice-filled coolers and submitted to North Coast Laboratories, Ltd. (NCL) for analysis under standard chain-of-custody protocol. Boring B10 was abandoned with hydrated bentonite chips to 2 feet bgs, and grout topped with gravel to match existing grade. Borings B11 and B12 were temporarily closed with bentonite to grade, and covered with a traffic cone pending well installation.

Laboratory Analysis

Soil samples were analyzed for:

- Total Petroleum Hydrocarbons as gasoline (TPHg) by EPA Method 8260B
- Total Petroleum Hydrocarbons as diesel (TPHd) with Silica Gel Cleanup by EPA Method 3550
- Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX) by EPA Method 8260B
- Methyl Tertiary Butyl ether (MTBE), Tert-butyl alcohol (TBA), Di-isopropyl alcohol (DIPE), Ethyl tert-butyl ether (ETBE) and Tert-amyl methyl ether (TAME) by EPA Method 8260B

Groundwater samples were analyzed for:

- TPHg by EPA Method 8260B
- TPHd with Silica Gel Cleanup by EPA Method 3510
- BTEX by EPA Method 8260B
- MTBE, TBA, DIPE, ETBE and TAME by EPA Method 8260B

MONITORING WELL INSTALLATION

Field Methods

On February 3, 2005, LACO installed three monitoring wells (MW4S, MW4D and MW5) at the subject site. A site map with the monitoring wells locations is presented as Figure 2. The monitoring wells were installed using a rotary drill rig fitted with 6 5/8-inch outside-diameter hollow stem augers. Monitoring wells MW4D and MW5 were installed by over-drilling borings B11 and B12. Monitoring well MW4D was installed to 18 feet bgs, with a screened interval of 13 to 18 feet bgs. Monitoring well MW4S was installed to 9 feet bgs, with a screened interval of 4 to 9 feet bgs, and monitoring well MW5 was installed to 20 feet bgs, with a screening interval of 15 to 20 feet bgs.

Wells were constructed with 2-inch Schedule 40 PVC pipe with 0.010-inch slotted screen and 2-inch solid Schedule 40 PVC casing, with a locking well cap. The annular space was filled with #2/16 sand from the total depth to one foot above the screen, a hydrated bentonite seal to 2 feet bgs, and completed with high-strength grout to approximately 8 inches bgs. A 6-inch, traffic-rated access box was set in the high-strength grout over the well.

The wells were developed February 9, 2005, by purging several well volumes of water to remove fine-grained material from the well and surrounding soil disturbed during well installation. Wellhead location and top of casing elevation were surveyed to Geotracker requirements by a licensed surveyor. Initial sampling of the new wells was performed concurrent with the first quarter 2005 sampling event of February 28, 2005. Field notes are included as Attachment 2.

Analytical Results

Soil analytical results are included in Table 1. Groundwater analytical results are included in Table 2. Copies of the laboratory reports are included as Attachment 3. TPHg isoconcentrations in soil are presented on Figure 3. Please refer to the laboratory reports for an explanation of the analytical results. In general, laboratory notations are typical at sites with older or weathered petroleum constituents, in which the samples contain material in the gasoline and/or diesel range of molecular weights, but exhibited less definable results on the chromatograph.

FIRST QUARTER 2005 GROUNDWATER MONITORING

Field Methods

Field activities associated with the first quarter 2005 groundwater monitoring event were conducted on February 28, 2005. Please refer to Table A for the current groundwater monitoring regime. A depth-to-water measurement and groundwater sample were not collected from monitoring well MW3 because the well was inaccessible.

Table A: Sampling Regime for February 28, 2005

MONITORING WELL ID	SCREENED INTERVAL (feet)	DTW (feet)	PURGE METHOD	WATER QUALITY PARAMETERS	ANALYTICALS	SAMPLING SCHEDULE
					ORGANICS	
MW1	5-15	8.75	DHP	ORP, DO	TPHg, BTEX, MTBE, DIPE, ETBE, TAME, TBA, TPHd, w/ SGC	Quarterly
MW2	5-15	2.92				
MW3	5-15	---	---	---	---	
MW4S	4-9	3.39	DHP	ORP, DO	TPHg, BTEX, MTBE, DIPE, ETBE, TAME, TBA, TPHd,w/ SGC	
MW4D	13-18	11.93				
MW5	15-20	11.05				

A key to this Table is included as Attachment 4.

Hydrogeology

Stratigraphic data from this investigation provides evidence supporting a two aquifer model (shallow and deep) separated by a low permeability unit. The soil types encountered during drilling borings B10 through B12 were primarily clayey silt and silty clay with intermittent layers of poorly graded sands below 12 feet bgs. Saturated conditions were observed from 4 to 8 feet bgs and again from 13 feet bgs to the total explored depth. This interpretation implies the screen interval of monitoring wells MW1 through MW3 connects the two water bearing zones. Use of these wells to calculate a hydraulic gradient is therefore limited in that the calculated hydraulic head is averaged over two water bearing zones. We interpret a northwesterly hydraulic gradient in the shallow zone, supported by the distribution of dissolved phase constituents observed at the site. Although the calculated hydraulic head in monitoring wells MW1, MW4D and MW5, are similar, these three wells are in a straight line. Therefore, an accurate hydraulic gradient for the deep zone cannot be calculated. Hydraulic head data is summarized in Table 1 and a figure showing the hydraulic head of each monitoring well is included as Figure 4.

Laboratory Results

Laboratory results are summarized in Table 3 and copies of the laboratory report are included as Attachment 3. Table B (included below) presents the laboratory results of the current sampling event. Please refer to the laboratory reports for an explanation of the analytical results. In general, laboratory notations are typical at sites with older or weathered petroleum constituents, in which the samples contain material in the gasoline and/or diesel range of molecular weights, but exhibited less definable results on the chromatograph.

Table B: Analytical Results (2/28/05)

WELL	TPHg (µg/L)	TPHd (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	Additional Analytes (µg/L)
MW1	**3,700**	**160**	ND<0.50	ND<0.50	**4.4**	**0.60**	ND<1.0	**DIPE = 2.3** Others ND<1.0-10
MW2	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.5	ND<1.0-10
MW3	---	---	---	---	---	---	---	---
MW4S	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.5	ND<1.0-10
MW4D	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.5	ND<1.0-10
MW5	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.5	ND<1.0-10

ND<0.50: The analyte was reported below the laboratory detection limit indicated.

DISCUSSION

Secondary Source

Site characterization to date provides evidence that the remaining gasoline impacted soil (up to 1,100 μg/g) is located north of the site, beneath First Street, and extends west approximately 40 feet down First Street (Figure 3). This secondary source primarily extends to depth of 5 feet bgs with one elevated detection (370 μg/g) between 7 to 9 feet bgs

TPHg (130 µg/g) reported for the sample collected from boring B9/1-16, installed south of the market building in 1997, contrasts with TPHg (ND<1 µg/g) reported in soil boring B10, located adjacent to boring B9/1-16. The sample from boring B10 was collected a few feet south and deeper than the sample from boring B9/1-16. This suggests spatial decrease more than physical decay.

Analytical results from this investigation suggest that the gasoline impacted soil reported in borings B11 (53 μg/g) and B12 (ND), along First Street, represent a lateral concentration decrease, notably in contrast to historical boring B6/1-16 (910 μg/g) located approximately 15 feet upgradient of boring B11. Therefore, samples from borings B11 and B12 provide evidence to delineate the impact of petroleum hydrocarbons in soil along First Street.

Soil analytical data were used to define zones of like concentrations and estimate the mass of remaining sorbed phase TPHg. The calculations produce a result of approximately 170 kilograms (kg) TPHg soil on-site, mostly under the market, and approximately 230 kg along First Street (Table 4).

FEASIBILITY STUDY OF REMEDIATION ALTERNATIVES

Two remediation options are presented: 1) over-excavation of TPHg impacted soil; and 2) monitored natural attenuation (MONA). The feasibility study is based on: 1) an evaluation of advantages/disadvantages; 2) calculations of an observed point attenuation rate; 3) published first order rate constant; 4) groundwater seepage velocity; and 5) the proximity of a domestic well located at 478 South Fortuna Boulevard, approximately 80 feet north northwest of the site.

Over-Excavation

Over-excavation involves chemical characterization and physical removal of gasoline impacted soil. Removed soil is transported and disposed of at a facility licensed to accept gasoline impacted soil. TPHg in soil has been delineated on-site and within the area of First Street, northeast of the on-site market (Figure 3).

Advantages of excavation include the immediate removal of approximately 230 kg of gasoline impacted soil from further impact to groundwater. Disadvantages include excavation around buried utilities and within a public right-of-way; and therefore include the limitations set forth by the utility companies and local municipality. Review of historical Groundwater Monitoring Report (GMR) hydraulic head elevations suggests that implementation of the excavation should occur late in the summer to avoid high hydraulic head elevations from the perched aquifer observed in the winter and spring seasons.

Over-excavation limits are based on removal of soil to a concentration which will lead to a TPHg concentration in groundwater that will reach the water quality objective within a reasonable timeframe. This concentration is based on a first order rate constant and distribution coefficient of TPHg, and water quality objective (WQO) timelines. Calculations are presented on Worksheet 1. Because coinciding soil/groundwater data is limited in the area of the proposed excavation, LACO analyzed soil/groundwater data from a neighboring UST site in Fortuna, to draw conclusions regarding distribution coefficients at this site. The neighboring site shares similar site soil types, and soil and groundwater that are impacted by degraded/weathered gasoline.

Discussion of Excavation Limit Calculations

A first order rate constant for TPHg was determined based on the published half-life of cyclohexane. A half-life for gasoline is not realistic as it is a complex formulation of many chemicals; however, cyclohexane is a major component in standard gasoline formulation, making up to approximately 32 percent by volume of the formulation (Nyer et al., 1996). Cyclohexanes were also reported as a major component in a groundwater sample collected from monitoring well MW1 during the May 2001 sampling event. Attachment 5 presents a data sheet from Agricultural and Priority Pollutants Laboratories, Inc. (APPL), illustrating the relative concentrations of separate chemicals comprising degraded dissolved TPHg at this site. Based on data presented in Attachment 5, cyclohexanes comprise approximately 36 percent of TPHg. This supports Nyer's estimate; therefore, we conclude that cyclohexane is a representative proxy for a gasoline half-life.

The cyclohexane half-life for aqueous biodegradation under anaerobic conditions was obtained from Howard's *Handbook of Environmental Degradation Rates* (Howard, 1991). Howard's cyclohexane half-life is 24 months. A first order rate constant of (-) 0.00095 day^{-1} was calculated using Howard's cyclohexane half-life and the first order decay equation:

$$C_f = C_o e^{-kt}$$

Where:
C_f is the final concentration
C_o is the initial concentration
e, the base of the natural logarithm
k is the first order rate constant (Newell et al, 2002)
t is the time

Initial concentrations of TPHg were calculated using TPHg's WQO of 50 μg/L as the final concentration; the first order rate constant, (-) 0.00095 day^{-1}; and decay periods of both 15 and 20 years. Results of initial groundwater concentrations are presented on Worksheet 1.

Finally, to determine the TPHg excavation limit concentration from the initial dissolved TPHg concentrations (described above), the distribution coefficient from a neighboring site was used. A distribution coefficient is determined using equation:

$$K_D=[S]/[W]$$

Where:
[S] is the TPHg concentration in soil
[W] is the TPHg concentration in water

A distribution coefficient is the ratio of sorbed and dissolved concentrations in a given soil/water matrix. Our use of a distribution coefficient assumes the chemical phases are in equilibrium. An average distribution coefficient was determined from several points at a neighboring site to be 0.024 L/g (Worksheet 1). Multiplying the initial dissolved TPHg concentration calculated to meet WQOs in 15 years (9,075 μg/L, Worksheet 1) by the distribution coefficient, results in an over-excavation limit concentration of approximately 200 μg/g. However, to meet WQO in 20 years the over-excavation limit is approximately 1,240 μg/g.

Excavation of impacted soil would be warranted if 20 years is not an acceptable timeline to reach WQOs. Figure 5 presents the approximate limits of over-excavation to meet WQOs in 15 years. If 20 years is an acceptable timeline then MONA may be a more cost effective option.

Monitored Natural Attenuation

Natural attenuation is an *in-situ* treatment which monitors bio-chemical and geo-chemical processes, which destroys subsurface contaminants. Microorganisms in soil and groundwater have been found to degrade petroleum hydrocarbons by using the hydrocarbons as an energy

source during aerobic respiration, anaerobic respiration, and fermentation. Advantages of the MONA remedial alternative include the low cost, minimal site disturbance, and the ability to remediate contamination below structures.

TPHg concentrations from the monitoring well with the highest dissolved TPHg concentrations observed at the site were used in several calculations to determine a first order point attenuation rate constant, degradation timelines, seepage velocities, and potential impact to groundwater near the domestic well located at 478 Fortuna Boulevard. These calculations ultimately estimate the date of impact to the domestic well assuming that groundwater gradient is to the northwest. Additionally assumed is: 1) the entire groundwater column is impacted by dissolved TPHg evenly (i.e. there is no vertical delineation); and 2) the plume is not receding. Calculations and more assumptions are presented in Worksheet 2.

Discussion of MONA Calculations

TPHg concentrations reported in MW1 have been steadily increasing since approximately 2001; however, prior to 2001, TPHg concentrations, were declining (Chart 1). As stated in the *Status Report*, dated July 12, 2002, LACO speculated early 2001 modifications to the storm water collection system along south Fortuna Boulevard, reduced the amount of infiltration to the perched water-bearing unit. This, in turn, created the appearance of an increase in dissolved TPHg/BTEX concentrations in the perched aquifer due to a decrease in water to the system. The hydrologic change does not appear to have increased the mass of dissolved TPHg/BTEX, but likely reduced the potential for migration and dilution.

To compare with the first order rate constant calculated from the published cyclohexane half life, above, an observed point attenuation rate was determined from TPHg concentrations from monitoring well MW1 prior to the storm drain modifications and the May 3, 2001 sampling event. Chart 1 presents the trend in TPHg concentrations as reported in monitoring well MW1 from August 1996 to March 1999. An exponential trendline was used to compare the trendline point attenuation rate (k_{point}) (Newell, et al., 2002) at the site to the published first order rate constant from cyclohexane. The equation for the exponential trendline matches the format of first order decay equation:

$$C_f = C_o e^{-kt}$$

Where:

C_f is the final concentration

C_o is the initial concentration

e, the base of the natural logarithm

k is the first order rate constant (Newell et al, 2002)
t is the time

Worksheet 2 presents calculations for MONA, using both the first order rate constant calculated from published cyclohexane half-life data, and observed point attenuation rates from TPHg concentrations in monitoring well MW1 from August 1996 to March 1999. According to calculations presented on Worksheet 2, dissolved TPHg concentrations in monitoring well MW1 will reach WQOs in approximately 13 years using the published first order rate constant, and approximately 21 years using the observed point attenuation rate.

Based on the dissolved TPHg distribution (Figure 6), we assume groundwater gradient in the impacted aquifer is in the northwesterly direction, towards the nearest domestic well. To determine the approximate time when the highest dissolved TPHg concentration to date (4,700 μg/L, May 3, 2001) may impact the nearest domestic well located approximately 80 feet north northwest of the site, seepage velocities were calculated using the equation:

$$V=i(k)/n_{eff}$$

Where:
i is the hydraulic gradient
k, the hydraulic conductivity of the soil unit
n_{eff} is the effective porosity of the soil unit

The seepage velocity calculation suggests that advection dominates fate and transport of impacted groundwater at the site. However, diffusion, dispersion, dilution, sorption, volatilization, and natural attenuation all govern fate and transport of an impacted aquifer, in addition to advection. Therefore, the seepage velocities calculated represent the quickest time to impact the domestic well, without considering other fate and transport factors.

Based on review of boring and monitoring well logs associated with this site, three soil units exist below the site: 1) the gravel fill of the perched aquifer; 2) fine grained silty clay and clayey silt to a depth of approximately 11 feet; and 3) gravelly sand observed at a depth of approximately 15 feet. The gravel fill and fine grained silty clay and clayey silt tend to dominate the upper perched aquifer, and the gravelly sand tends to dominate the lower aquifer. A seepage velocity was calculated for each of the native soil units based on calculated hydraulic gradients in the northwest direction at the site, hydraulic conductivities from Freeze and Cherry (1979), and assumed porosities. The observed seepage velocity was also calculated. Worksheet 2 presents the assumptions and results of each calculation.

According to calculated seepage velocities, elevated TPHg as reported in monitoring well MW1 during the May 3, 2001 sampling event would impact the nearest domestic well, located at 478 South Fortuna Boulevard, approximately 80 feet north northwest of the site:

- Observed seepage velocity impact date: approximately 2011
- Silty clay seepage velocity impact date: approximately 3547
- Gravelly sand seepage velocity impact date: 2003, current

Three of the four reported domestic wells (LACO, 1999) in the area were sampled for gasoline and diesel range material in March 2001, and results are presented in the July 2002 *Status Report* (LACO, 2002). The nearest domestic well, at 478 South Fortuna Boulevard was not sampled; therefore, we do not currently know if groundwater quality near the well is impacted or not. According to laboratory results, domestic wells at 1702 (1701) First Street, 491 (485) Spring Street, and 555 Spring Street were not impacted with dissolved TPHg as of March 2001. TPHd (58 μg/L) was detected in the domestic well located at 555 South Spring during the March sampling event, but not during the May sampling event. The March sample was analyzed without a silica gel clean-up; therefore, reported petroleum hydrocarbons may actually be natural organics in the water eluting as TPHd. Because groundwater direction in the two separate aquifers has not been evaluated for the site, any impact to the 555 Spring domestic well may not be originating from the site, and the potential impact to the nearest domestic well is unknown at this time. A more complete study regarding the impact to the domestic wells will be presented following the sampling of the 478 South Fortuna Boulevard well, and the reconstruction of the monitoring well network, and a hydrologic cycle of quarterly groundwater monitoring evaluations.

CONCLUSIONS

- The lateral and vertical extent of gasoline impacted soil and groundwater has been delineated.
- Two water bearing units occur within the top 20 feet of the soil profile at the site. This implies monitoring wells MW1, MW2, and MW3 are screened across two water bearing units.

RECOMMENDATIONS

- Incorporate monitoring wells MW4S, MW4D and MW5 into the quarterly groundwater monitoring schedule.

- Reconstruction of monitoring wells MW1, MW2, and MW3 as well pairs, and the installation of one additional well pair screened in the shallow and deep water bearing zones. The additional well pair will be installed near boring B5.
- Monitor groundwater on a monthly basis from wells in the secondary source to evaluate the timeline to reach WQOs.
- If the timeline to reach WQOs, determined by one year of monitoring data, is greater than 25 years, over-excavate off-site gasoline impacted soil to a TPHg concentration of 200 μg/g along First Street.
- Collect groundwater sample from the domestic well located at 478 South Fortuna Boulevard to assess potential impacts to well originating from this site.

LIMITATIONS

LACO ASSOCIATES has exercised a standard of care equal to that generated for this industry to ensure that the information contained in this report is current and accurate. LACO ASSOCIATES disclaims any and all liability for any errors, omissions, or inaccuracies in the information and data presented in this report and/or any consequences arising therefrom, whether attributable to inadvertence or otherwise. LACO ASSOCIATES makes no representations or warranties of any kind, including, but not limited to, any implied warranties with respect to the accuracy or interpretations of the data furnished. LACO ASSOCIATES assumes no responsibility of any third party reliance on the data presented, and that data generated for this report represents information gathered at that time, and at the indicated locations. It should not be utilized by any third party to represent data for any other time or location. The report is valid solely for the purpose, site, and project described in this document. Any alteration, unauthorized distribution, or deviation from this description will invalidate this report.

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XI. FIGURES, TABLES AND ATTACHMENTS

Figure 1: Location Map
Figure 2: Site Map
Figure 3: TPHg Concentration in Soil 0' and 10' bgs
Figure 4: Hydraulic Head Map (2/28/05)
Figure 5: Approximate Limits of Proposed Over-Excavation
Figure 6: Historical TPHg Concentrations in Groundwater

Table 1: Results of Laboratory Analysis for Soil
Table 2: Results of Laboratory Analysis for Groundwater – Borings
Table 3: Monitoring Well Data and Groundwater Analytical Results
Table 4: Mass Calculations of Sorbed TPHg On and Off-Site

Chart 1: TPHg Concentrations and Trend Line for August 1996 to March 1999

Worksheet 1: Calculations for Over-Excavation as a Remedial Option
Worksheet 2: Calculations for MONA as a Remedial Option

Attachment 1: Boring Logs
Attachment 2: Field Notes
Attachment 3: Copy of Laboratory Analytical Results
Attachment 4: Key to Abbreviations
Attachment 5: APPL Data Sheets

VTS:jg

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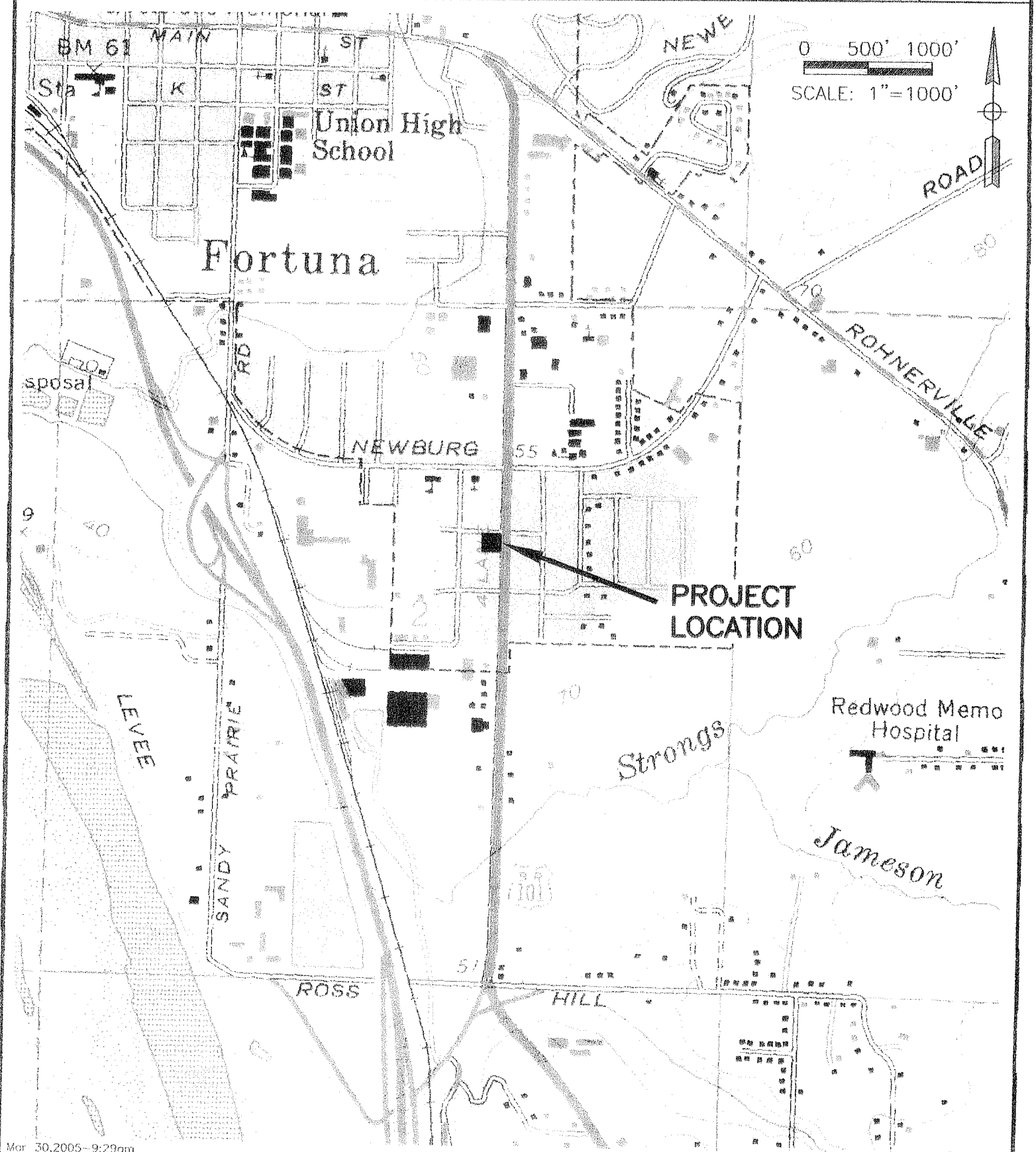
LACO ASSOCIATES CONSULTING ENGINEERS 21 W 4TH ST. EUREKA, CA 95501 (707)443-5054	PROJECT	REPORT OF FINDINGS	BY	RJM	FIGURE
	CLIENT	TOTEM POLE MARKET	DATE	3/29/05	1
	LOCATION	FORTUNA BLVD., FORTUNA, CA	CHECK	VS	JOB NO.
		LOCATION MAP	SCALE	1"=1000'	3472.04



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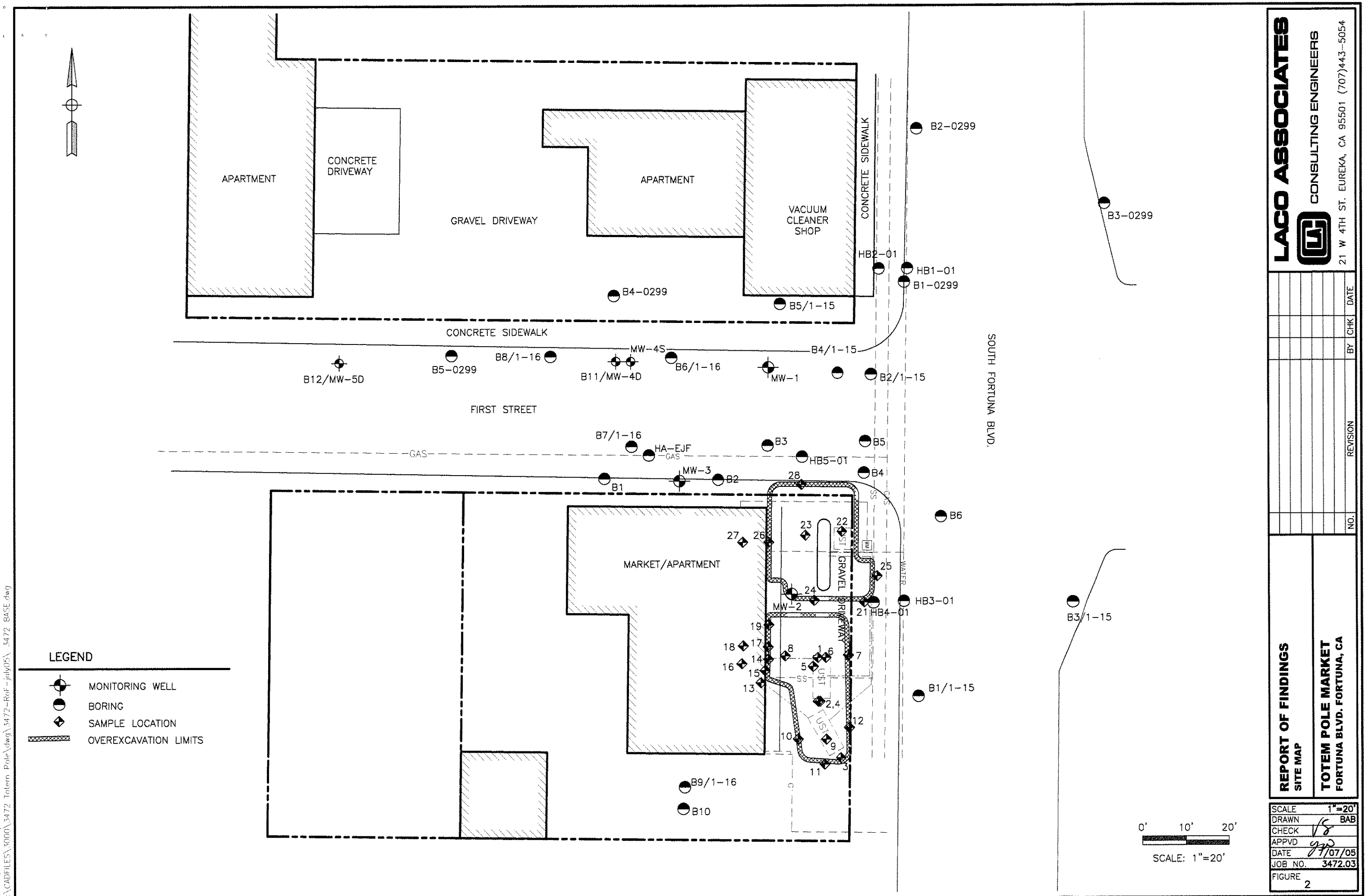
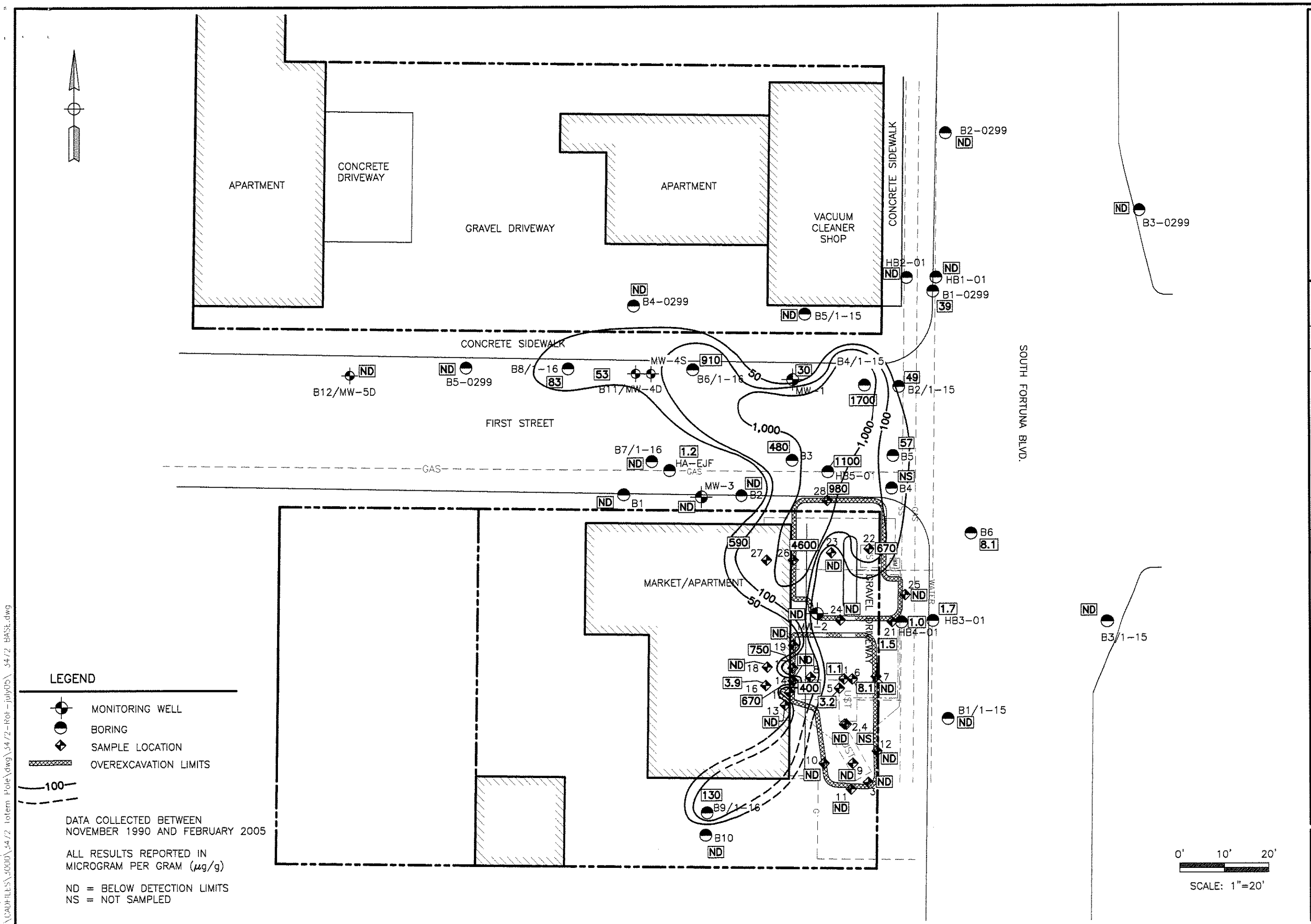

APARTMENT
CONCRETE DRIVEWAY
GRAVEL DRIVEWAY
APARTMENT
VACUUM CLEANER SHOP
CONCRETE SIDEWALK
B2-0299
B3-0299
HB2-01
HB1-01
B1-0299
B4-0299
B5/1-15
CONCRETE SIDEWALK
MW-4S
B4/1-15
B12/MW-5D
B5-0299
B8/1-16
B11/MW-4D
B6/1-16
MW-1
B2/1-15
SOUTH FORTUNA BLVD.
FIRST STREET
B7/1-16
HA-EJF
GAS
B3
B5
HB5-01
MW-3
B1
B2
28
B4
B6
MARKET/APARTMENT
GRAVEL DRIVEWAY
MW-2
HB3-01
HB4-01
B3/1-15
B1/1-15
B9/1-16
B10
LEGEND
MONITORING WELL
BORING
SAMPLE LOCATION
OVEREXCAVATION LIMITS
0' 10' 20'
SCALE: 1"=20'
LACO ASSOCIATES
CONSULTING ENGINEERS
21 W 4TH ST. EUREKA, CA 95501 (707)443-5054
NO. REVISION BY CHK DATE
REPORT OF FINDINGS
SITE MAP
TOTEM POLE MARKET
FORTUNA BLVD. FORTUNA, CA
SCALE 1"=20'
DRAWN BAB
CHECK
APPVD
DATE 07/07/05
JOB NO. 3472.03
FIGURE 2



LEGEND

- MONITORING WELL
- BORING
- SAMPLE LOCATION
- OVEREXCAVATION LIMITS
- —100—

DATA COLLECTED BETWEEN NOVEMBER 1990 AND FEBRUARY 2005

ALL RESULTS REPORTED IN MICROGRAM PER GRAM ($\mu g/g$)

ND = BELOW DETECTION LIMITS
NS = NOT SAMPLED

LACO ASSOCIATES
CONSULTING ENGINEERS
21 W 4TH ST. EUREKA, CA 95501 (707)443-5054

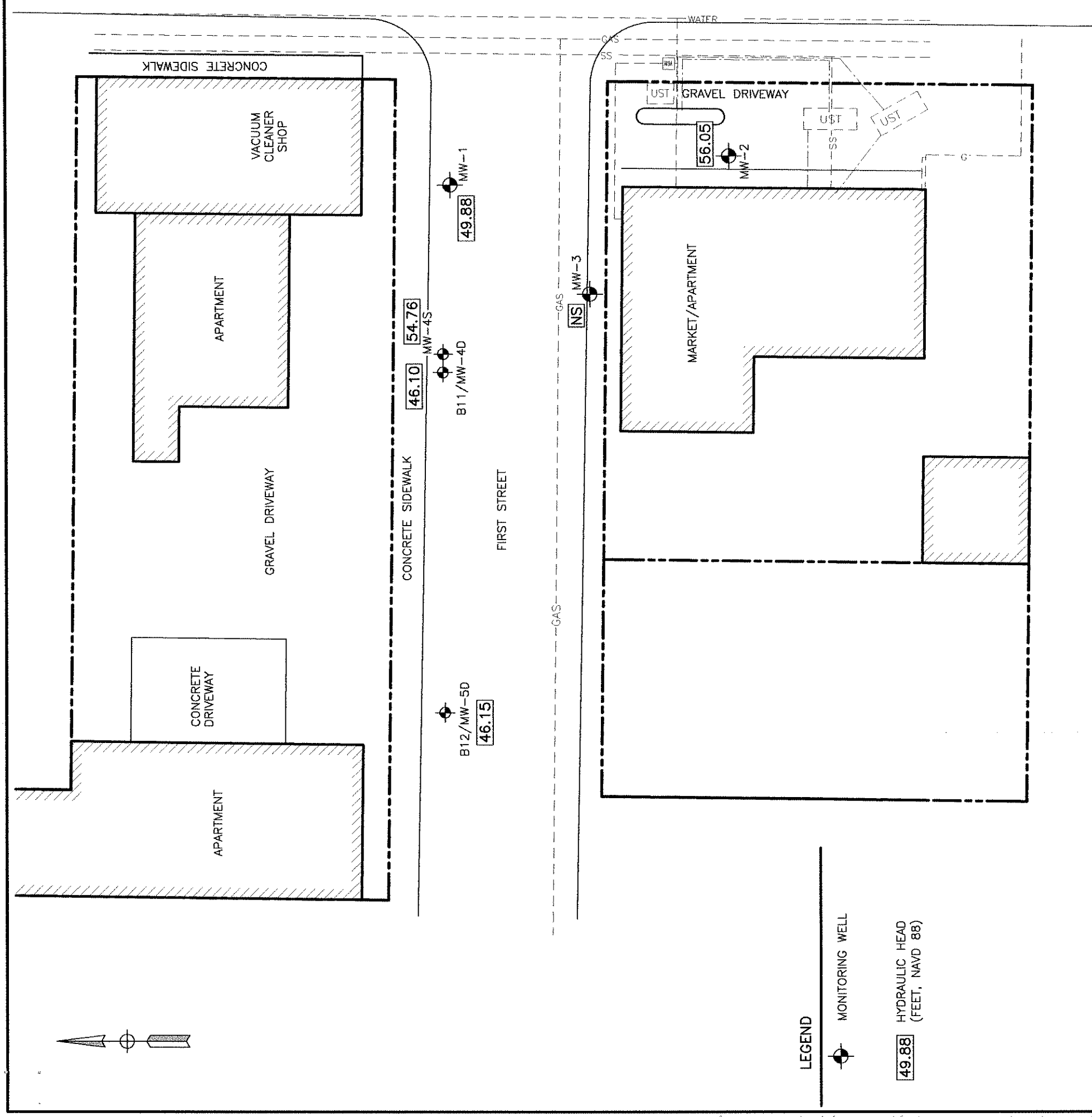
NO.	REVISION	BY	CHK	DATE

REPORT OF FINDINGS
TPHg CONCENTRATIONS IN SOIL (0' to 10' bgs)

TOTEM POLE MARKET
FORTUNA BLVD. FORTUNA, CA

SCALE	1"=20'
DRAWN	BAB
CHECK	
APPVD	
DATE	7/07/05
JOB NO.	3472.03
FIGURE	3

Jul 07,2005-6:42pm
I:\CADFILES\3000\34/2 totem Pole\dwg\34/2-Rot-july05\ 34/2 BASE.dwg



REPORT OF FINDINGS
HYDRAULIC HEAD MAP (2/28/05)

TOTEM POLE MARKET
FORTUNA BLVD. FORTUNA, CA

SCALE	1"=20'
DRAWN	BAB
CHECK	VS
APPVD	
DATE	7/07/05
JOB NO.	3472.03
FIGURE	4

NO.	REVISION	BY	CHK	DATE

LACO ASSOCIATES
CONSULTING ENGINEERS
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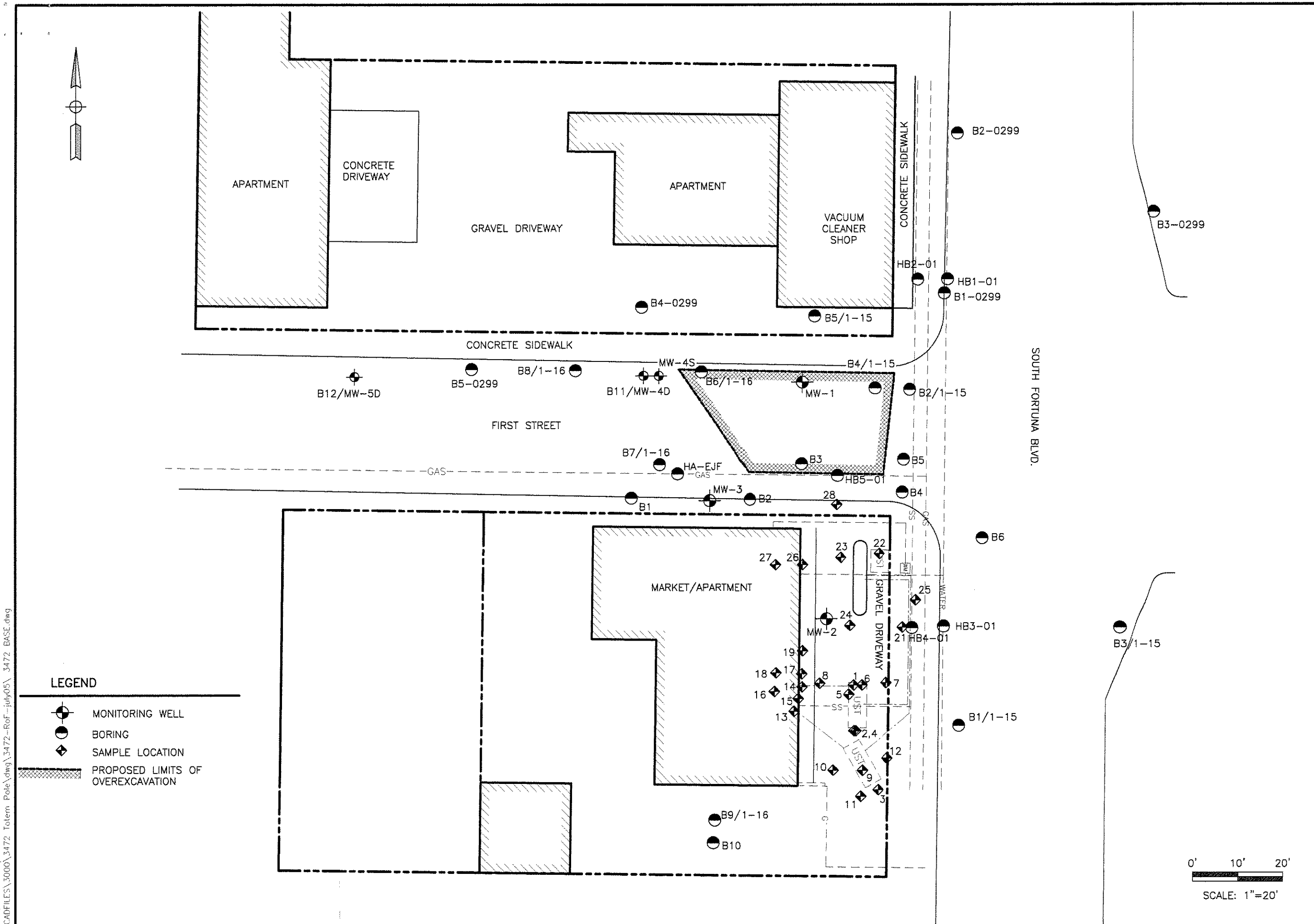

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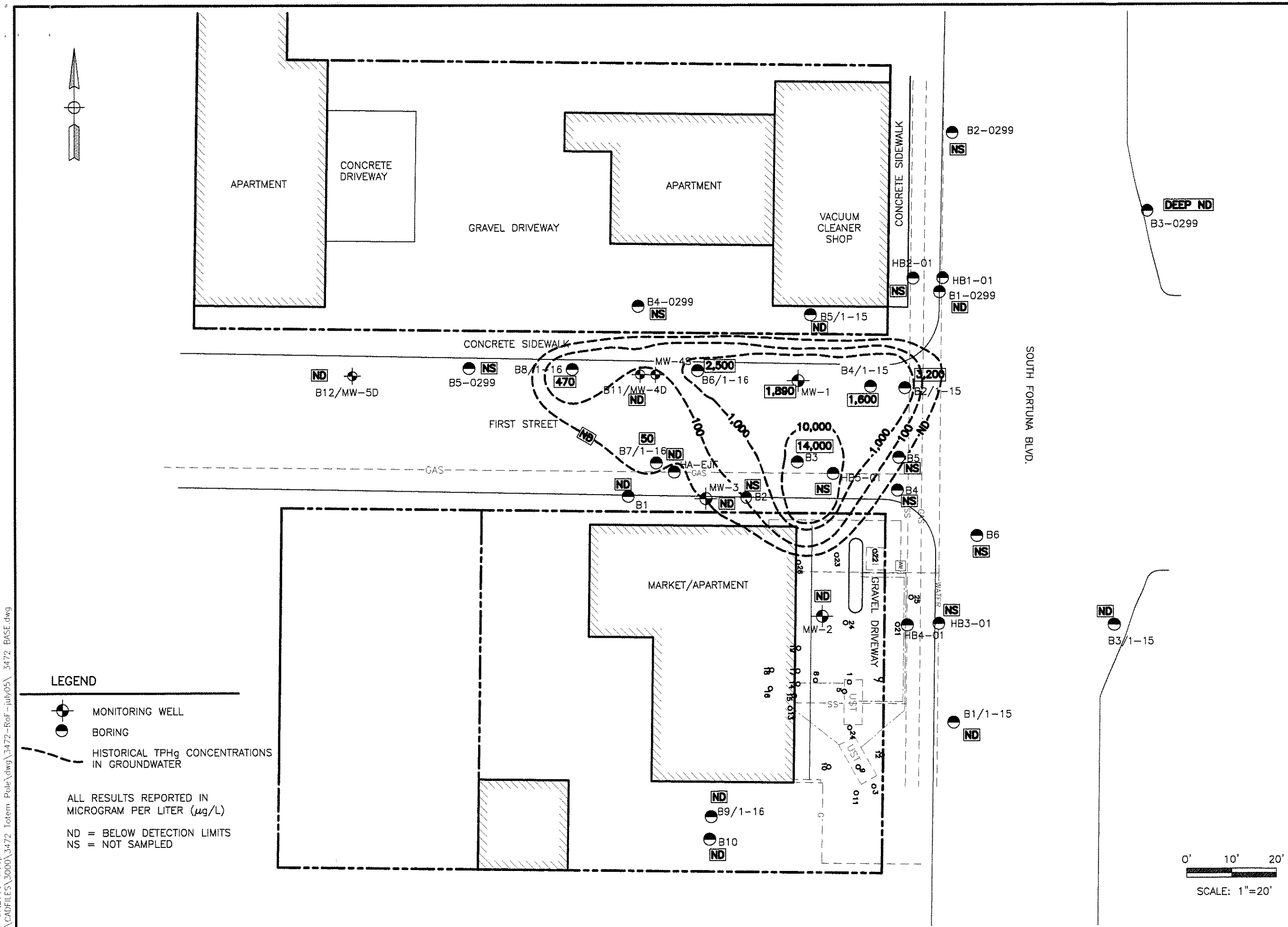
NO.	REVISION	BY	CHK	DATE

REPORT OF FINDINGS
APPROXIMATE LIMITS OF PROPOSED OVEREXCAVATION

TOTEM POLE MARKET
FORTUNA BLVD. FORTUNA, CA

SCALE	1"=20'
DRAWN	BAB
CHECK	VS
APPVD	
DATE	7/07/05
JOB NO.	3472.03
FIGURE	5

Jul 07,2005-6:37pm
T:\CADFILES\3000\3472 Totem Pole\dwg\3472-RoF-july05\ 3472 BASE.dwg



LEGEND

- MONITORING WELL
- BORING
- HISTORICAL TPHg CONCENTRATIONS IN GROUNDWATER

ALL RESULTS REPORTED IN MICROGRAM PER LITER (μg/L)

ND = BELOW DETECTION LIMITS
NS = NOT SAMPLED

LACO ASSOCIATES
CONSULTING ENGINEERS
21 W 4TH ST. EUREKA, CA 95501 (707)443-5054

NO.	REVISION	BY	CHK	DATE

REPORT OF FINDINGS
HISTORICAL TPHg CONCENTRATIONS IN GROUNDWATER

TOTEM POLE MARKET
FORTUNA BLVD. FORTUNA, CA

SCALE	1"=20'
DRAWN	BAB
CHECK	
APPVD	
DATE	07/07/05
JOB NO.	3472.03
FIGURE	6

Jul 07,2005-6:35pm
T:\CADFILES\3000\3472 Totem Pole\dwg\3472-RoF-july05\ 3472 BASE.dwg

Attachment 2

LACO ASSOCIATES
CONSULTING ENGINEERS
21 West Fourth Street, Eureka, CA 95501
TEL 707.443.5054
FAX 707.443.0553

Project Name: Forks / Totem Pole Market
Project No.: 3472.04
Date: 2-28-05
Golbal ID No.: T0602300028
PM: LDB

Tech: SJD
Mob/Demob time: .25/.25
Travel time: 1.25
Time on site: 8:10
Time off site: 12:10
Mileage: 37

WELL No.:	MW3		MW2		MW1		MW4S		MW4D	
DIAMETER (in)	2.00		2.00		2.00		2.00		2.00	
SCREENED INTERVAL (ft)	5-15		5-15		5-15		4-9		13-18	
DEPTH TO WATER (ft)			2.92		8.75		3.39		11.93	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
FIELD INTRINSICS: pH										
TEMP (°C)										
Ecw (µmohs)										
ORP (mV)			56	130	-75	Jr	122	109	140	84
DO (mg/L)			7.46	6.65	1.04	0.76	3.22	2.72	3.01	1.22
OTHER (units)										
PURGE: TIME			10:04	10:16	9:27	9:35	10:41	10:49	11:05	11:19
METHOD (DHP/CB/B)			DHP		DHP		DHP		DHP	
RATE (Lpm)			0.17		0.19		0.19		0.16	
VOLUME (L)			2.0		1.50		1.50		2.20	
COLOR			CLEAR	CLOUDY	CLEAR	CLEAR	CLEAR	CLEAR	CLEAR	CLEAR
ODOR			NONE		LIGHT FUEL	SLIGHT ORGANIC	NONE		NONE	
INTAKE DEPTH (FEET)			10.0		12.0		7.0		15.5	
SAMPLE: TIME			10:17		9:36		10:50		11:20	
METHOD (DHP/CB/B)			DHP		DHP		DHP		DHP	
ANALYTES	8260 List 1; TPHd w/SGC		8260 List 1; TPHd w/SGC		8260 List 1; TPHd w/SGC		8260 List 1; TPHd w/SGC		8260 List 1; TPHd w/SGC	
TOTAL DRAWDOWN (FEET)			0.91		0.85		0.76		1.29	
REMARKS	WATER TRUCK PARKED OVER		WELL BOX FILLING W/ RAIN WATER TOO FAST COULD NOT SAMPLE							
WELL CONDITION	WELL - OPERATOR AT WORK - UNABLE TO MOVE TRUCK		WELL BOX FULL OF H_2O CAP NOT SECURE	EARLY	good		good		good	
WASTE DRUMS	4 DOT DRUMS ONSITE				4 SOIL		1 WATER (FULL)			

DEPTH MEASUREMENTS ARE REFERENCED TO TOP OF CASING

DHP=DOWN HOLE PUMP CB=CHECK BALL B=BAILER FD=FIELD DUPLICATE MB=METHOD BLANK FF=FIELD FILTERED

LACO ASSOCIATES
CONSULTING ENGINEERS
21 West Fourth Street, Eureka, CA 95501
TEL 707.443.5054
FAX 707.443.0553

Project Name: **Forks / Totem Pole Market**
Project No.: **3472.04**
Date: 2-28-05
Golbal ID No.: **T0602300028**
PM: **LDB**

Tech: SJD
Mob/Demob time: .25/.25
Travel time: 1.25
Time on site: 8:10
Time off site: 12:10
Mileage: 37

WELL No.:	MW5											
DIAMETER (in)	2.00											
SCREENED INTERVAL (ft)	15-20											
DEPTH TO WATER (ft)	11.05											
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
DEPTH MEASUREMENTS ARE REFERENCED TO TOP OF CASING — FIELD INTRINSICS: pH												
TEMP (°C)												
Ecw (µmohs)												
ORP (mV)	128	69										
DO (mg/L)	1.60	0.98										
OTHER (units)	—											
PURGE: TIME	11:37	11:53										
METHOD (DHP/CB/B)	DHP											
RATE (Lpm)	0.18											
VOLUME (L)	2.50											
COLOR	CLOUDY	CLOUDY										
ODOR	NONE											
INTAKE DEPTH (FEET)	17.5											
SAMPLE: TIME	11:54											
METHOD (DHP/CB/B)	DHP											
ANALYTES	8260 List 1; TPHd w/SGC											
TOTAL DRAWDOWN (FEET)	0.28											
REMARKS	—											
WELL CONDITION	good											
WASTE DRUMS												

DHP=DOWN HOLE PUMP CB=CHECK BALL B=BAILER FD=FIELD DUPLICATE MB=METHOD BLANK FF=FIELD FILTERED

LACO ASSOCIATES
CONSULTING ENGINEERS
21 West Fourth Street, Eureka, CA 95501
TEL 707.443.5054
FAX 707.443.0553

Project Name: FORKS / TOTEM POLE MARKET
Project No.: 3472.04
Tech: SJD
Date: 2-28-05

WELL ID:	METER ACCURACY RANGE				
MW1	+/- 0.2 pH	+/- 0.5 °C	+/- 20 µmohs	+/- 2 mv	+/- 0.3 mg/L
TIME	pH	TEMP (°C)	Ecw (µmohs)	ORP (mV)	DO (mg/L)
9:29	~	~	~	-92	1.29
9:31	~	~	~	-95	1.12
9:33	~	~	~	-98	0.84
9:35	~	~	~	UR	0.79
9:37	~	~	~	UR	0.76

WELL ID: MW2

TIME	pH	TEMP (°C)	Ecw (µmohs)	ORP (mV)	DO (mg/L)
10:06	~	~	~	79	7.03
10:08	~	~	~	105	6.80
10:10	~	~	~	117	6.61
10:12	~	~	~	127	6.60
10:14	~	~	~	130	6.56
10:16	~	~	~	130	6.65

WELL ID: MW4S

TIME	pH	TEMP (°C)	Ecw (µmohs)	ORP (mV)	DO (mg/L)
10:43	~	~	~	120	2.96
10:45	~	~	~	112	2.72
10:47	~	~	~	109	2.71
10:49	~	~	~	109	2.72

WELL ID: MW4D

TIME	pH	TEMP (°C)	Ecw (µmohs)	ORP (mV)	DO (mg/L)
11:07	~	~	~	128	2.13
11:09	~	~	~	104	1.14
11:11	~	~	~	92	0.91
11:13	~	~	~	—	—
11:15	~	~	~	88	1.31
11:17	~	~	~	84	1.18
11:19	~	~	~	84	1.22

CHANGED BATTERY

WELL ID: MW5

TIME	pH	TEMP (°C)	Ecw (µmohs)	ORP (mV)	DO (mg/L)
11:39	~	~	~	121	1.18
11:41	~	~	~	108	0.88
11:43	~	~	~	94	0.63
11:45	~	~	~	85	0.56
11:47	~	~	~	76	0.63
11:49	~	~	~	72	0.77
11:51	~	~	~	70	0.92
11:53	~	~	~	69	0.98

WELL ID:

TIME	pH	TEMP (°C)	Ecw (µmohs)	ORP (mV)	DO (mg/L)

LACO ASSOCIATES
CONSULTING ENGINEERS
21 West Fourth Street, Eureka, CA 95501
TEL 707.443.5054
FAX 707.443.0553

Project Name: FORKS/TOTEM POLE MARKET
Project No.: 3472.04
Tech: SJD
Date: 2-28-05

WELL ID: MW1		WELL ID: MW2		WELL ID: MW3		WELL ID: MW4S		WELL ID: MW4D		WELL ID: MW5	
TIME	DTW (ft)	TIME	DTW (ft)	TIME	DTW (ft)	TIME	DTW (ft)	TIME	DTW (ft)	TIME	DTW (ft)
:37	8.74	8:39	2.90	—	—	8:42	3.38	8:43	11.93	8:46	11.05
:50	8.75	8:52	2.92			8:54	3.39	8:55	11.93	8:58	11.05
:02	8.75	9:04	2.92			9:06	3.39				

WELL ID:		WELL ID:		WELL ID:		WELL ID:		WELL ID:		WELL ID:	
TIME	DTW (ft)	TIME	DTW (ft)	TIME	DTW (ft)	TIME	DTW (ft)	TIME	DTW (ft)	TIME	DTW (ft)

WELL ID:		WELL ID:		WELL ID:		WELL ID:		WELL ID:		WELL ID:	
ME	DTW (ft)	TIME	DTW (ft)	TIME	DTW (ft)	TIME	DTW (ft)	TIME	DTW (ft)	TIME	DTW (ft)

NORTH COAST LABORATORIES LTD.
5680 West End Road • Arcata • CA 95521-9202
707-822-4649 Fax 707-822-6831

Chain of Custody

LABORATORY NUMBER:

Attention: Ms. Valerie Ellis
Results & Invoice to: Forks Estate
Address: P.O. Box 1092 Kodiak, AK 99615

Phone: (907) 486-2042
Copies of Report to: LACO ; Anna Forina

Sampler (Sign & Print): SID

TAT: ☐ 24 Hr ☐ 48 Hr ☐ 5 Day ☐ 5–7 Day
☑ STD (2–3 Wk) ☐ Other:
PRIOR AUTHORIZATION IS REQUIRED FOR RUSHES

REPORTING REQUIREMENTS: State Forms ☐
Preliminary: FAX ☑ Verbal ☐ By:
Final Report: FAX ☐ Verbal ☐ By:

CONTAINER CODES: 1—½ gal. pl; 2—250 ml pl; 3—500 ml pl; 4—1 L Nalgene; 5—250 ml BG; 6—500 ml BG; 7—1 L BG; 8—1 L cg; 9—40 ml VOA; 10—125 ml VOA; 11—4 oz glass jar; 12—8 oz glass jar; 13—brass tube; 14—other

PRESERVATIVE CODES: a—HNO_3; b—HCl; c—H_2SO_4; d—$Na_2S_2O_3$; e—NaOH; f—$C_2H_3O_2Cl$; g—other

PROJECT INFORMATION

Project Number: 3472.04
Project Name: Totem Pole Market
Purchase Order Number: TASK 3020

LAB ID	SAMPLE ID	DATE	TIME	MATRIX*	ANALYSIS: 8260 List 1 (CONTAINER 9, PRESERVATIVE b)	ANALYSIS: TPHd w/SGC (CONTAINER 7, PRESERVATIVE ---)	SAMPLE CONDITION/SPECIAL INSTRUCTIONS
	3472-MW1-W	2-28-05	am	GW	3	1	GEOTRACKER
	3472-MW2-W				3	1	
					3	1	
	3472-MW4S-W				3	1	
	3472-MW4D-W				3	1	
	3472-MW5-W				3	1	
	3472-QCTB-W				1		

RELINQUISHED BY (Sign & Print)	DATE/TIME	RECEIVED BY (Sign)	DATE/TIME

SAMPLE DISPOSAL
☑ NCL Disposal of Non-Contaminated
☐ Return ☐ Pickup

CHAIN OF CUSTODY SEALS Y/N/NA
SHIPPED VIA: UPS Air-Ex Fed-Ex Bus Hand

***MATRIX:** DW=Drinking Water; Eff=Effluent; Inf=Influent; SW=Surface Water; GW=Ground Water; S=Soil; O=Other.

ALL CONTAMINATED NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT

Attachment 3

NORTH COAST LABORATORIES LTD.

February 23, 2005

Pvt. cust. paying on pickup

Order No.: 0502100
Invoice No.: 48313
PO No.:
ELAP No. 1247-Expires July 2006

Attn: Valerie Ellis-Forks Estate

RE: 3472.04, Forks Totem Pole Market

SAMPLE IDENTIFICATION

Fraction	Client Sample Description
01A	3472-B10-S8
01B	3472-B10-S8
02A	3472-B10-S12
02B	3472-B10-S12
03A	3472-B10-S16
03B	3472-B10-S16
04A	3472-B10-S20
04B	3472-B10-S20
05A	3472-B11-S4
05B	3472-B11-S4
06A	3472-B11-S8
06B	3472-B11-S8
07A	3472-B11-S12
07B	3472-B11-S12
08A	3472-B11-S16
08B	3472-B11-S16
09A	3472-B11-S20
09B	3472-B11-S20
10A	3472-B12-S4
10B	3472-B12-S4
11A	3472-B12-S8
11B	3472-B12-S8
12A	3472-B12-S12
12B	3472-B12-S12
13A	3472-B12-S16
13B	3472-B12-S16
14A	3472-B12S-20
14B	3472-B12S-20

ND = Not Detected at the Reporting Limit
Limit = Reporting Limit
All solid results are expressed on a wet-weight basis unless otherwise noted.

RECEIVED
LACO ASSOCIATES
FEB 25 2005
BY:

DRG
LDB
VTS

REPORT CERTIFIED BY

Laboratory Supervisor(s) | QA Unit | Jesse G. Chaney, Jr. Laboratory Director

5680 West End Road • Arcata California 95521-9202 • 707-822-4649 • FAX 707-822-6831
Printed on Recycled Paper

February 23, 2005

Pvt. cust. paying on pickup

,

Attn: Valerie Ellis-Forks Estate

RE: 3472.04, Forks Totem Pole Market

Order No.: 0502100
Invoice No.: 48313
PO No.:
ELAP No. 1247-Expires July 2006

SAMPLE IDENTIFICATION

15A	3472-B10-W16-20
15B	3472-B10-W16-20
16A	TB

NORTH COAST LABORATORIES
5680 West End Road • Arcata, California 95521-9202 • 707-822-4649 • FAX 707-822-6831
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North Coast Laboratories, Ltd. Date: *23-Feb-05*

CLIENT: Pvt. cust. paying on pickup
Project: 3472.04, Forks Totem Pole Market
Lab Order: 0502100

CASE NARRATIVE

TPH as Diesel with Silica Gel Cleanup:
Sample 3472-B11-S4 contains some material lighter than diesel. However, some of this material extends into the diesel range of molecular weights.

Samples 3472-B10-S8, 3472-B10-S12, 3472-B10-S20, 3472-B11-S4, 3472-B11-S8, 3472-B11-S12 and 3472-B12-S8 contain material in the diesel range of molecular weights, but the material does not exhibit the peak pattern typical of diesel oil.

Sample 3472-B12-S8 contains material in the diesel range of molecular weights and beyond. This suggests the presence of an oil heavier than diesel.

The surrogate recoveries for samples 3472-B11-S20 and 3472-B12-S16 were outside of the acceptance limits. The surrogate recoveries for the quality control samples were within the acceptance limits. This indicates that the low surrogate recoveries may be due to matrix effects from the samples.

Gasoline Components/Additives:
Sample 3472-B11-S4 does not present a peak pattern consistent with that of gasoline. The peaks elute towards the end of the gasoline range. In our judgement the material appears to be a product heavier than gasoline. Due to the differences in the purging efficiency of these heavier materials the result may be variable. The reported result represents the amount of material in the gasoline range.

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Date: 23-Feb-05
WorkOrder: 0502100

ANALYTICAL REPORT

Client Sample ID: 3472-B10-S8 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-01A

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	0.025	µg/g	1.0	2/15/05	2/15/05
Tert-butyl alcohol (TBA)	ND	0.50	µg/g	1.0	2/15/05	2/15/05
Di-isopropyl ether (DIPE)	ND	0.020	µg/g	1.0	2/15/05	2/15/05
Ethyl tert-butyl ether (ETBE)	ND	0.020	µg/g	1.0	2/15/05	2/15/05
Benzene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
Tert-amyl methyl ether (TAME)	ND	0.020	µg/g	1.0	2/15/05	2/15/05
Toluene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
Ethylbenzene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
m,p-Xylene	ND	0.010	µg/g	1.0	2/15/05	2/15/05
o-Xylene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
Surrogate: 1,4-Dichlorobenzene-d4	94.7	80-120	% Rec	1.0	2/15/05	2/15/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	1.0	µg/g	1.0	2/15/05	2/15/05

Client Sample ID: 3472-B10-S8 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-01B

Test Name: TPH as Diesel with Silica Gel Cleanup **Reference:** EPA 3550/3630/GCFID(LUFT)/8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	3.1	1.0	µg/g	1.0	2/16/05	2/21/05
Surrogate: N-Tricosane	107	33.2-121	% Rec	1.0	2/16/05	2/21/05

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Printed on Recycled Paper

Date: 23-Feb-05
WorkOrder: 0502100

ANALYTICAL REPORT

Client Sample ID: 3472-B10-S12 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-02A

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	0.025	µg/g	1.0	2/15/05	2/15/05
Tert-butyl alcohol (TBA)	ND	0.50	µg/g	1.0	2/15/05	2/15/05
Di-isopropyl ether (DIPE)	ND	0.020	µg/g	1.0	2/15/05	2/15/05
Ethyl tert-butyl ether (ETBE)	ND	0.020	µg/g	1.0	2/15/05	2/15/05
Benzene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
Tert-amyl methyl ether (TAME)	ND	0.020	µg/g	1.0	2/15/05	2/15/05
Toluene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
Ethylbenzene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
m,p-Xylene	ND	0.010	µg/g	1.0	2/15/05	2/15/05
o-Xylene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
Surrogate: 1,4-Dichlorobenzene-d4	96.6	80-120	% Rec	1.0	2/15/05	2/15/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	1.0	µg/g	1.0	2/15/05	2/15/05

Client Sample ID: 3472-B10-S12 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-02B

Test Name: TPH as Diesel with Silica Gel Cleanup **Reference:** EPA 3550/3630/GCFID(LUFT)/8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	1.6	1.0	µg/g	1.0	2/16/05	2/21/05
Surrogate: N-Tricosane	94.2	33.2-121	% Rec	1.0	2/16/05	2/21/05

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Date: 23-Feb-05
WorkOrder: 0502100

ANALYTICAL REPORT

Client Sample ID: 3472-B10-S16 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-03A

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	0.025	µg/g	1.0	2/15/05	2/15/05
Tert-butyl alcohol (TBA)	ND	0.50	µg/g	1.0	2/15/05	2/15/05
Di-isopropyl ether (DIPE)	ND	0.020	µg/g	1.0	2/15/05	2/15/05
Ethyl tert-butyl ether (ETBE)	ND	0.020	µg/g	1.0	2/15/05	2/15/05
Benzene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
Tert-amyl methyl ether (TAME)	ND	0.020	µg/g	1.0	2/15/05	2/15/05
Toluene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
Ethylbenzene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
m,p-Xylene	ND	0.010	µg/g	1.0	2/15/05	2/15/05
o-Xylene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
Surrogate: 1,4-Dichlorobenzene-d4	96.0	80-120	% Rec	1.0	2/15/05	2/15/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	1.0	µg/g	1.0	2/15/05	2/15/05

Client Sample ID: 3472-B10-S16 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-03B

Test Name: TPH as Diesel with Silica Gel Cleanup **Reference:** EPA 3550/3630/GCFID(LUFT)/8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	ND	1.0	µg/g	1.0	2/16/05	2/21/05
Surrogate: N-Tricosane	41.3	33.2-121	% Rec	1.0	2/16/05	2/21/05

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ANALYTICAL REPORT

Client Sample ID: 3472-B10-S20 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-04A

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	0.025	µg/g	1.0	2/15/05	2/15/05
Tert-butyl alcohol (TBA)	ND	0.50	µg/g	1.0	2/15/05	2/15/05
Di-isopropyl ether (DIPE)	ND	0.020	µg/g	1.0	2/15/05	2/15/05
Ethyl tert-butyl ether (ETBE)	ND	0.020	µg/g	1.0	2/15/05	2/15/05
Benzene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
Tert-amyl methyl ether (TAME)	ND	0.020	µg/g	1.0	2/15/05	2/15/05
Toluene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
Ethylbenzene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
m,p-Xylene	ND	0.010	µg/g	1.0	2/15/05	2/15/05
o-Xylene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
Surrogate: 1,4-Dichlorobenzene-d4	95.9	80-120	% Rec	1.0	2/15/05	2/15/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	1.0	µg/g	1.0	2/15/05	2/15/05

Client Sample ID: 3472-B10-S20 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-04B

Test Name: TPH as Diesel with Silica Gel Cleanup **Reference:** EPA 3550/3630/GCFID(LUFT)/8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	3.1	1.0	µg/g	1.0	2/16/05	2/21/05
Surrogate: N-Tricosane	67.0	33.2-121	% Rec	1.0	2/16/05	2/21/05

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ANALYTICAL REPORT

Client Sample ID: 3472-B11-S4 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-05A

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	0.025	µg/g	1.0	2/15/05	2/15/05
Tert-butyl alcohol (TBA)	ND	0.50	µg/g	1.0	2/15/05	2/15/05
Di-Isopropyl ether (DIPE)	ND	0.020	µg/g	1.0	2/15/05	2/15/05
Ethyl tert-butyl ether (ETBE)	ND	0.020	µg/g	1.0	2/15/05	2/15/05
Benzene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
Tert-amyl methyl ether (TAME)	ND	0.020	µg/g	1.0	2/15/05	2/15/05
Toluene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
Ethylbenzene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
m,p-Xylene	ND	0.010	µg/g	1.0	2/15/05	2/15/05
o-Xylene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
Surrogate: 1,4-Dichlorobenzene-d4	87.7	80-120	% Rec	1.0	2/15/05	2/15/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	53	1.0	µg/g	1.0	2/15/05	2/15/05

Client Sample ID: 3472-B11-S4 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-05B

Test Name: TPH as Diesel with Silica Gel Cleanup **Reference:** EPA 3550/3630/GCFID(LUFT)/8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	14	1.0	µg/g	1.0	2/16/05	2/21/05
Surrogate: N-Tricosane	48.8	33.2-121	% Rec	1.0	2/16/05	2/21/05

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ANALYTICAL REPORT

Client Sample ID: 3472-B11-S8 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-06A

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	0.025	µg/g	1.0	2/15/05	2/15/05
Tert-butyl alcohol (TBA)	ND	0.50	µg/g	1.0	2/15/05	2/15/05
Di-isopropyl ether (DIPE)	ND	0.020	µg/g	1.0	2/15/05	2/15/05
Ethyl tert-butyl ether (ETBE)	ND	0.020	µg/g	1.0	2/15/05	2/15/05
Benzene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
Tert-amyl methyl ether (TAME)	ND	0.020	µg/g	1.0	2/15/05	2/15/05
Toluene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
Ethylbenzene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
m,p-Xylene	ND	0.010	µg/g	1.0	2/15/05	2/15/05
o-Xylene	ND	0.0050	µg/g	1.0	2/15/05	2/15/05
Surrogate: 1,4-Dichlorobenzene-d4	95.2	80-120	% Rec	1.0	2/15/05	2/15/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	1.0	µg/g	1.0	2/15/05	2/15/05

Client Sample ID: 3472-B11-S8 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-06B

Test Name: TPH as Diesel with Silica Gel Cleanup **Reference:** EPA 3550/3630/GCFID(LUFT)/8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	4.0	1.0	µg/g	1.0	2/16/05	2/21/05
Surrogate: N-Tricosane	81.8	33.2-121	% Rec	1.0	2/16/05	2/21/05

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ANALYTICAL REPORT

Client Sample ID: 3472-B11-S12 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-07A

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	0.025	µg/g	1.0	2/15/05	2/16/05
Tert-butyl alcohol (TBA)	ND	0.50	µg/g	1.0	2/15/05	2/16/05
Di-isopropyl ether (DIPE)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Ethyl tert-butyl ether (ETBE)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Benzene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Tert-amyl methyl ether (TAME)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Toluene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Ethylbenzene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
m,p-Xylene	ND	0.010	µg/g	1.0	2/15/05	2/16/05
o-Xylene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Surrogate: 1,4-Dichlorobenzene-d4	97.0	80-120	% Rec	1.0	2/15/05	2/16/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	1.0	µg/g	1.0	2/15/05	2/16/05

Client Sample ID: 3472-B11-S12 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-07B

Test Name: TPH as Diesel with Silica Gel Cleanup **Reference:** EPA 3550/3630/GCFID(LUFT)/8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	1.7	1.0	µg/g	1.0	2/16/05	2/21/05
Surrogate: N-Tricosane	88.9	33.2-121	% Rec	1.0	2/16/05	2/21/05

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ANALYTICAL REPORT

Client Sample ID: 3472-B11-S16 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-08A

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	0.025	µg/g	1.0	2/15/05	2/16/05
Tert-butyl alcohol (TBA)	ND	0.50	µg/g	1.0	2/15/05	2/16/05
Di-isopropyl ether (DIPE)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Ethyl tert-butyl ether (ETBE)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Benzene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Tert-amyl methyl ether (TAME)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Toluene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Ethylbenzene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
m,p-Xylene	ND	0.010	µg/g	1.0	2/15/05	2/16/05
o-Xylene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Surrogate: 1,4-Dichlorobenzene-d4	96.5	80-120	% Rec	1.0	2/15/05	2/16/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	1.0	µg/g	1.0	2/15/05	2/16/05

Client Sample ID: 3472-B11-S16 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-08B

Test Name: TPH as Diesel with Silica Gel Cleanup **Reference:** EPA 3550/3630/GCFID(LUFT)/8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	ND	1.0	µg/g	1.0	2/16/05	2/21/05
Surrogate: N-Tricosane	48.7	33.2-121	% Rec	1.0	2/16/05	2/21/05

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ANALYTICAL REPORT

Client Sample ID: 3472-B11-S20 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-09A

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	0.025	µg/g	1.0	2/15/05	2/16/05
Tert-butyl alcohol (TBA)	ND	0.50	µg/g	1.0	2/15/05	2/16/05
Di-isopropyl ether (DIPE)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Ethyl tert-butyl ether (ETBE)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Benzene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Tert-amyl methyl ether (TAME)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Toluene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Ethylbenzene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
m,p-Xylene	ND	0.010	µg/g	1.0	2/15/05	2/16/05
o-Xylene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Surrogate: 1,4-Dichlorobenzene-d4	97.1	80-120	% Rec	1.0	2/15/05	2/16/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	1.0	µg/g	1.0	2/15/05	2/16/05

Client Sample ID: 3472-B11-S20 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-09B

Test Name: TPH as Diesel with Silica Gel Cleanup **Reference:** EPA 3550/3630/GCFID(LUFT)/8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	ND	1.0	µg/g	1.0	2/16/05	2/21/05
Surrogate: N-Tricosane	28.3	33.2-121	% Rec	1.0	2/16/05	2/21/05

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ANALYTICAL REPORT

Client Sample ID: 3472-B12-S4 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-10A

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	0.025	µg/g	1.0	2/15/05	2/16/05
Tert-butyl alcohol (TBA)	ND	0.50	µg/g	1.0	2/15/05	2/16/05
Di-isopropyl ether (DIPE)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Ethyl tert-butyl ether (ETBE)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Benzene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Tert-amyl methyl ether (TAME)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Toluene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Ethylbenzene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
m,p-Xylene	ND	0.010	µg/g	1.0	2/15/05	2/16/05
o-Xylene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Surrogate: 1,4-Dichlorobenzene-d4	98.3	80-120	% Rec	1.0	2/15/05	2/16/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	1.0	µg/g	1.0	2/15/05	2/16/05

Client Sample ID: 3472-B12-S4 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-10B

Test Name: TPH as Diesel with Silica Gel Cleanup **Reference:** EPA 3550/3630/GCFID(LUFT)/8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	ND	1.0	µg/g	1.0	2/16/05	2/21/05
Surrogate: N-Tricosane	39.2	33.2-121	% Rec	1.0	2/16/05	2/21/05

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ANALYTICAL REPORT

Client Sample ID: 3472-B12-S8 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-11A

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	0.025	µg/g	1.0	2/15/05	2/16/05
Tert-butyl alcohol (TBA)	ND	0.50	µg/g	1.0	2/15/05	2/16/05
Di-isopropyl ether (DIPE)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Ethyl tert-butyl ether (ETBE)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Benzene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Tert-amyl methyl ether (TAME)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Toluene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Ethylbenzene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
m,p-Xylene	ND	0.010	µg/g	1.0	2/15/05	2/16/05
o-Xylene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Surrogate: 1,4-Dichlorobenzene-d4	97.0	80-120	% Rec	1.0	2/15/05	2/16/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	1.0	µg/g	1.0	2/15/05	2/16/05

Client Sample ID: 3472-B12-S8 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-11B

Test Name: TPH as Diesel with Silica Gel Cleanup **Reference:** EPA 3550/3630/GCFID(LUFT)/8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	2.3	1.0	µg/g	1.0	2/16/05	2/21/05
Surrogate: N-Tricosane	88.7	33.2-121	% Rec	1.0	2/16/05	2/21/05

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ANALYTICAL REPORT

Client Sample ID: 3472-B12-S12 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-12A

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	0.025	µg/g	1.0	2/15/05	2/16/05
Tert-butyl alcohol (TBA)	ND	0.50	µg/g	1.0	2/15/05	2/16/05
Di-isopropyl ether (DIPE)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Ethyl tert-butyl ether (ETBE)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Benzene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Tert-amyl methyl ether (TAME)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Toluene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Ethylbenzene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
m,p-Xylene	ND	0.010	µg/g	1.0	2/15/05	2/16/05
o-Xylene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Surrogate: 1,4-Dichlorobenzene-d4	99.1	80-120	% Rec	1.0	2/15/05	2/16/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	1.0	µg/g	1.0	2/15/05	2/16/05

Client Sample ID: 3472-B12-S12 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-12B

Test Name: TPH as Diesel with Silica Gel Cleanup **Reference:** EPA 3550/3630/GCFID(LUFT)/8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	ND	1.0	µg/g	1.0	2/16/05	2/21/05
Surrogate: N-Tricosane	40.0	33.2-121	% Rec	1.0	2/16/05	2/21/05

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ANALYTICAL REPORT

Client Sample ID: 3472-B12-S16 Received: 2/4/05 Collected: 2/2/05 0:00
Lab ID: 0502100-13A

Test Name: Gasoline Components/Additives Reference: LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	0.025	µg/g	1.0	2/15/05	2/16/05
Tert-butyl alcohol (TBA)	ND	0.50	µg/g	1.0	2/15/05	2/16/05
Di-isopropyl ether (DIPE)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Ethyl tert-butyl ether (ETBE)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Benzene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Tert-amyl methyl ether (TAME)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Toluene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Ethylbenzene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
m,p-Xylene	ND	0.010	µg/g	1.0	2/15/05	2/16/05
o-Xylene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Surrogate: 1,4-Dichlorobenzene-d4	99.2	80-120	% Rec	1.0	2/15/05	2/16/05

Test Name: TPH as Gasoline Reference: LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	1.0	µg/g	1.0	2/15/05	2/16/05

Client Sample ID: 3472-B12-S16 Received: 2/4/05 Collected: 2/2/05 0:00
Lab ID: 0502100-13B

Test Name: TPH as Diesel with Silica Gel Cleanup Reference: EPA 3550/3630/GCFID(LUFT)/8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	ND	1.0	µg/g	1.0	2/16/05	2/21/05
Surrogate: N-Tricosane	33.0	33.2-121	% Rec	1.0	2/16/05	2/21/05

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WorkOrder: 0502100

ANALYTICAL REPORT

Client Sample ID: 3472-B12S-20 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-14A

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	0.025	µg/g	1.0	2/15/05	2/16/05
Tert-butyl alcohol (TBA)	ND	0.50	µg/g	1.0	2/15/05	2/16/05
Di-isopropyl ether (DIPE)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Ethyl tert-butyl ether (ETBE)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Benzene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Tert-amyl methyl ether (TAME)	ND	0.020	µg/g	1.0	2/15/05	2/16/05
Toluene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Ethylbenzene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
m,p-Xylene	ND	0.010	µg/g	1.0	2/15/05	2/16/05
o-Xylene	ND	0.0050	µg/g	1.0	2/15/05	2/16/05
Surrogate: 1,4-Dichlorobenzene-d4	99.2	80-120	% Rec	1.0	2/15/05	2/16/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	1.0	µg/g	1.0	2/15/05	2/16/05

Client Sample ID: 3472-B12S-20 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-14B

Test Name: TPH as Diesel with Silica Gel Cleanup **Reference:** EPA 3550/3630/GCFID(LUFT)/8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	ND	1.0	µg/g	1.0	2/16/05	2/21/05
Surrogate: N-Tricosane	114	33.2-121	% Rec	1.0	2/16/05	2/21/05

Client Sample ID: 3472-B10-W16-20 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-15A

Test Name: TPH as Diesel with Silica Gel Cleanup **Reference:** EPA 3510/3630/GCFID(LUFT)/8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	ND	50	µg/L	1.0	2/10/05	2/15/05
Surrogate: N-Tricosane	61.7	34-145	% Rec	1.0	2/10/05	2/15/05

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WorkOrder: 0502100

ANALYTICAL REPORT

Client Sample ID: 3472-B10-W16-20 **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-15B

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1.0		2/9/05
Tert-butyl alcohol (TBA)	ND	10	µg/L	1.0		2/9/05
Di-isopropyl ether (DIPE)	ND	1.0	µg/L	1.0		2/9/05
Ethyl tert-butyl ether (ETBE)	ND	1.0	µg/L	1.0		2/9/05
Benzene	ND	0.50	µg/L	1.0		2/9/05
Tert-amyl methyl ether (TAME)	ND	1.0	µg/L	1.0		2/9/05
Toluene	ND	0.50	µg/L	1.0		2/9/05
Ethylbenzene	ND	0.50	µg/L	1.0		2/9/05
m,p-Xylene	ND	0.50	µg/L	1.0		2/9/05
o-Xylene	ND	0.50	µg/L	1.0		2/9/05
Surrogate: 1,4-Dichlorobenzene-d4	99.2	80.8-139	% Rec	1.0		2/9/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	50	µg/L	1.0		2/9/05

Client Sample ID: TB **Received:** 2/4/05 **Collected:** 2/2/05 0:00
Lab ID: 0502100-16A

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1.0		2/9/05
Tert-butyl alcohol (TBA)	ND	10	µg/L	1.0		2/9/05
Di-isopropyl ether (DIPE)	ND	1.0	µg/L	1.0		2/9/05
Ethyl tert-butyl ether (ETBE)	ND	1.0	µg/L	1.0		2/9/05
Benzene	ND	0.50	µg/L	1.0		2/9/05
Tert-amyl methyl ether (TAME)	ND	1.0	µg/L	1.0		2/9/05
Toluene	ND	0.50	µg/L	1.0		2/9/05
Ethylbenzene	ND	0.50	µg/L	1.0		2/9/05
m,p-Xylene	ND	0.50	µg/L	1.0		2/9/05
o-Xylene	ND	0.50	µg/L	1.0		2/9/05
Surrogate: 1,4-Dichlorobenzene-d4	95.7	80.8-139	% Rec	1.0		2/9/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	50	µg/L	1.0		2/9/05

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Work Order: 0502100
Project: 3472.04, Forks Totem Pole Market

QC SUMMARY REPORT

Method Blank

Sample ID MB-12979 | Batch ID: 12979 | Test Code: 8260OXYS | Units: µg/g | Analysis Date 2/15/05 8:01:00 AM | Prep Date 2/15/05
Client ID: | Run ID: ORGCMS3_050215A | SeqNo: 483100

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.025									
Tert-butyl alcohol (TBA)	ND	0.50									
Di-isopropyl ether (DIPE)	ND	0.020									
Ethyl tert-butyl ether (ETBE)	ND	0.020									
Benzene	ND	0.0050									
Tert-amyl methyl ether (TAME)	ND	0.020									
Toluene	ND	0.0050									
Ethylbenzene	ND	0.0050									
m,p-Xylene	0.005028	0.010									J
o-Xylene	ND	0.0050									
1,4-Dichlorobenzene-d4	0.962	0.10	1.00	0	96.2%	80	120	0			

Sample ID MB 020905 | Batch ID: R33287 | Test Code: 8260OXYW | Units: µg/L | Analysis Date 2/9/05 8:59:00 AM | Prep Date
Client ID: | Run ID: ORGCMS3_050209B | SeqNo: 482326

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	1.0									
Tert-butyl alcohol (TBA)	ND	10									
Di-isopropyl ether (DIPE)	ND	1.0									
Ethyl tert-butyl ether (ETBE)	ND	1.0									
Benzene	ND	0.50									
Tert-amyl methyl ether (TAME)	ND	1.0									
Toluene	0.1484	0.50									J
Ethylbenzene	0.1327	0.50									J
m,p-Xylene	0.2196	0.50									J
o-Xylene	ND	0.50									
1,4-Dichlorobenzene-d4	0.959	0.10	1.00	0	95.9%	81	139	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: Pvt. cust. paying on pickup
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Project: 3472.04, Forks Totem Pole Market

QC SUMMARY REPORT

Method Blank

Sample ID **MB-12979** Batch ID: **12979** Test Code: **GASS-MS** Units: **µg/g** Analysis Date **2/15/05 8:01:00 AM** Prep Date **2/15/05**
Client ID: Run ID: **ORGCMS3_050215B** SeqNo: **483489**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	0.2522	1.0									J

Sample ID **MB 020905** Batch ID: **R33285** Test Code: **GASW-MS** Units: **µg/L** Analysis Date **2/9/05 8:59:00 AM** Prep Date
Client ID: Run ID: **ORGCMS3_050209A** SeqNo: **482305**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	25.18	50									J

Sample ID **MB-12989** Batch ID: **12989** Test Code: **SGTPHDS** Units: **µg/g** Analysis Date **2/21/05 2:19:21 PM** Prep Date **2/16/05**
Client ID: Run ID: **ORGC5_050221A** SeqNo: **484745**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	0.9356	1.0									J
N-Tricosane	0.416	0.10	1.00	0	41.6%	33	121	0			

Sample ID **MB-12952** Batch ID: **12952** Test Code: **SGTPHDW** Units: **µg/L** Analysis Date **2/15/05 7:58:14 PM** Prep Date **2/10/05**
Client ID: Run ID: **ORGC5_050215A** SeqNo: **483206**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	ND	50									
N-Tricosane	34.4	0.10	50.0	0	68.7%	34	145	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

North Coast Laboratories, Ltd.

Date: 23-Feb-05

CLIENT: Pvt. cust. paying on pickup
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QC SUMMARY REPORT

Laboratory Control Spike

Sample ID **LCS-12979** Batch ID: **12979** Test Code: **8260OXYS** Units: **µg/g** Analysis Date **2/15/05 4:38:00 AM** Prep Date **2/15/05**
Client ID: Run ID: **ORGCMS3_050215A** SeqNo: **483097**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.3708	0.025	0.400	0	92.7%	86	137	0			
Tert-butyl alcohol (TBA)	7.171	0.50	8.00	0	89.6%	43	185	0			
Di-isopropyl ether (DIPE)	0.3709	0.020	0.400	0	92.7%	80	137	0			
Ethyl tert-butyl ether (ETBE)	0.3632	0.020	0.400	0	90.8%	81	133	0			
Benzene	0.3855	0.0050	0.400	0	96.4%	74	137	0			
Tert-amyl methyl ether (TAME)	0.3885	0.020	0.400	0	97.1%	81	135	0			
Toluene	0.3591	0.0050	0.400	0	89.8%	69	139	0			
Ethylbenzene	0.3882	0.0050	0.400	0	97.0%	77	139	0			
m,p-Xylene	0.7889	0.010	0.800	0	98.6%	74	147	0			
o-Xylene	0.3965	0.0050	0.400	0	99.1%	62	147	0			
1,4-Dichlorobenzene-d4	0.999	0.10	1.00	0	99.9%	80	120	0			

Sample ID **LCSD-12979** Batch ID: **12979** Test Code: **8260OXYS** Units: **µg/g** Analysis Date **2/15/05 5:04:00 AM** Prep Date **2/15/05**
Client ID: Run ID: **ORGCMS3_050215A** SeqNo: **483098**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.4104	0.025	0.400	0	103%	86	137	0.371	10.1%	20	
Tert-butyl alcohol (TBA)	8.083	0.50	8.00	0	101%	43	185	7.17	12.0%	20	
Di-isopropyl ether (DIPE)	0.4138	0.020	0.400	0	103%	80	137	0.371	10.9%	20	
Ethyl tert-butyl ether (ETBE)	0.4075	0.020	0.400	0	102%	81	133	0.363	11.5%	20	
Benzene	0.4314	0.0050	0.400	0	108%	74	137	0.386	11.2%	20	
Tert-amyl methyl ether (TAME)	0.4358	0.020	0.400	0	109%	81	135	0.388	11.5%	20	
Toluene	0.4020	0.0050	0.400	0	101%	69	139	0.359	11.3%	20	
Ethylbenzene	0.4382	0.0050	0.400	0	110%	77	139	0.388	12.1%	20	
m,p-Xylene	0.8851	0.010	0.800	0	111%	74	147	0.789	11.5%	20	
o-Xylene	0.4372	0.0050	0.400	0	109%	62	147	0.396	9.76%	20	
1,4-Dichlorobenzene-d4	0.992	0.10	1.00	0	99.2%	80	120	0.999	0.692%	15	

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

CLIENT: Pvt. cust. paying on pickup
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Project: 3472.04, Forks Totem Pole Market

QC SUMMARY REPORT

Laboratory Control Spike

Sample ID **LCS-05096** Batch ID: **R33287** Test Code: **8260OXYW** Units: **µg/L** Analysis Date **2/9/05 5:36:00 AM** Prep Date
Client ID: Run ID: **ORGCMS3_050209B** SeqNo: **482323**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	20.42	1.0	20.0	0	102%	80	120	0			
Tert-butyl alcohol (TBA)	353.6	10	400	0	88.4%	25	162	0			
Di-isopropyl ether (DIPE)	20.97	1.0	20.0	0	105%	80	120	0			
Ethyl tert-butyl ether (ETBE)	20.82	1.0	20.0	0	104%	77	120	0			
Benzene	21.10	0.50	20.0	0	106%	78	117	0			
Tert-amyl methyl ether (TAME)	20.53	1.0	20.0	0	103%	64	136	0			
Toluene	19.29	0.50	20.0	0	96.5%	80	120	0			
Ethylbenzene	20.33	0.50	20.0	0	102%	80	120	0			
m,p-Xylene	41.07	0.50	40.0	0	103%	80	120	0			
o-Xylene	20.06	0.50	20.0	0	100%	80	120	0			
1,4-Dichlorobenzene-d4	1.00	0.10	1.00	0	100%	81	139	0			

Sample ID **LCSD-05096** Batch ID: **R33287** Test Code: **8260OXYW** Units: **µg/L** Analysis Date **2/9/05 6:01:00 AM** Prep Date
Client ID: Run ID: **ORGCMS3_050209B** SeqNo: **482324**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	20.69	1.0	20.0	0	103%	80	120	20.4	1.31%	20	
Tert-butyl alcohol (TBA)	357.2	10	400	0	89.3%	25	162	354	0.989%	20	
Di-isopropyl ether (DIPE)	21.00	1.0	20.0	0	105%	80	120	21.0	0.148%	20	
Ethyl tert-butyl ether (ETBE)	20.91	1.0	20.0	0	105%	77	120	20.8	0.430%	20	
Benzene	21.15	0.50	20.0	0	106%	78	117	21.1	0.239%	20	
Tert-amyl methyl ether (TAME)	20.90	1.0	20.0	0	104%	64	136	20.5	1.76%	20	
Toluene	19.42	0.50	20.0	0	97.1%	80	120	19.3	0.655%	20	
Ethylbenzene	20.53	0.50	20.0	0	103%	80	120	20.3	0.988%	20	
m,p-Xylene	41.33	0.50	40.0	0	103%	80	120	41.1	0.635%	20	
o-Xylene	20.43	0.50	20.0	0	102%	80	120	20.1	1.85%	20	
1,4-Dichlorobenzene-d4	1.02	0.10	1.00	0	102%	81	139	1.00	1.71%	20	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: Pvt. cust. paying on pickup
Work Order: 0502100
Project: 3472.04, Forks Totem Pole Market

QC SUMMARY REPORT

Laboratory Control Spike

Sample ID **LCSG-12979** Batch ID: **12979** Test Code: **GASS-MS** Units: **µg/g** Analysis Date **2/15/05 6:20:00 AM** Prep Date **2/15/05**
Client ID: Run ID: **ORGCMS3_050215B** SeqNo: **483486**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	22.35	1.0	20.0	0	112%	77	124	0			

Sample ID **LCSDG-12979** Batch ID: **12979** Test Code: **GASS-MS** Units: **µg/g** Analysis Date **2/15/05 6:45:00 AM** Prep Date **2/15/05**
Client ID: Run ID: **ORGCMS3_050215B** SeqNo: **483487**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	22.18	1.0	20.0	0	111%	77	124	22.4	0.784%	20	

Sample ID **LCS-05097** Batch ID: **R33285** Test Code: **GASW-MS** Units: **µg/L** Analysis Date **2/9/05 7:17:00 AM** Prep Date
Client ID: Run ID: **ORGCMS3_050209A** SeqNo: **482302**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	1,073	50	1,000	0	107%	80	120	0			

Sample ID **LCSD-05097** Batch ID: **R33285** Test Code: **GASW-MS** Units: **µg/L** Analysis Date **2/9/05 7:43:00 AM** Prep Date
Client ID: Run ID: **ORGCMS3_050209A** SeqNo: **482303**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	1,072	50	1,000	0	107%	80	120	1,070	0.146%	20	

Sample ID **LCS-12989** Batch ID: **12989** Test Code: **SGTPHDS** Units: **µg/g** Analysis Date **2/21/05 12:25:15 PM** Prep Date **2/16/05**
Client ID: Run ID: **ORGC5_050221A** SeqNo: **484743**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	6.314	1.0	10.0	0	63.1%	36	97	0			
N-Tricosane	0.880	0.10	1.00	0	88.0%	33	121	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: Pvt. cust. paying on pickup
Work Order: 0502100
Project: 3472.04, Forks Totem Pole Market

QC SUMMARY REPORT

Laboratory Control Spike Duplicate

Sample ID **LCSD-12989** Batch ID: **12989** Test Code: **SGTPHDS** Units: **µg/g** Analysis Date **2/21/05 12:53:28 PM** Prep Date **2/16/05**
Client ID: Run ID: **ORGC5_050221A** SeqNo: **484744**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	6.652	1.0	10.0	0	66.5%	36	97	6.31	5.22%	17	
N-Tricosane	0.821	0.10	1.00	0	82.1%	33	121	0.880	6.96%	15	

Sample ID **LCS-12952** Batch ID: **12952** Test Code: **SGTPHDW** Units: **µg/L** Analysis Date **2/15/05 7:01:19 PM** Prep Date **2/10/05**
Client ID: Run ID: **ORGC5_050215A** SeqNo: **483205**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	361.1	50	500	0	72.2%	33	92	0			
N-Tricosane	47.1	0.10	50.0	0	94.2%	34	145	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

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Chain of Custody

LABORATORY NUMBER: 0502100

Attention: Valerie Ellis
Results & Invoice to: Forks Estate
Address: P.O. Box 1092, Kodiak, AK 99615

Phone: (707) 443-5054
Copies of Report to: Lori Biondini - LACO ASSOCIATES

Sampler (Sign & Print): LBiondini - LDB

TAT: ☐ 24 Hr ☐ 48 Hr ☐ 5 Day ☐ 5–7 Day
☒ STD (2–3 Wk) ☐ Other:
PRIOR AUTHORIZATION IS REQUIRED FOR RUSHES

REPORTING REQUIREMENTS: State Forms ☐
Preliminary: email FAX ☐ Verbal ☐ By:
Final Report: FAX ☐ Verbal ☐ By:

CONTAINER CODES: 1—½ gal. pl; 2—250 ml pl; 3—500 ml pl; 4—1 L Nalgene; 5—250 ml BG; 6—500 ml BG; 7—1 L BG; 8—1 L cg; 9—40 ml VOA; 10—125 ml VOA; 11—4 oz glass jar; 12—8 oz glass jar; 13—brass tube; 14—other

PRESERVATIVE CODES: a—HNO_3; b—HCl; c—H_2SO_4; d—$Na_2S_2O_3$; e—NaOH; f—$C_2H_3O_2Cl$; g—other

PROJECT INFORMATION

Project Number: 3472.04
Project Name: Forks Totem Pole Market
Purchase Order Number:

LAB ID	SAMPLE ID	DATE	TIME	MATRIX*	ANALYSIS: 8260 List 1	ANALYSIS: TPHd w/ SGC	CONTAINER: 13/9	CONTAINER: 13/7	PRESERVATIVE: 6
	3472-B10-S8	2/2/05	AM	S	1	1			
	B10-S12				1	1			
	B10-S16				1	1			
	B10-S20				1	1			
	3472-B10-W16-20			GW	3	1			
	3472-B11-S4		PM	S	1	1			
	B11-S8				1	1			
	B11-S12				1	1			
	B11-S16				1	1			
	B11-S20				1	1			

SAMPLE CONDITION/SPECIAL INSTRUCTIONS

Cooler temp=9.3°C

RELINQUISHED BY (Sign & Print)	DATE/TIME	RECEIVED BY (Sign)	DATE/TIME
Gary L Manhart	2-4-05 1428	Britta Wood	2/4/05
			1428
			2/4/05

SAMPLE DISPOSAL
☒ NCL Disposal of Non-Contaminated
☐ Return ☐ Pickup

CHAIN OF CUSTODY SEALS Y/N/NA
SHIPPED VIA: UPS Air-Ex Fed-Ex Bus Hand

***MATRIX:** DW=Drinking Water; Eff=Effluent; Inf=Influent; SW=Surface Water; GW=Ground Water; S=Soil; O=Other.

ALL CONTAMINATED NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT

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Chain of Custody

LABORATORY NUMBER: 0502100

Attention: Valerie Ellis
Results & Invoice to: Forks Estate
Address: P.O. Box 1092, Kodiak, AK 99615

Phone: (707) 443-5054
Copies of Report to: Lori Biondini - LACO ASSOCIATES

Sampler (Sign & Print): [signature] - LDB

TAT: ☐ 24 Hr ☐ 48 Hr ☐ 5 Day ☐ 5–7 Day
☒ STD (2–3 Wk) ☐ Other: _____
PRIOR AUTHORIZATION IS REQUIRED FOR RUSHES

REPORTING REQUIREMENTS: State Forms ☐
Preliminary: email FAX ☐ Verbal ☐ By: ___
Final Report: FAX ☐ Verbal ☐ By: ___

CONTAINER CODES: 1—½ gal. pl; 2—250 ml pl; 3—500 ml pl; 4—1 L Nalgene; 5—250 ml BG; 6—500 ml BG; 7—1 L BG; 8—1 L cg; 9—40 ml VOA; 10—125 ml VOA; 11—4 oz glass jar; 12—8 oz glass jar; 13—brass tube; 14—other

PRESERVATIVE CODES: a—HNO_3; b—HCl; c—H_2SO_4; d—$Na_2S_2O_3$; e—NaOH; f—$C_2H_3O_2Cl$; g—other

PROJECT INFORMATION

Project Number: 3472.04
Project Name: Forks Totem Pole Market
Purchase Order Number: _____

LAB ID	SAMPLE ID	DATE	TIME	MATRIX*	ANALYSIS: 8260 List 1	CONTAINER: 13/9	PRESERVATIVE: b
	3472-B12-S4	2/2/05	PM	S	1	1	
	B12-S8				1	1	
	B12-S12				1	1	
	B12-S16				1	1	
	B12-S20				1	1	
	TB						

ANALYSIS	CONTAINER	PRESERVATIVE
8260 List 1	13/9	b
TPHd w/ SGC	13/7	

SAMPLE CONDITION/SPECIAL INSTRUCTIONS

RELINQUISHED BY (Sign & Print)	DATE/TIME	RECEIVED BY (Sign)	DATE/TIME
Gary L. Manhart	2-4-05 1428	Britta Wood	2/4/05 1428
			(OCH) B. Wood 2/4/05

SAMPLE DISPOSAL
☒ NCL Disposal of Non-Contaminated
☐ Return ☐ Pickup

CHAIN OF CUSTODY SEALS Y/N/NA
SHIPPED VIA: UPS Air-Ex Fed-Ex Bus Hand

*MATRIX: DW=Drinking Water; Eff=Effluent; Inf=Influent; SW=Surface Water; GW=Ground Water; S=Soil; O=Other.

ALL CONTAMINATED NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT

NORTH COAST LABORATORIES LTD.

March 28, 2005

RECEIVED
LACO ASSOCIATES
MAR 29 2005
BY: JG

LACO Associates
P.O. Box 1023
Eureka, CA 95502

Order No.: 0503028
Invoice No.: 48746
PO No.:
ELAP No. 1247-Expires July 2006

Attn: Ms. Valerie Ellis-Forks Estate

DRG ___

RE: 3472.04, Totem Pole Market

LDB ___

SAMPLE IDENTIFICATION

Fraction	Client Sample Description
01A	3472-MW1-W
01D	3472-MW1-W
02A	3472-MW2-W
02D	3472-MW2-W
03A	3472-MW4S-W
03D	3472-MW4S-W
04A	3472-MW4D-W
04D	3472-MW4D-W
05A	3472-MW5-W
05D	3472-MW5-W
06A	3472-QCTB-W

ND = Not Detected at the Reporting Limit

Limit = Reporting Limit

All solid results are expressed on a wet-weight basis unless otherwise noted.

REPORT CERTIFIED BY

Colleen Blackstone (for SKD) Laura Miller

Laboratory Supervisor(s) QA Unit Jesse G. Chaney, Jr.
Laboratory Director

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North Coast Laboratories, Ltd. **Date:** *28-Mar-05*

CLIENT: LACO Associates
Project: 3472.04, Totem Pole Market
Lab Order: 0503028

CASE NARRATIVE

All samples submitted for a silica gel cleanup were initially analyzed for diesel. The samples showing no detectable levels of the analyte were not subjected to the cleanup procedure.

TPH as Diesel with Silica Gel Cleanup:
The relative percent difference (RPD) for the laboratory control samples was above the upper acceptance limit for diesel and the surrogate. This indicates that the results could be variable.

Sample 3472-MW1-W contains some material lighter than diesel. However, some of this material extends into the diesel range of molecular weights. This sample also contains material in the diesel range of molecular weights, but the material does not exhibit the peak pattern typical of diesel oil.

TPH as Diesel:
The surrogate recoveries were above the upper acceptance limit for sample 3472-MW2-W and the laboratory control sample duplicate (LCSD). The LCSD recovery was within the acceptance limit for diesel; therefore, the data were accepted.

Gasoline Components/Additives:
The gasoline value for sample 3472-MW1-W includes the reported gasoline components and additives in addition to other peaks in the gasoline range.

The surrogate recovery for sample 3472-MW1-W was outside of the acceptance limits. The surrogate recoveries for the quality control samples were within the acceptance limits. This indicates that the low surrogate recovery may be due to matrix effects from the sample.

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Date: 28-Mar-05
WorkOrder: 0503028

ANALYTICAL REPORT

Client Sample ID: 3472-MW1-W **Received:** 3/1/05 **Collected:** 2/28/05 0:00
Lab ID: 0503028-01A **Matrix:** Groundwater

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1.0		3/7/05
Tert-butyl alcohol (TBA)	ND	10	µg/L	1.0		3/7/05
Di-isopropyl ether (DIPE)	2.3	1.0	µg/L	1.0		3/7/05
Ethyl tert-butyl ether (ETBE)	ND	1.0	µg/L	1.0		3/7/05
Benzene	ND	0.50	µg/L	1.0		3/7/05
Tert-amyl methyl ether (TAME)	ND	1.0	µg/L	1.0		3/7/05
Toluene	ND	0.50	µg/L	1.0		3/7/05
Ethylbenzene	4.4	0.50	µg/L	1.0		3/7/05
m,p-Xylene	0.60	0.50	µg/L	1.0		3/7/05
o-Xylene	ND	0.50	µg/L	1.0		3/7/05
Surrogate: 1,4-Dichlorobenzene-d4	73.8	80.8-139	% Rec	1.0		3/7/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	3,700	50	µg/L	1.0		3/7/05

Client Sample ID: 3472-MW1-W **Received:** 3/1/05 **Collected:** 2/28/05 0:00
Lab ID: 0503028-01D **Matrix:** Groundwater

Test Name: TPH as Diesel with Silica Gel Cleanup **Reference:** EPA 3510/3630/GCFID(LUFT)/8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	160	50	µg/L	1.0	3/5/05	3/14/05
Surrogate: N-Tricosane	72.8	34-145	% Rec	1.0	3/5/05	3/14/05

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Date: 28-Mar-05
WorkOrder: 0503028

ANALYTICAL REPORT

Client Sample ID: 3472-MW2-W **Received:** 3/1/05 **Collected:** 2/28/05 0:00
Lab ID: 0503028-02A **Matrix:** Groundwater

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1.0		3/7/05
Tert-butyl alcohol (TBA)	ND	10	µg/L	1.0		3/7/05
Di-isopropyl ether (DIPE)	ND	1.0	µg/L	1.0		3/7/05
Ethyl tert-butyl ether (ETBE)	ND	1.0	µg/L	1.0		3/7/05
Benzene	ND	0.50	µg/L	1.0		3/7/05
Tert-amyl methyl ether (TAME)	ND	1.0	µg/L	1.0		3/7/05
Toluene	ND	0.50	µg/L	1.0		3/7/05
Ethylbenzene	ND	0.50	µg/L	1.0		3/7/05
m,p-Xylene	ND	0.50	µg/L	1.0		3/7/05
o-Xylene	ND	0.50	µg/L	1.0		3/7/05
Surrogate: 1,4-Dichlorobenzene-d4	86.1	80.8-139	% Rec	1.0		3/7/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	50	µg/L	1.0		3/7/05

Client Sample ID: 3472-MW2-W **Received:** 3/1/05 **Collected:** 2/28/05 0:00
Lab ID: 0503028-02D **Matrix:** Groundwater

Test Name: TPH as Diesel **Reference:** EPA 3510/GCFID(LUFT)/EPA 8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	ND	50	µg/L	1.0	3/3/05	3/3/05
Surrogate: N-Tricosane	110	27.6-107	% Rec	1.0	3/3/05	3/3/05

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Date: 28-Mar-05
WorkOrder: 0503028

ANALYTICAL REPORT

Client Sample ID: 3472-MW4S-W **Received:** 3/1/05 **Collected:** 2/28/05 0:00
Lab ID: 0503028-03A **Matrix:** Groundwater

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1.0		3/7/05
Tert-butyl alcohol (TBA)	ND	10	µg/L	1.0		3/7/05
Di-isopropyl ether (DIPE)	ND	1.0	µg/L	1.0		3/7/05
Ethyl tert-butyl ether (ETBE)	ND	1.0	µg/L	1.0		3/7/05
Benzene	ND	0.50	µg/L	1.0		3/7/05
Tert-amyl methyl ether (TAME)	ND	1.0	µg/L	1.0		3/7/05
Toluene	ND	0.50	µg/L	1.0		3/7/05
Ethylbenzene	ND	0.50	µg/L	1.0		3/7/05
m,p-Xylene	ND	0.50	µg/L	1.0		3/7/05
o-Xylene	ND	0.50	µg/L	1.0		3/7/05
Surrogate: 1,4-Dichlorobenzene-d4	86.8	80.8-139	% Rec	1.0		3/7/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	50	µg/L	1.0		3/7/05

Client Sample ID: 3472-MW4S-W **Received:** 3/1/05 **Collected:** 2/28/05 0:00
Lab ID: 0503028-03D **Matrix:** Groundwater

Test Name: TPH as Diesel **Reference:** EPA 3510/GCFID(LUFT)/EPA 8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	ND	50	µg/L	1.0	3/3/05	3/4/05
Surrogate: N-Tricosane	97.4	27.6-107	% Rec	1.0	3/3/05	3/4/05

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Date: 28-Mar-05
WorkOrder: 0503028

ANALYTICAL REPORT

Client Sample ID: 3472-MW4D-W **Received:** 3/1/05 **Collected:** 2/28/05 0:00
Lab ID: 0503028-04A **Matrix:** Groundwater

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1.0		3/7/05
Tert-butyl alcohol (TBA)	ND	10	µg/L	1.0		3/7/05
Di-isopropyl ether (DIPE)	ND	1.0	µg/L	1.0		3/7/05
Ethyl tert-butyl ether (ETBE)	ND	1.0	µg/L	1.0		3/7/05
Benzene	ND	0.50	µg/L	1.0		3/7/05
Tert-amyl methyl ether (TAME)	ND	1.0	µg/L	1.0		3/7/05
Toluene	ND	0.50	µg/L	1.0		3/7/05
Ethylbenzene	ND	0.50	µg/L	1.0		3/7/05
m,p-Xylene	ND	0.50	µg/L	1.0		3/7/05
o-Xylene	ND	0.50	µg/L	1.0		3/7/05
Surrogate: 1,4-Dichlorobenzene-d4	85.8	80.8-139	% Rec	1.0		3/7/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	50	µg/L	1.0		3/7/05

Client Sample ID: 3472-MW4D-W **Received:** 3/1/05 **Collected:** 2/28/05 0:00
Lab ID: 0503028-04D **Matrix:** Groundwater

Test Name: TPH as Diesel **Reference:** EPA 3510/GCFID(LUFT)/EPA 8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	ND	50	µg/L	1.0	3/3/05	3/4/05
Surrogate: N-Tricosane	98.1	27.6-107	% Rec	1.0	3/3/05	3/4/05

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Date: 28-Mar-05
WorkOrder: 0503028

ANALYTICAL REPORT

Client Sample ID: 3472-MW5-W **Received:** 3/1/05 **Collected:** 2/28/05 0:00
Lab ID: 0503028-05A **Matrix:** Groundwater

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1.0		3/8/05
Tert-butyl alcohol (TBA)	ND	10	µg/L	1.0		3/8/05
Di-isopropyl ether (DIPE)	ND	1.0	µg/L	1.0		3/8/05
Ethyl tert-butyl ether (ETBE)	ND	1.0	µg/L	1.0		3/8/05
Benzene	ND	0.50	µg/L	1.0		3/8/05
Tert-amyl methyl ether (TAME)	ND	1.0	µg/L	1.0		3/8/05
Toluene	ND	0.50	µg/L	1.0		3/8/05
Ethylbenzene	ND	0.50	µg/L	1.0		3/8/05
m,p-Xylene	ND	0.50	µg/L	1.0		3/8/05
o-Xylene	ND	0.50	µg/L	1.0		3/8/05
Surrogate: 1,4-Dichlorobenzene-d4	87.9	80.8-139	% Rec	1.0		3/8/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	50	µg/L	1.0		3/8/05

Client Sample ID: 3472-MW5-W **Received:** 3/1/05 **Collected:** 2/28/05 0:00
Lab ID: 0503028-05D **Matrix:** Groundwater

Test Name: TPH as Diesel **Reference:** EPA 3510/GCFID(LUFT)/EPA 8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	ND	50	µg/L	1.0	3/3/05	3/4/05
Surrogate: N-Tricosane	94.0	27.6-107	% Rec	1.0	3/3/05	3/4/05

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Date: 28-Mar-05
WorkOrder: 0503028

ANALYTICAL REPORT

Client Sample ID: 3472-QCTB-W **Received:** 3/1/05 **Collected:** 2/28/05 0:00
Lab ID: 0503028-06A **Matrix:** Trip Blank

Test Name: Gasoline Components/Additives **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1.0		3/7/05
Tert-butyl alcohol (TBA)	ND	10	µg/L	1.0		3/7/05
Di-isopropyl ether (DIPE)	ND	1.0	µg/L	1.0		3/7/05
Ethyl tert-butyl ether (ETBE)	ND	1.0	µg/L	1.0		3/7/05
Benzene	ND	0.50	µg/L	1.0		3/7/05
Tert-amyl methyl ether (TAME)	ND	1.0	µg/L	1.0		3/7/05
Toluene	ND	0.50	µg/L	1.0		3/7/05
Ethylbenzene	ND	0.50	µg/L	1.0		3/7/05
m,p-Xylene	ND	0.50	µg/L	1.0		3/7/05
o-Xylene	ND	0.50	µg/L	1.0		3/7/05
Surrogate: 1,4-Dichlorobenzene-d4	85.8	80.8-139	% Rec	1.0		3/7/05

Test Name: TPH as Gasoline **Reference:** LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	50	µg/L	1.0		3/7/05

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North Coast Laboratories, Ltd.

Date: 28-Mar-05

CLIENT: LACO Associates
Work Order: 0503028
Project: 3472.04, Totem Pole Market

QC SUMMARY REPORT

Method Blank

Sample ID: **MB 030705** Batch ID: **R33731** Test Code: **8260OXYW** Units: **µg/L** Analysis Date: **3/7/05 7:15:00 AM** Prep Date:
Client ID: Run ID: **ORGCMS2_050307A** SeqNo: **488324**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	1.0									
Tert-butyl alcohol (TBA)	ND	10									
Di-isopropyl ether (DIPE)	ND	1.0									
Ethyl tert-butyl ether (ETBE)	ND	1.0									
Benzene	ND	0.50									
Tert-amyl methyl ether (TAME)	ND	1.0									
Toluene	ND	0.50									
Ethylbenzene	0.1090	0.50									J
m,p-Xylene	0.2857	0.50									J
o-Xylene	0.2354	0.50									J
1,4-Dichlorobenzene-d4	0.859	0.10	1.00	0	85.9%	81	139	0			

Sample ID: **MB 030705** Batch ID: **R33732** Test Code: **GASW-MS** Units: **µg/L** Analysis Date: **3/7/05 7:15:00 AM** Prep Date:
Client ID: Run ID: **ORGCMS2_050307B** SeqNo: **488350**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	ND	50									

Sample ID: **MB-13110** Batch ID: **13110** Test Code: **SGTPHDW** Units: **µg/L** Analysis Date: **3/14/05 7:03:17 PM** Prep Date: **3/5/05**
Client ID: Run ID: **ORGC7_050314A** SeqNo: **489748**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	ND	50									
N-Tricosane	38.3	0.10	50.0	0	76.5%	34	145	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: LACO Associates
Work Order: 0503028
Project: 3472.04, Totem Pole Market

QC SUMMARY REPORT

Method Blank

Sample ID: **MB-13088** Batch ID: **13088** Test Code: **TPHDIW** Units: **µg/L** Analysis Date: **3/3/05 11:31:10 PM** Prep Date: **3/3/05**

Client ID: Run ID: **ORGC7_050303B** SeqNo: **488139**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	ND	50									
N-Tricosane	50.0	0.10	50.0	0	100%	28	107	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

North Coast Laboratories, Ltd.

Date: 28-Mar-05

CLIENT: LACO Associates
Work Order: 0503028
Project: 3472.04, Totem Pole Market

QC SUMMARY REPORT

Laboratory Control Spike

Sample ID: **LCS-05162** Batch ID: **R33731** Test Code: **8260OXYW** Units: **µg/L** Analysis Date: **3/7/05 3:13:00 AM** Prep Date:

Client ID: Run ID: **ORGCMS2_050307A** SeqNo: **488321**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	18.63	1.0	20.0	0	93.1%	80	120	0			
Tert-butyl alcohol (TBA)	517.4	10	400	0	129%	25	162	0			
Di-isopropyl ether (DIPE)	17.83	1.0	20.0	0	89.1%	80	120	0			
Ethyl tert-butyl ether (ETBE)	20.11	1.0	20.0	0	101%	77	120	0			
Benzene	16.02	0.50	20.0	0	80.1%	78	117	0			
Tert-amyl methyl ether (TAME)	18.66	1.0	20.0	0	93.3%	64	136	0			
Toluene	16.42	0.50	20.0	0	82.1%	80	120	0			
Ethylbenzene	18.28	0.50	20.0	0	91.4%	80	120	0			
m,p-Xylene	34.17	0.50	40.0	0	85.4%	80	120	0			
o-Xylene	17.21	0.50	20.0	0	86.1%	80	120	0			
1,4-Dichlorobenzene-d4	1.30	0.10	1.00	0	131%	81	139	0			

Sample ID: **LCSD-05162** Batch ID: **R33731** Test Code: **8260OXYW** Units: **µg/L** Analysis Date: **3/7/05 3:44:00 AM** Prep Date:

Client ID: Run ID: **ORGCMS2_050307A** SeqNo: **488322**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	18.11	1.0	20.0	0	90.6%	80	120	18.6	2.81%	20	
Tert-butyl alcohol (TBA)	446.6	10	400	0	112%	25	162	517	14.7%	20	
Di-isopropyl ether (DIPE)	17.80	1.0	20.0	0	89.0%	80	120	17.8	0.142%	20	
Ethyl tert-butyl ether (ETBE)	20.64	1.0	20.0	0	103%	77	120	20.1	2.59%	20	
Benzene	16.67	0.50	20.0	0	83.4%	78	117	16.0	4.00%	20	
Tert-amyl methyl ether (TAME)	18.67	1.0	20.0	0	93.3%	64	136	18.7	0.0535%	20	
Toluene	16.87	0.50	20.0	0	84.3%	80	120	16.4	2.70%	20	
Ethylbenzene	19.28	0.50	20.0	0	96.4%	80	120	18.3	5.31%	20	
m,p-Xylene	35.19	0.50	40.0	0	88.0%	80	120	34.2	2.95%	20	
o-Xylene	17.39	0.50	20.0	0	87.0%	80	120	17.2	1.06%	20	
1,4-Dichlorobenzene-d4	1.28	0.10	1.00	0	128%	81	139	1.30	1.75%	20	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: LACO Associates
Work Order: 0503028
Project: 3472.04, Totem Pole Market

QC SUMMARY REPORT

Laboratory Control Spike

Sample ID: **LCS-05163** Batch ID: **R33732** Test Code: **GASW-MS** Units: **µg/L** Analysis Date: **3/7/05 5:15:00 AM** Prep Date:
Client ID: Run ID: **ORGCMS2_050307B** SeqNo: **488347**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	1,064	50	1,000	0	106%	80	120	0			

Sample ID: **LCSD-05163** Batch ID: **R33732** Test Code: **GASW-MS** Units: **µg/L** Analysis Date: **3/7/05 5:45:00 AM** Prep Date:
Client ID: Run ID: **ORGCMS2_050307B** SeqNo: **488348**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	1,015	50	1,000	0	102%	80	120	1,060	4.67%	20	

Sample ID: **LCS-13110** Batch ID: **13110** Test Code: **SGTPHDW** Units: **µg/L** Analysis Date: **3/14/05 5:04:15 PM** Prep Date: **3/5/05**
Client ID: Run ID: **ORGC7_050314A** SeqNo: **489746**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	420.2	50	500	0	84.0%	33	92	0			
N-Tricosane	66.8	0.10	50.0	0	134%	34	145	0			

Sample ID: **LCSD-13110** Batch ID: **13110** Test Code: **SGTPHDW** Units: **µg/L** Analysis Date: **3/14/05 5:33:49 PM** Prep Date: **3/5/05**
Client ID: Run ID: **ORGC7_050314A** SeqNo: **489747**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	355.0	50	500	0	71.0%	33	92	420	16.8%	13	R
N-Tricosane	58.6	0.10	50.0	0	117%	34	145	66.8	13.2%	11	R

Sample ID: **LCS-13088** Batch ID: **13088** Test Code: **TPHDIW** Units: **µg/L** Analysis Date: **3/3/05 9:58:08 PM** Prep Date: **3/3/05**
Client ID: Run ID: **ORGC7_050303B** SeqNo: **488136**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	408.0	50	500	0	81.6%	80	120	0			
N-Tricosane	53.4	0.10	50.0	0	107%	28	107	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: LACO Associates
Work Order: 0503028
Project: 3472.04, Totem Pole Market

QC SUMMARY REPORT

Laboratory Control Spike Duplicate

Sample ID: **LCSD-13088** Batch ID: **13088** Test Code: **TPHDIW** Units: **µg/L** Analysis Date: **3/3/05 10:16:55 PM** Prep Date: **3/3/05**

Client ID: Run ID: **ORGC7_050303B** SeqNo: **488137**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	420.7	50	500	0	84.1%	80	120	408	3.06%	15	
N-Tricosane	54.0	0.10	50.0	0	108%	28	107	53.4	1.06%	15	S

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

NORTH COAST LABORATORIES LTD.
5680 West End Road • Arcata • CA 95521-9202
707-822-4649 Fax 707-822-6831

Chain of Custody

0503028

LABORATORY NUMBER:

Attention: Ms. Valerie Ellis
Results & Invoice to: Forks Estate
Address: P.O. Box 1092 Kodiak, AK 99615

Phone: (907) 486-2042
Copies of Report to: LACO ; Anna Forina

Sampler (Sign & Print): SJD

TAT: ☐ 24 Hr ☐ 48 Hr ☐ 5 Day ☐ 5–7 Day
☑ STD (2–3 Wk) ☐ Other:
PRIOR AUTHORIZATION IS REQUIRED FOR RUSHES

REPORTING REQUIREMENTS: State Forms ☐
Preliminary: FAX ☑ Verbal ☐ By:
Final Report: FAX ☐ Verbal ☐ By:

CONTAINER CODES: 1—½ gal. pl; 2—250 ml pl; 3—500 ml pl; 4—1 L Nalgene; 5—250 ml BG; 6—500 ml BG; 7—1 L BG; 8—1 L cg; 9—40 ml VOA; 10—125 ml VOA; 11—4 oz glass jar; 12—8 oz glass jar; 13—brass tube; 14—other

PRESERVATIVE CODES: a—HNO_3; b—HCl; c—H_2SO_4; d—$Na_2S_2O_3$; e—NaOH; f—$C_2H_3O_2Cl$; g—other

PROJECT INFORMATION

Project Number: 3472.04
Project Name: Totem Pole Market
Purchase Order Number: TASK 3020

LAB ID	SAMPLE ID	DATE	TIME	MATRIX*	ANALYSIS: 8260 List 1 (CONTAINER 9, PRESERVATIVE b)	ANALYSIS: TPHd w/SGC (CONTAINER 7, PRESERVATIVE --)
	3472-MW1-W	2-28-05	AM	GW	3	1
	3472-MW2-W	↓	↓	↓	3	1
					3	1
	3472-MW4S-W				3	1
	3472-MW4D-W				3	1
	3472-MW5-W				3	1
	3472-QCTB-W				1	

SAMPLE CONDITION/SPECIAL INSTRUCTIONS

GEOTRACKER
Intact/on ice

RELINQUISHED BY (Sign & Print)	DATE/TIME	RECEIVED BY (Sign)	DATE/TIME
STEVE DAVIS	3-1-05 12:20pm	Zana Miller	3/1/05 1222

SAMPLE DISPOSAL
☑ NCL Disposal of Non-Contaminated
☐ Return ☐ Pickup

CHAIN OF CUSTODY SEALS Y/N/NA
SHIPPED VIA: UPS Air-Ex Fed-Ex Bus Hand

***MATRIX:** DW=Drinking Water; Eff=Effluent; Inf=Influent; SW=Surface Water; GW=Ground Water; S=Soil; O=Other.

ALL CONTAMINATED NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT

Attachment 4

ATTACHMENT 1: KEY TO ABBREVIATIONS
Former Totem Pole Market; LACO Project No. 3472.04
580 South Fortuna Boulevard, Fortuna, CA
LOP No. 12028

KEY TO TECHNICAL ABBREVIATIONS		
Alk	--	Alkalinity
bgs	--	below ground surface
BTEX	--	Benzene; Toluene; Ethylbenzene; m,p- and o- Xylenes
CO_2	--	Carbon dioxide
COC	--	Chain of custody
Cr	--	Chromium
DHP	--	Down-hole-pump (submersible pump)
DIPE	--	Di-isopropyl Ether
Dis	--	Dissolved
DO	--	Dissolved Oxygen
DTW	--	Depth-to-Water
ECw	--	Electrical Conductivity in water
ETBE	--	Ethyl Tertiary Butyl Ether
Fe	--	Iron
FP	--	Free Product
HASP	--	Health and Safety Plan
Mn	--	Manganese
MTBE	--	Methyl Tertiary Butyl Ether
N	--	Nitrogen
NA	--	Not Applicable
ND<50	--	non-detect at reporting limits shown
NO_3	--	Nitrate
NOT ACTIVE	--	Sample not analyzed for parameter during current sampling event
ORP	--	Oxidation Reduction Potential
P	--	Phosphorous
PCP/TCP	--	penta- tetra- tri- chlorophenols
pH	--	Potential of hydrogen
SGC	--	Silica gel cleanup
SO_4	--	Sulfate
T	--	Temperature
T&P	--	Tape and Paste
TAME	--	Tertiary Amyl Methyl Ether
TBA	--	Tetiary Butyl Alcohol
TBF	--	Tertiary Butyl Formate
TIC	--	Total Inorganic Carbon
TOC	--	Total Organic Carbon
Tot	--	Total
TPHd	--	Total Petroluem Hydrocarbons as Diesel
TPHg	--	Total Petroluem Hydrocarbons as Gasoline
TPHk	--	Total Petroluem Hydrocarbons as Kerosene
TPHmo	--	Total Petroluem Hydrocarbons as Motor Oil
TPHs	--	Total Petroluem Hydrocarbons as Solvent
UST (s)	--	Underground Storage Tank (s)
µg/L	--	Micro grams per liter (parts per billion)

Note: Not all abbreviation in this key are used in this report.

Attachment 5

appl
AGRICULTURE & PRIORITY POLLUTANTS LABORATORIES, INC.
4203 West Swift ▼ Fresno, California 93722 ▼ Phone 559.275-2175 ▼ Fax 559.275-4422

RECEIVED
JUL 13 2001
BY: AB

June 20, 2001

LMO
DRG
DNL
HWG
FRB
CWG
CSW
FILE 3472-05
Fork

North Coast Laboratories Ltd.
5680 West End Road
Arcata, California 95521

Attn: Loretta Tomlin

Subject: Report of Data: Case 35576

Results in this report apply to the sample analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Dear Ms. Tomlin:

One water sample for job # 0106100-1A was received June 06, 2001, in good condition. Written results are being provided on this June 20, 2001, for the requested analysis.

For the EPA 8260 analysis, the sample was extracted according to EPA method 5030. The sample was taken off hold June 12, 2001 and purged. The pH of the sample was 4. The tentatively identified peaks are reported. The results are based on a one to one response ratio to the nearest internal standard. The results are estimated values.

No unusual problems or complications were encountered with this sample set.

If you have any questions or require further information, please contact us at your convenience. Thank you for choosing APPL, Inc.

Sincerely,

Paula Young by DA

Paula Young, Laboratory Director
APPL, Inc.

PY/rp
Enclosure
cc: File

Number of pages in this report 7

EPA 8260B

orth Coast Laboratories Ltd.
680 W. End Road
rcata, CA 95521

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

ttn: Loretta Tomlin
roject: 0106100-1A
ample ID: 3472 MW1
ample Collection Date: 6/1/01

ARF: 35576
APPL ID AP17625
QCG: $8260-010614AH-36588

Method	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
PA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	1,1,1-Trichloroethane	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	1,1,2-Trichloroethane	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	1,1-Dichloroethane	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	1,1-Dichloroethene	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	1,2-Dichlorobenzene	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	1,2-Dichloroethane	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	1,2-Dichloropropane	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	1,3-Dichlorobenzene	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	1,4-Dichlorobenzene	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	1H-Indene, 2,3-dihydro-1-methyl-	65	TIC	ug/L	6/14/01	6/14/01
PA 8260B	1H-Indene, 2,3-dihydro-4-methyl-	60	TIC	ug/L	6/14/01	6/14/01
PA 8260B	1H-Indene, 2,3-dihydro-5-methyl-	23	TIC	ug/L	6/14/01	6/14/01
PA 8260B	Benzene	12	0.5	ug/L	6/14/01	6/14/01
PA 8260B	Benzene, (2-methyl-1-propenyl)-	26	TIC	ug/L	6/14/01	6/14/01
PA 8260B	Benzene, propyl-	30	TIC	ug/L	6/14/01	6/14/01
PA 8260B	Bromobenzene	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	Bromodichloromethane	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	Bromoform	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	Bromomethane	Not detected	1	ug/L	6/14/01	6/14/01
PA 8260B	Carbon tetrachloride	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	Chlorobenzene	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	Chloroethane	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	Chloroform	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	Chloromethane	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	Cyclohexane	130	TIC	ug/L	6/14/01	6/14/01
PA 8260B	Cyclohexane, 1-methyl	58	TIC	ug/L	6/14/01	6/14/01
PA 8260B	Cyclohexane, methyl	180	TIC	ug/L	6/14/01	6/14/01
PA 8260B	Cyclohexene, 4-methyl	22	TIC	ug/L	6/14/01	6/14/01
PA 8260B	Cyclopentane	43	TIC	ug/L	6/14/01	6/14/01
PA 8260B	Cyclopentane, 1,2,3	21	TIC	ug/L	6/14/01	6/14/01
PA 8260B	Cyclopentane, 1,2-di	76	TIC	ug/L	6/14/01	6/14/01

Run #: 0614H10
Instrument: HEWEY
Sequence: H010608
Dilution Factor: 1
Initials: RP

Printed: 6/18/01 1:57:45 PM

EPA 8260B

North Coast Laboratories Ltd.
5680 W. End Road
Arcata, CA 95521

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Loretta Tomlin
Project: 0106100-1A
Sample ID: 3472 MW1
Sample Collection Date: 6/1/01

ARF: 35576
APPL ID AP17625
QCG: $8260-010614AH-36588

Method	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
PA 8260B	Cyclopentane, 1,3-di	50	TIC	ug/L	6/14/01	6/14/01
PA 8260B	Cyclopentane, ethyl	38	TIC	ug/L	6/14/01	6/14/01
PA 8260B	Cyclopentane, methyl	170	TIC	ug/L	6/14/01	6/14/01
PA 8260B	Dibromochloromethane	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	Dibromomethane	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	Dichlorodifluoromethane	Not detected	1	ug/L	6/14/01	6/14/01
PA 8260B	Ethylbenzene	25	0.5	ug/L	6/14/01	6/14/01
PA 8260B	Freon 113	Not detected	1	ug/L	6/14/01	6/14/01
PA 8260B	Methylene chloride	Not detected	5	ug/L	6/14/01	6/14/01
PA 8260B	Tetrachloroethene	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	Toluene	0.57	0.5	ug/L	6/14/01	6/14/01
PA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	Trichloroethene	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	Trichlorofluoromethane	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	Vinyl chloride	Not detected	0.5	ug/L	6/14/01	6/14/01
PA 8260B	Xylenes	45	0.5	ug/L	6/14/01	6/14/01
PA 8260B	Surrogate recovery (BFB)	105	75-125	%	6/14/01	6/14/01
PA 8260B	Surrogate recovery (DBFM)	99.9	75-125	%	6/14/01	6/14/01
PA 8260B	Surrogate recovery (DCA)	102	75-125	%	6/14/01	6/14/01
PA 8260B	Surrogate recovery (TOL)	92.3	75-125	%	6/14/01	6/14/01

Run #: 0614H10
Instrument: HEWEY
Sequence: H010608
Dilution Factor: 1
Initials: RP

Printed: 6/18/01 1:57:45 PM

Method Blank
EPA 8260B

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Blank Name/QCG: **010614W - 36588**
Batch ID: $8260-010614AH

ple Type	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
NK	1,1,1,2-Tetrachloroethane	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	1,1,1-Trichloroethane	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	1,1,2,2-Tetrachloroethane	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	1,1,2-Trichloroethane	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	1,1-Dichloroethane	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	1,1-Dichloroethene	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	1,2-Dichlorobenzene	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	1,2-Dichloroethane	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	1,2-Dichloropropane	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	1,3-Dichlorobenzene	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	1,4-Dichlorobenzene	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	Benzene	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	Bromobenzene	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	Bromodichloromethane	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	Bromoform	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	Bromomethane	Not detected	1	ug/L	6/14/01	6/14/01
NK	Carbon tetrachloride	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	Chlorobenzene	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	Chloroethane	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	Chloroform	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	Chloromethane	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	cis-1,2-Dichloroethene	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	cis-1,3-Dichloropropene	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	Dibromochloromethane	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	Dibromomethane	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	Dichlorodifluoromethane	Not detected	1	ug/L	6/14/01	6/14/01
NK	Ethylbenzene	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	Freon 113	Not detected	1	ug/L	6/14/01	6/14/01
NK	Methylene chloride	Not detected	5	ug/L	6/14/01	6/14/01
NK	Tetrachloroethene	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	Toluene	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	trans-1,2-Dichloroethene	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	trans-1,3-Dichloropropene	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	Trichloroethene	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	Trichlorofluoromethane	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	Vinyl chloride	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	Xylenes	Not detected	0.5	ug/L	6/14/01	6/14/01
NK	Surrogate recovery (BFB)	100	75-125	%	6/14/01	6/14/01
NK	Surrogate recovery (DBFM)	97.5	75-125	%	6/14/01	6/14/01

Run #: 0614H04
Instrument: HEWEY
Sequence: H010608
Initials: RP

Printed: 6/18/01 1:58:47 PM

Method Blank
EPA 8260B

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Blank Name/QCG: **010614W - 36588**
Batch ID: $8260-010614AH

nple Type	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
NK	Surrogate recovery (DCA)	98.2	75-125	%	6/14/01	6/14/01
NK	Surrogate recovery (TOL)	93.1	75-125	%	6/14/01	6/14/01

Run #: 0614H04
Instrument: HEWEY
Sequence: H010608
Initials: RP

Printed: 6/18/01 1:58:47 PM

Laboratory Control Spike Recoveries

EPA 8260B

PPL ID: **010614W-17625 LCS - 36588**
atch ID: $8260-010614AH

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Compound Name	Spike Lvl ug/L	SPK Result ug/L	DUP Result ug/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
,2-Tetrachloroethane	10.00	9.96	9.68	99.6	96.8	75-125	2.9	25
-Trichloroethane	10.00	10.0	10.2	100	102	75-125	2.0	25
,2-Tetrachloroethane	10.00	9.50	9.20	95.0	92.0	75-125	3.2	25
-Trichloroethane	10.00	9.85	10.1	98.5	101	75-125	2.5	25
ichloroethane	10.00	10.7	10.6	107	106	75-125	0.94	25
ichloroethene	10.00	10.0	10.3	100	103	75-125	3.0	25
ichlorobenzene	10.00	9.97	9.57	99.7	95.7	75-125	4.1	25
ichloroethane	10.00	10.0	9.82	100	98.2	75-125	1.8	25
ichloropropane	10.00	10.2	10.1	102	101	75-125	0.99	25
ichlorobenzene	10.00	9.95	9.74	99.5	97.4	75-125	2.1	25
ichlorobenzene	10.00	9.79	9.60	97.9	96.0	75-125	2.0	25
ene	10.00	10.0	9.84	100	98.4	75-125	1.6	25
obenzene	10.00	10.1	9.66	101	96.6	75-125	4.5	25
odichloromethane	10.00	10.2	10.0	102	100	75-125	2.0	25
oform	10.00	9.72	9.55	97.2	95.5	75-125	1.8	25
omethane	10.00	8.63	7.81	86.3	78.1	75-125	10.0	25
on tetrachloride	10.00	10.1	10.2	101	102	75-125	0.99	25
robenzene	10.00	9.90	9.68	99.0	96.8	75-125	2.2	25
roethane	10.00	9.40	9.35	94.0	93.5	75-125	0.53	25
roform	10.00	10.7	10.4	107	104	75-125	2.8	25
romethane	10.00	7.86	7.97	78.6	79.7	75-125	1.4	25
,2-Dichloroethene	10.00	10.1	9.81	101	98.1	75-125	2.9	25
,3-Dichloropropene	10.00	10.2	10.1	102	101	75-125	0.99	25
omochloromethane	10.00	9.82	9.61	98.2	96.1	75-125	2.2	25
omomethane	10.00	10.0	9.92	100	99.2	75-125	0.80	25

omments:

Primary	SPK	DUP
Extraction Date :	6/14/01	6/14/01
Analysis Date :	6/14/01	6/14/01
Instrument :	HEWEY	HEWEY
Run :	0614H02	0614H03
Analyst :	RP	

Printed: 6/18/01 3:45:19 PM

Laboratory Control Spike Recoveries

EPA 8260B

PPL ID: **010614W-17625 LCS - 36588**
atch ID: $8260-010614AH

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

ompound Name	Spike Lvl ug/L	SPK Result ug/L	DUP Result ug/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
orodifluoromethane	10.00	8.27	8.01	82.7	80.1	75-125	3.2	25
benzene	10.00	9.92	9.72	99.2	97.2	75-125	2.0	25
113	10.00	10.0	10.3	100	103	75-125	3.0	25
ylene chloride	10.00	9.80	9.78	98.0	97.8	75-125	0.20	25
chloroethene	10.00	9.48	9.55	94.8	95.5	75-125	0.74	25
ne	10.00	10.2	10.1	102	101	75-125	0.99	25
-1,2-Dichloroethene	10.00	9.62	9.48	96.2	94.8	75-125	1.5	25
-1,3-Dichloropropene	10.00	10.1	9.97	101	99.7	75-125	1.3	25
loroethene	10.00	9.78	9.80	97.8	98.0	75-125	0.20	25
lorofluoromethane	10.00	9.78	9.71	97.8	97.1	75-125	0.72	25
chloride	10.00	9.17	9.12	91.7	91.2	75-125	0.55	25
nes	30.00	30.1	29.5	100	98.3	75-125	2.0	25
gate recovery (BFB)	30.888	30.8	31.1	99.7	101	75-125		
gate recovery (DBFM)	31.249	30.3	30.6	97.0	97.9	75-125		
gate recovery (DCA)	29.710	28.2	28.1	94.9	94.6	75-125		
gate recovery (TOL)	31.754	30.3	29.9	95.4	94.2	75-125		

omments: _____

Primary	SPK	DUP
Extraction Date :	6/14/01	6/14/01
Analysis Date :	6/14/01	6/14/01
Instrument :	HEWEY	HEWEY
Run :	0614H02	0614H03
Analyst :	RP	

Printed: 6/18/01 3:45:19 PM

LACO ASSOCIATES
CONSULTING ENGINEERS
21 West Fourth Street, Eureka, CA 95501
TEL 707.443.5054
FAX 707.443.0553

PROJECT NAME: Totem Pole
PROJECT NO:. 3472
DATE: 2/2/05
DRILLER: DRL
PM: LDB
LOGGED BY: LDB

GLOBAL ID:
FIELD POINT NAME: 3472-B1D
DRILLING METHOD: DP
AUGER/ROD DIAMETER (in):
LOCATION: S. of Market
ELEVATION (ft): ~97

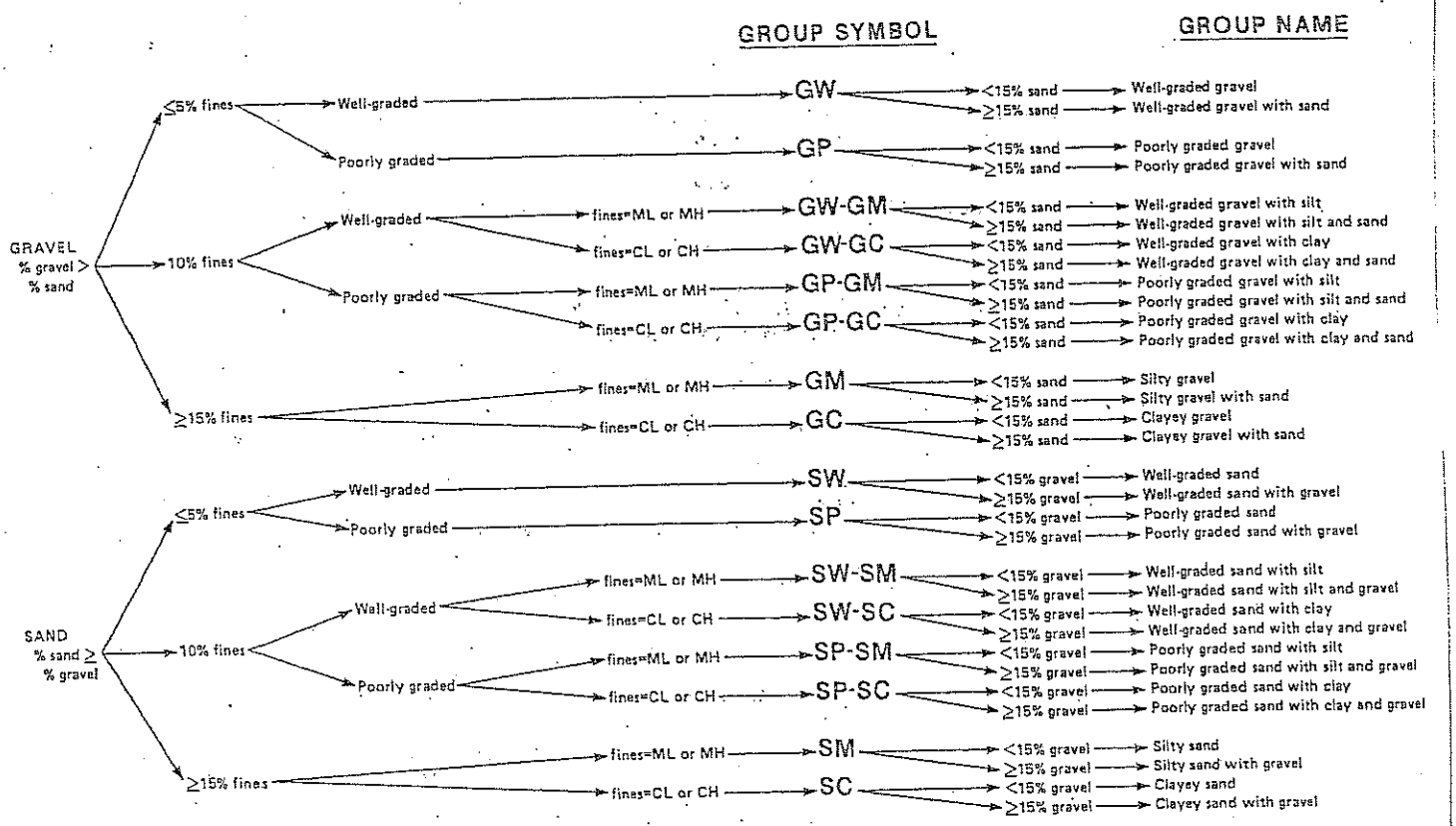
LOCATION MAP

DEPTH (ft)	COLOR (MUNSELL)	SILT AND CLAY: %CLAY	%SILT	PLASTICITY N=NONE L=LOW M=MEDIUM H=HIGH	CONSISTENCY S=SOFT F=FIRM ST=STIFF H=HARD	SAND AND GRAVEL: %SAND F=FINE M=MEDIUM C=COARSE	%GRAVEL F=FINE M=MEDIUM C=COARSE	SHAPE/ANGULARITY	DENSITY L=LOOSE MD=MEDIUM DENSE D=DENSE VH=VERY ~~H~~ DENSE HARD	ASTM D-2488 GROUP SYMBOL	MOISTURE D=DRY M=MOIST W=WET S=SATURATED	% ORGANICS	ODOR	PID (ppm)	SAMPLE A=AUGER SS=SPLIT-SPOON CC=CONTINUOUS CORE PT=PUSH TUBE	OTHER REMARKS
0-4	HA			N L M H	S F ST H	F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	
4-12	no			N L M H	S F ST H	F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	
12	tan grey w/orange	40	30	N L (M) H	S (F) ST H	(F) 30 M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	(D) M W S		none		A SS CC PT	
13.3	same	30	30	N L (M) H	S (F) ST H	(F) 40 M C	(F) 20 M C		L (MD) D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D (M) W S				A SS CC PT	
14	same	10	10	N L M H	S F ST H	(F) 60 M C	(F) 20 M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M (W) S				A SS CC PT	
15.3	same	50	40	N L (M) H	S F (ST) H	(F) 10 M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	(D) M W S				A SS CC PT	
16	same	90	10	N L M (H)	S F (ST) H	F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	(D) M W S				A SS CC PT	
17	same	70	20	N L (M) H	S F (ST) H	(F) 10 M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	(D) M W S				A SS CC PT	

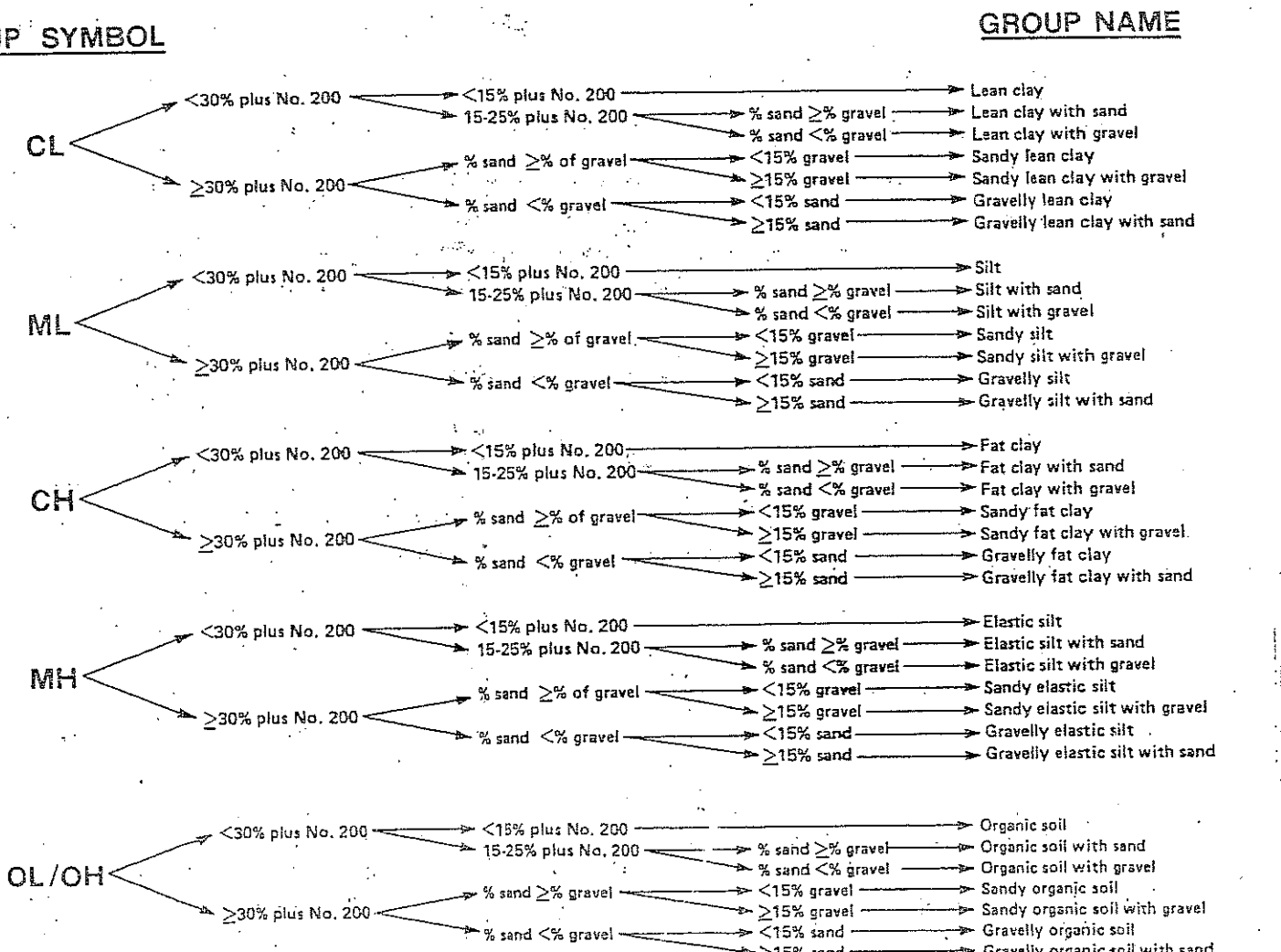
DEPTH TO WATER (ft):
CASING TYPE/DIAMETER (in):
SCREEN INTERVAL (ft bgs):

PURGE VOLUME:
PURGE METHOD:

SAMPLING METHOD:
ANALYTES:
CLOSURE:



NOTE—Percentages are based on estimating amounts of fines, sand, and gravel to the nearest 5 %.



LACO ASSOCIATES
CONSULTING ENGINEERS
21 West Fourth Street, Eureka, CA 95501
TEL 707.443.5054
FAX 707.443.0553

PROJECT NAME:
PROJECT NO:.
DATE:
DRILLER:
PM:
LOGGED BY:

GLOBAL ID:
FIELD POINT NAME:
DRILLING METHOD:
AUGER/ROD DIAMETER (in):
LOCATION:
ELEVATION (ft):

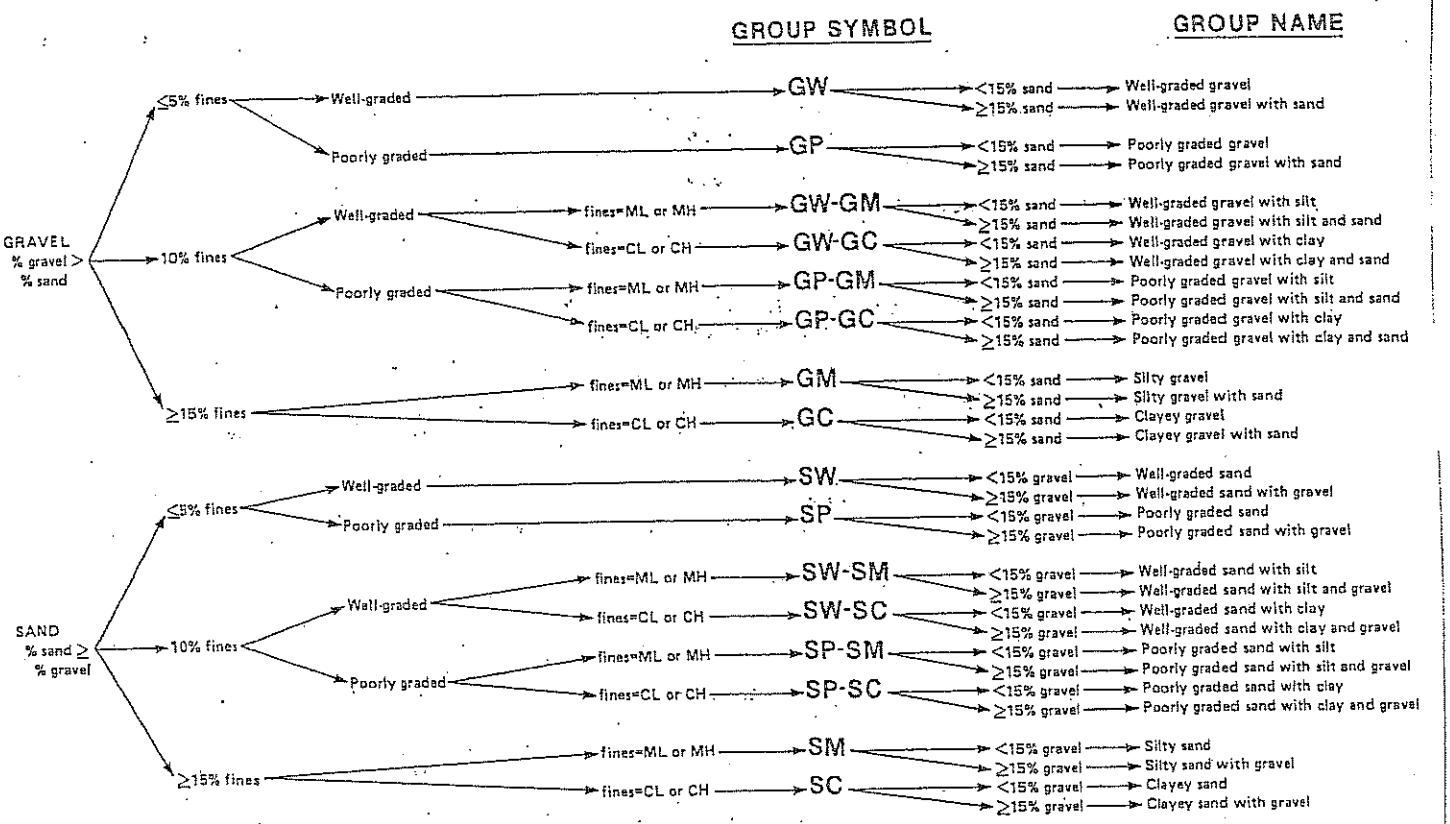
LOCATION MAP

DEPTH (ft)	COLOR (MUNSELL)	%CLAY	%SILT	PLASTICITY N=NONE L=LOW M=MEDIUM H=HIGH	CONSISTENCY S=SOFT F=FIRM ST=STIFF H=HARD	%SAND F=FINE M=MEDIUM C=COARSE	%GRAVEL F=FINE M=MEDIUM C=COARSE	SHAPE/ANGULARITY	DENSITY L=LOOSE MD=MEDIUM DENSE D=DENSE VH=VERY HARD	ASTM D-2488 GROUP SYMBOL	MOISTURE D=DRY M=MOIST W=WET S=SATURATED	% ORGANICS	ODOR	PID (ppm)	SAMPLE A=AUGER SS=SPLIT-SPOON CC=CONTINUOUS CORE PT=PUSH TUBE	OTHER REMARKS
17.3	Slightly darker	40	30	N L M H	S F ST H	F M C	M		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	
19.3		20	20	N L M H	S F ST H	F M C	F M		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	
				N L M H	S F ST H	F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	
				N L M H	S F ST H	F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	
				N L M H	S F ST H	F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	
				N L M H	S F ST H	F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	
				N L M H	S F ST H	F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	
				N L M H	S F ST H	F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	

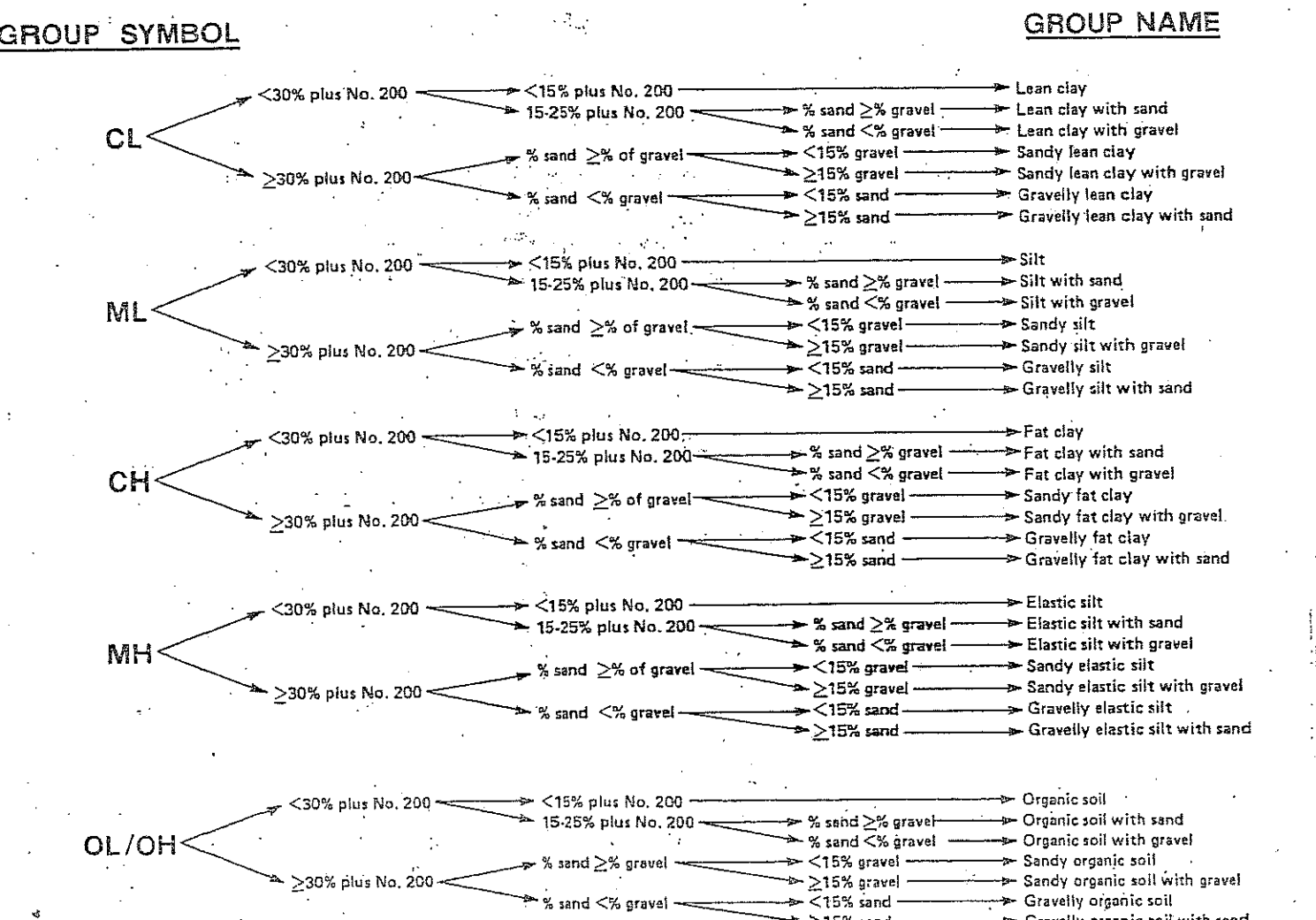
DEPTH TO WATER (ft):
CASING TYPE/DIAMETER (in):
SCREEN INTERVAL (ft bgs):

PURGE VOLUME:
PURGE METHOD:

SAMPLING METHOD:
ANALYTES:
CLOSURE:



NOTE—Percentages are based on estimating amounts of fines, sand, and gravel to the nearest 5 %.



LACO ASSOCIATES
CONSULTING ENGINEERS
21 West Fourth Street, Eureka, CA 95501
TEL 707.443.5054
FAX 707.443.0553

PROJECT NAME:
PROJECT NO:.
DATE:
DRILLER:
PM:
LOGGED BY:

GLOBAL ID: B11
FIELD POINT NAME:
DRILLING METHOD:
AUGER/ROD DIAMETER (in):
LOCATION:
ELEVATION (ft): ~[illegible]

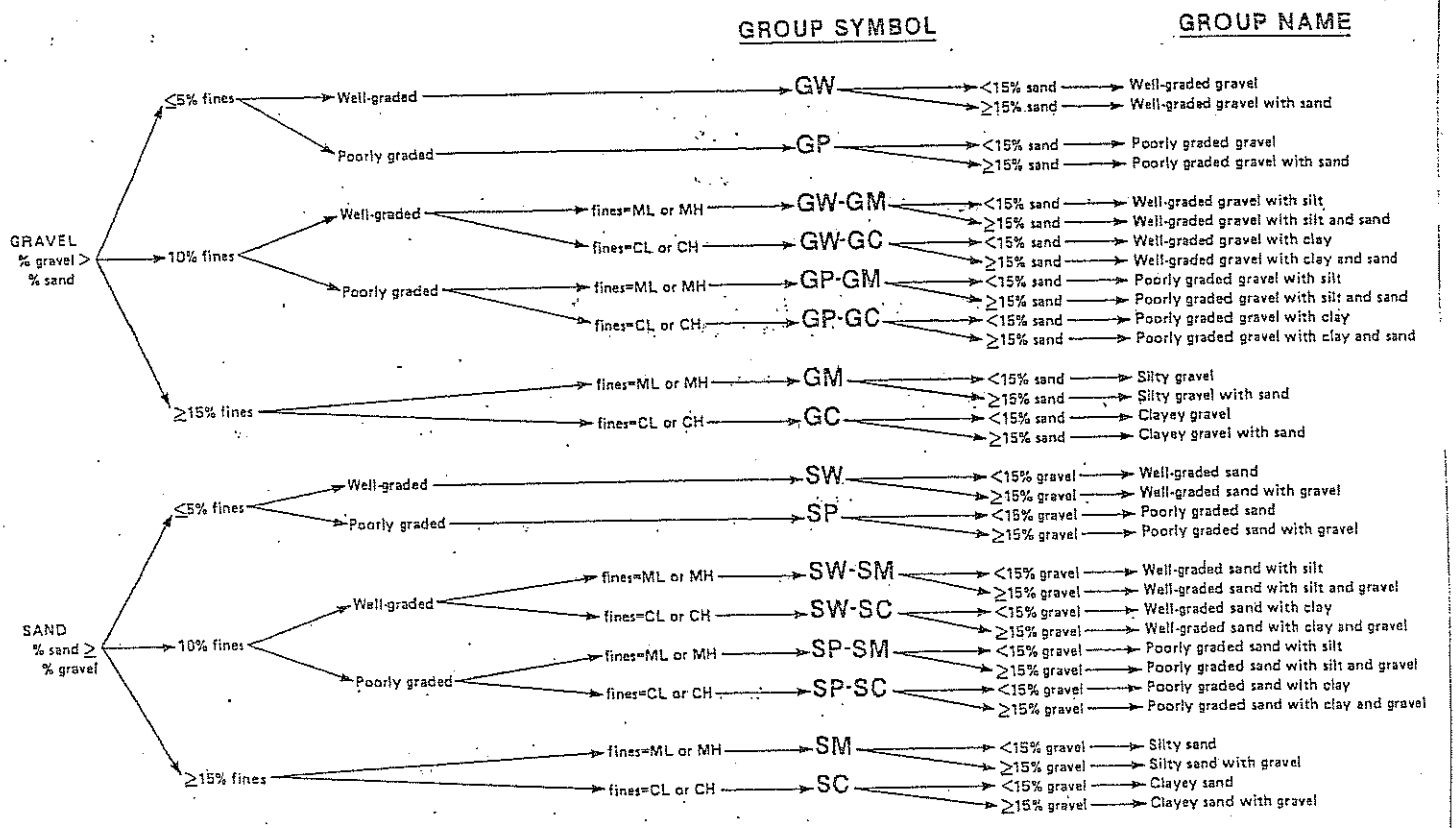
LOCATION MAP

DEPTH (ft)	COLOR (MUNSELL)	%CLAY	%SILT	PLASTICITY N=NONE L=LOW M=MEDIUM H=HIGH	CONSISTENCY S=SOFT F=FIRM ST=STIFF H=HARD	%SAND F=FINE M=MEDIUM C=COARSE	%GRAVEL F=FINE M=MEDIUM C=COARSE	SHAPE/ANGULARITY	DENSITY L=LOOSE MD=MEDIUM DENSE D=DENSE VH=VERY ~~HARD~~ dense	ASTM D-2488 GROUP SYMBOL	MOISTURE D=DRY M=MOIST W=WET S=SATURATED	% ORGANICS	ODOR	PID (ppm)	SAMPLE A=AUGER SS=SPLIT-SPOON CC=CONTINUOUS CORE PT=PUSH TUBE	OTHER REMARKS
0-4	+1A	40	50	N L M H	S F ST H	F M C 10	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	water at 4'
4	tan. mottled w/grey			N L M H	S F ST H	F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S		st. HC		A SS CC PT	4'-9'
8	same	40	60	N L M H	S F ST H	F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S		HC		A SS CC PT	
9.5	same	40	50	N L M H	S F ST H	F M C 10	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S		none		A SS CC PT	
12	same	30	40	N L M H	S F ST H	F M C 30	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S		none		A SS CC PT	
12.5	"	10	40	N L M H	S F ST H	F M C 30	F M C 20		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	
13.5	"	30	40	N L M H	S F ST H	F M C 30	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	13-14'
14.5			40	N L M H	S F ST H	F M C 60	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	

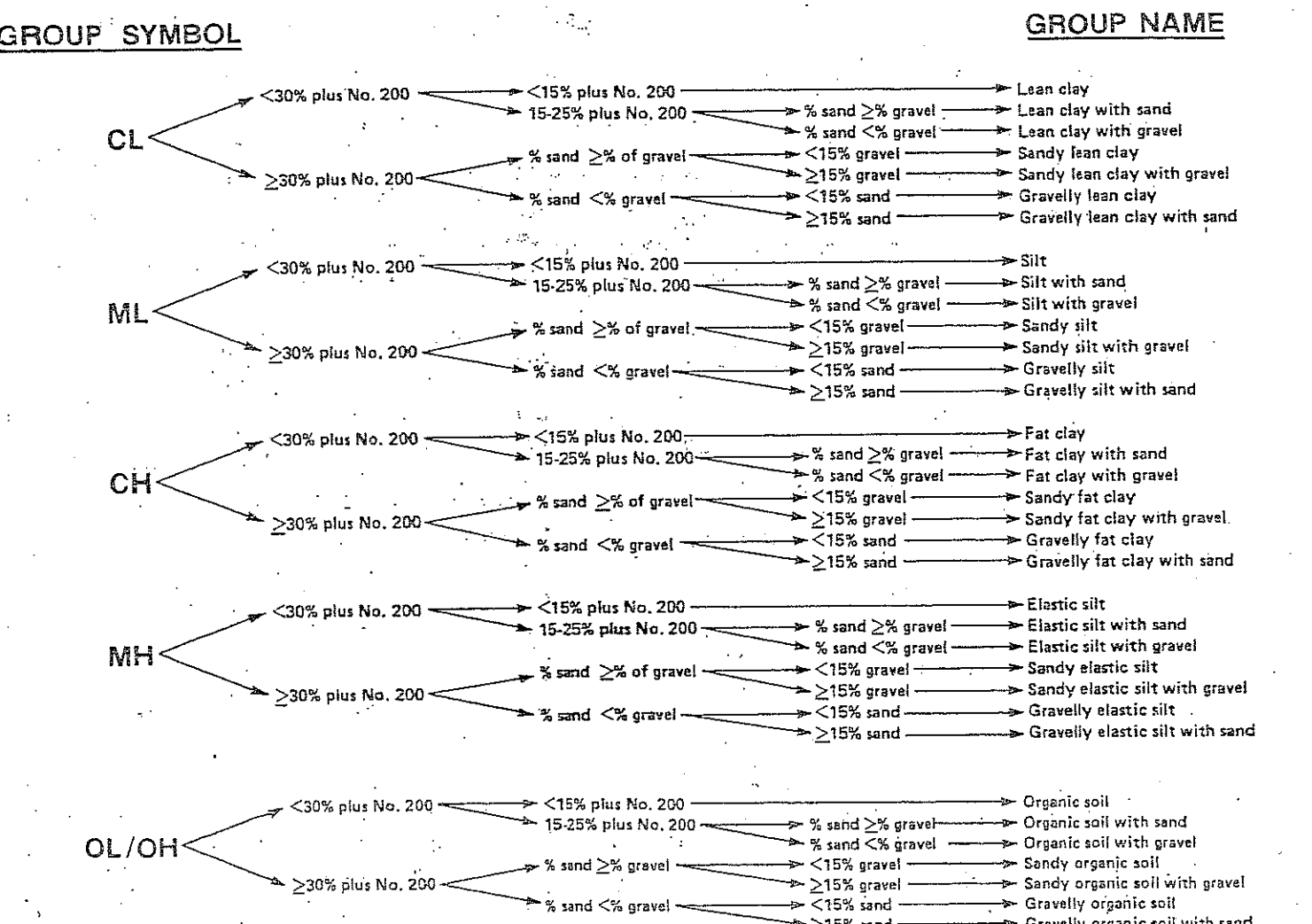
DEPTH TO WATER (ft):
CASING TYPE/DIAMETER (in):
SCREEN INTERVAL (ft bgs):

PURGE VOLUME:
PURGE METHOD:

SAMPLING METHOD:
ANALYTES:
CLOSURE:



NOTE—Percentages are based on estimating amounts of fines, sand, and gravel to the nearest 5 %.



LACO ASSOCIATES
CONSULTING ENGINEERS

21 West Fourth Street, Eureka, CA 95501
TEL 707.443.5054
FAX 707.443.0553

PROJECT NAME:
PROJECT NO:.
DATE:
DRILLER:
PM:
LOGGED BY:

GLOBAL ID:
FIELD POINT NAME:
DRILLING METHOD:
AUGER/ROD DIAMETER (in):
LOCATION:
ELEVATION (ft):

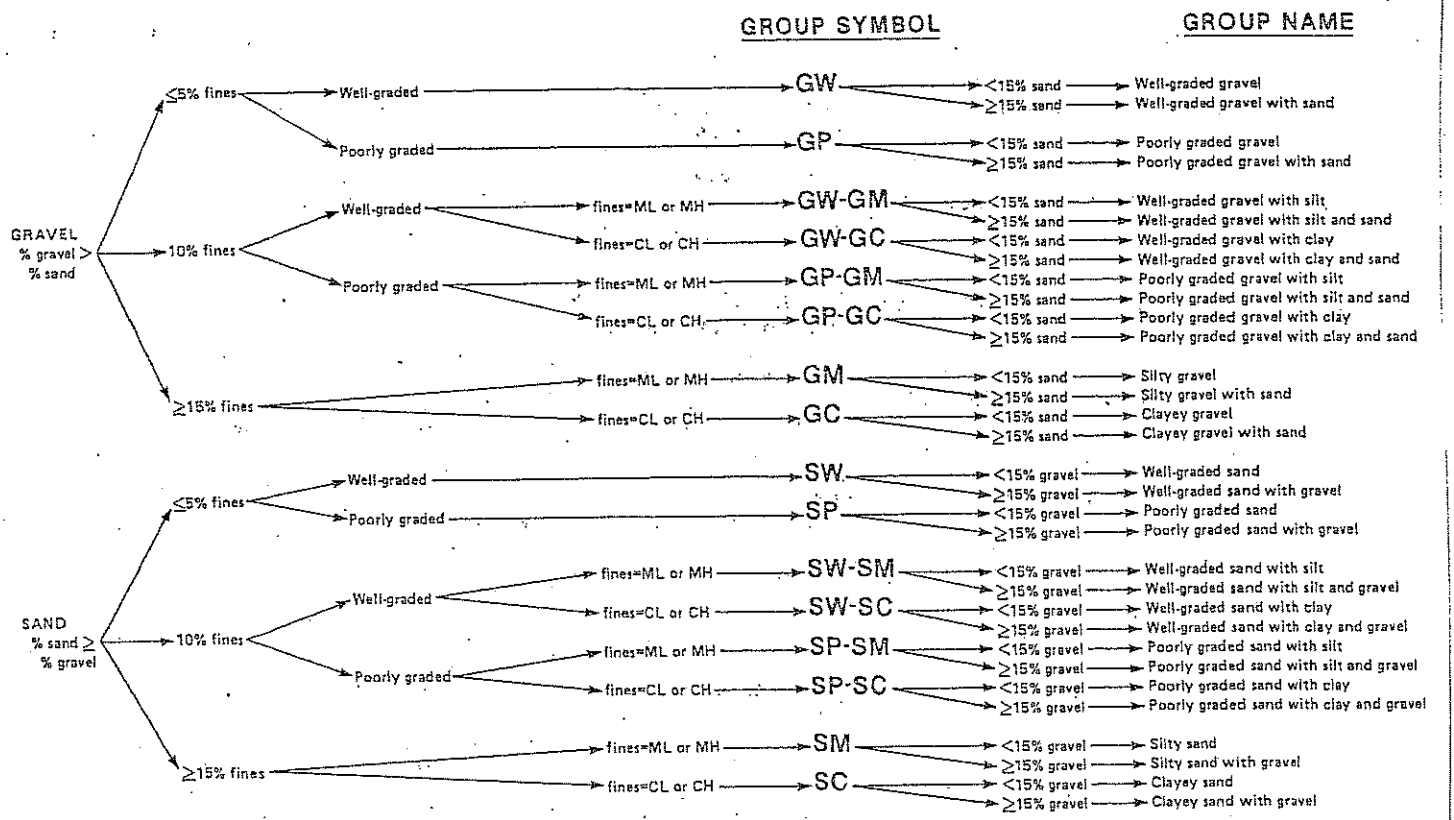
LOCATION MAP

DEPTH (ft)	COLOR (MUNSELL)	SILT AND CLAY: %CLAY	%SILT	PLASTICITY N=NONE L=LOW M=MEDIUM H=HIGH	CONSISTENCY S=SOFT F=FIRM ST=STIFF H=HARD	SAND AND GRAVEL: %SAND F=FINE M=MEDIUM C=COARSE	%GRAVEL F=FINE M=MEDIUM C=COARSE	SHAPE/ANGULARITY	DENSITY L=LOOSE MD=MEDIUM DENSE D=DENSE VH=VERY ~~HARD~~ dense	ASTM D-2488 GROUP SYMBOL	MOISTURE D=DRY M=MOIST W=WET S=SATURATED	% ORGANICS	ODOR	PID (ppm)	SAMPLE A=AUGER SS=SPLIT-SPOON CC=CONTINUOUS CORE PT=PUSH TUBE	OTHER REMARKS
14.8	"	10	70	N L M H	S F ST H	20 F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S		no		A SS CC PT	
16.3	darker mottle grey	10	80	N L M H	S F ST H	10 F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S	yes			A SS CC PT	organics + rust
17.0	+ orange dk brn.	10	70	N L M H	S F ST H	20 F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	
17.5	"	10	30	N L M H	S F ST H	60 F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	
20	HALT			N L M H	S F ST H	F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	
				N L M H	S F ST H	F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	
				N L M H	S F ST H	F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	
				N L M H	S F ST H	F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	

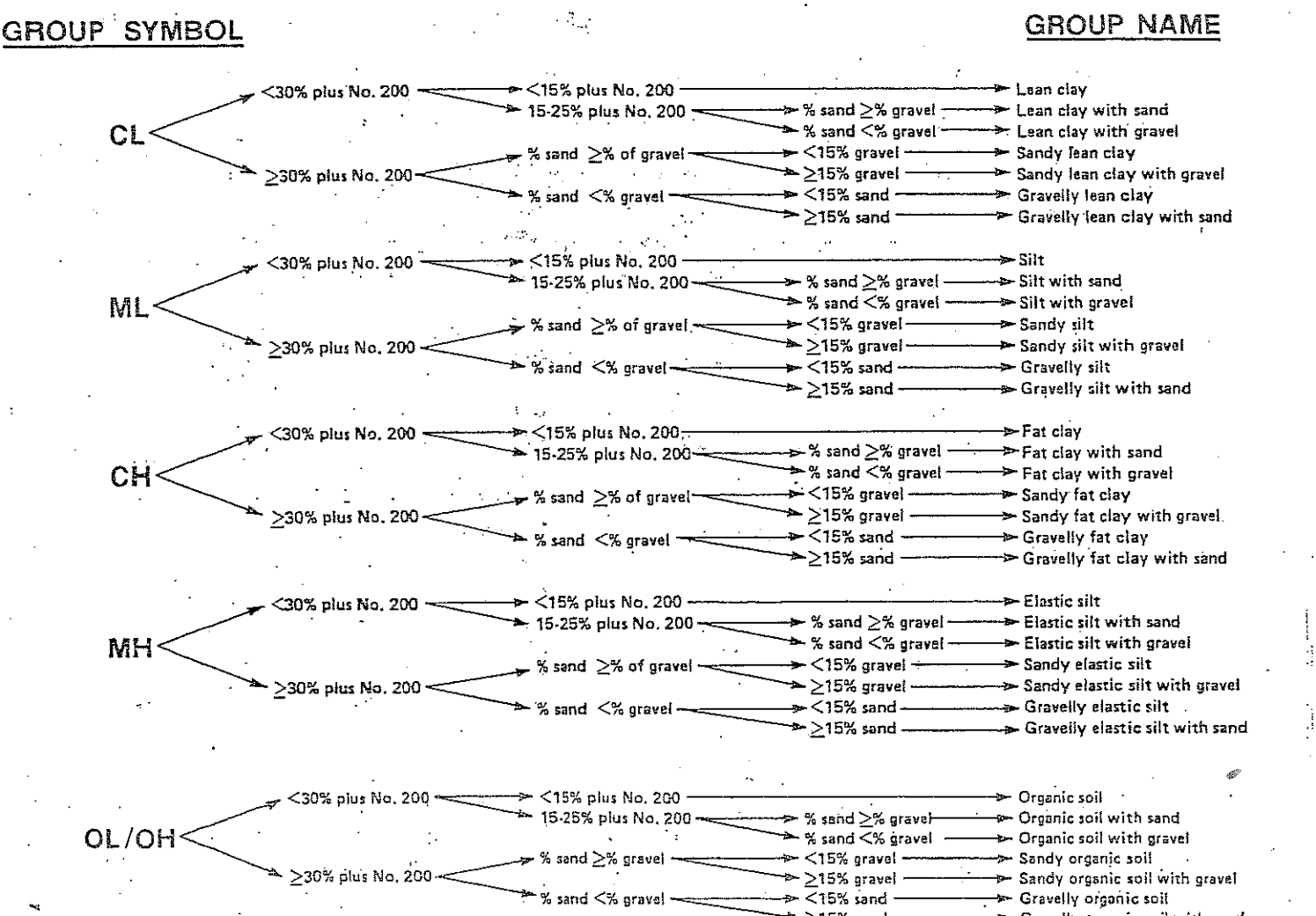
DEPTH TO WATER (ft):
CASING TYPE/DIAMETER (in):
SCREEN INTERVAL (ft bgs):

PURGE VOLUME:
PURGE METHOD:

SAMPLING METHOD:
ANALYTES:
CLOSURE:



NOTE—Percentages are based on estimating amounts of fines, sand, and gravel to the nearest 5 %.



LACO ASSOCIATES
CONSULTING ENGINEERS
21 West Fourth Street, Eureka, CA 95501
TEL 707.443.5054
FAX 707.443.0553

PROJECT NAME: Totem Pole
PROJECT NO:
DATE: 2/2/25
DRILLER:
PM: LDB
LOGGED BY:

GLOBAL ID:
FIELD POINT NAME: B12
DRILLING METHOD:
AUGER/ROD DIAMETER (in):
LOCATION:
ELEVATION (ft): ~94

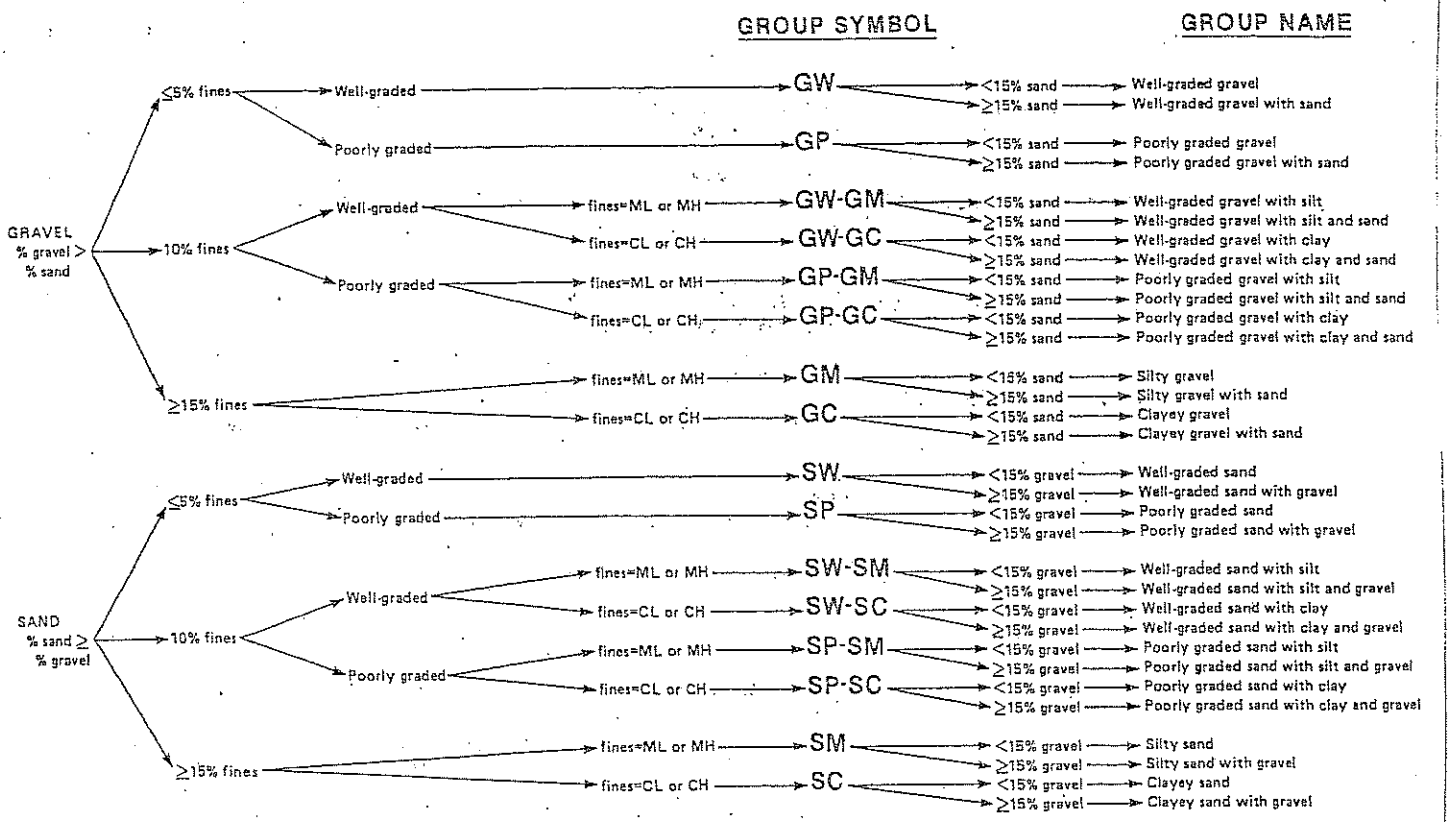
LOCATION MAP

DEPTH (ft)	COLOR (MUNSELL)	SILT AND CLAY: %CLAY	%SILT	PLASTICITY N=NONE L=LOW M=MEDIUM H=HIGH	CONSISTENCY S=SOFT F=FIRM ST=STIFF H=HARD	SAND AND GRAVEL: %SAND F=FINE M=MEDIUM C=COARSE	%GRAVEL F=FINE M=MEDIUM C=COARSE	SHAPE/ANGULARITY	DENSITY L=LOOSE MD=MEDIUM DENSE D=DENSE VH=VERY ~~HARD~~ dense	ASTM D-2488 GROUP SYMBOL	MOISTURE D=DRY M=MOIST W=WET S=SATURATED	% ORGANICS	ODOR	PID (ppm)	SAMPLE A=AUGER SS=SPLIT-SPOON CC=CONTINUOUS CORE PT=PUSH TUBE	OTHER REMARKS
0-4	4A			N L M H	S F ST H	F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	
4	orange-brn	40	50	N L (M) H	S F (ST) H	(F) M C 10	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	(D) M W S				A SS CC PT	
6	"	50	40	N L (M) H	S F (ST) H	(F) M C 10	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	(D) M W S				A SS CC PT	
8	w/ gravel fragments	60	30	N L (M) H	S F (ST) H	(F) M C 10	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	(D) M W S				A SS CC PT	
10.5		50	30	N L M H	S F ST H	(F) M C 20	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	(D) M W S				A SS CC PT	
12	"	30	20	N (L) M H	S (F) ST H	(F) M C 30	(F) 10 M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	(D) M W S				A SS CC PT	
14.3	"	20	20	N (L) M H	S (F) ST H	(F) M C 50	(F) 10 M C		L (MD) D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D (M) W S				A SS CC PT	
14.5	"	60	30	N L (M) H	S F (ST) H	(F) M C 10	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D (M) W S				A SS CC PT	

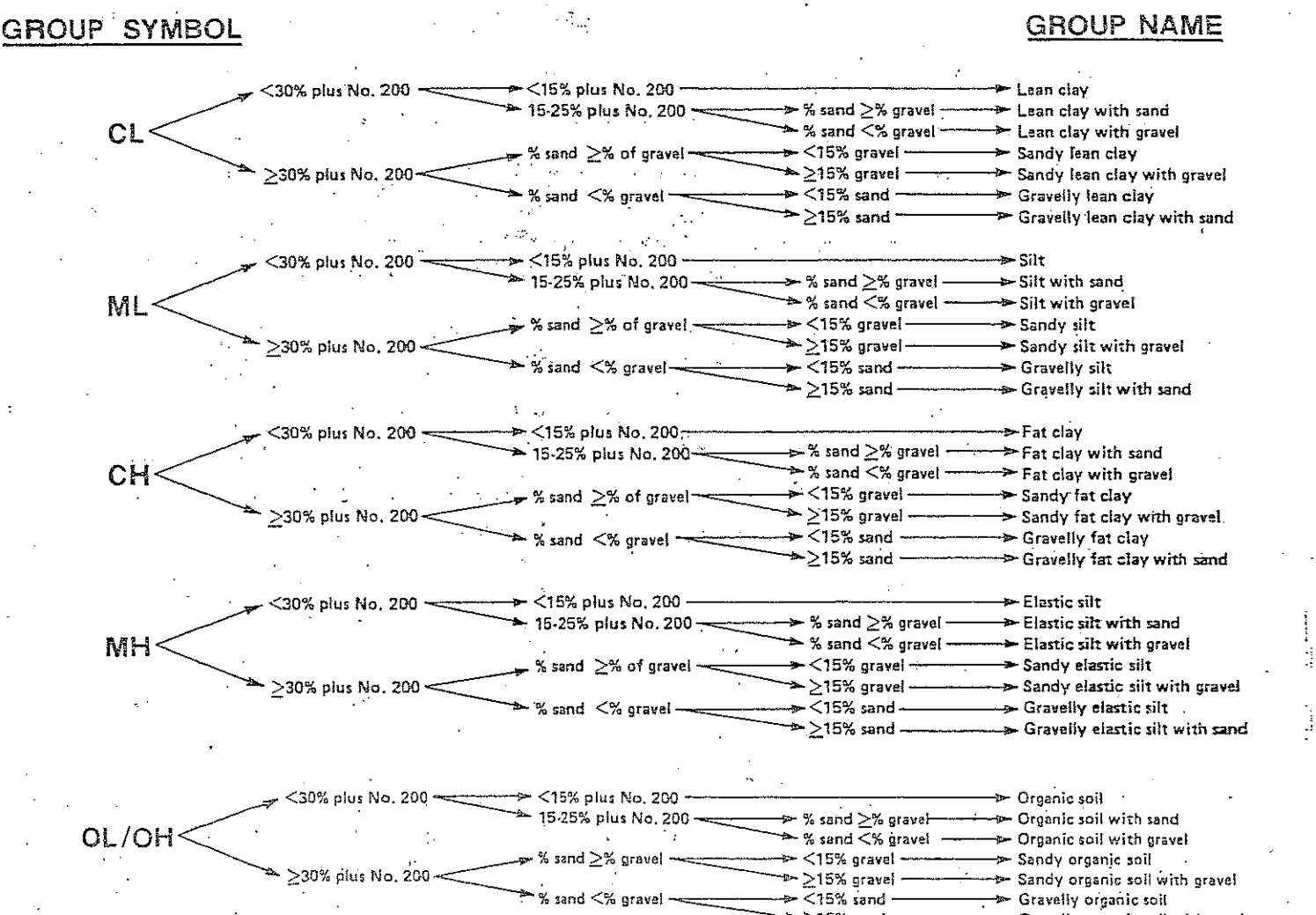
DEPTH TO WATER (ft):
CASING TYPE/DIAMETER (in):
SCREEN INTERVAL (ft bgs):

PURGE VOLUME:
PURGE METHOD:

SAMPLING METHOD:
ANALYTES:
CLOSURE:



NOTE—Percentages are based on estimating amounts of fines, sand, and gravel to the nearest 5 %.



LACO ASSOCIATES
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TEL 707.443.5054
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PROJECT NAME:
PROJECT NO:.
DATE:
DRILLER:
PM:
LOGGED BY:

GLOBAL ID:
FIELD POINT NAME:
DRILLING METHOD:
AUGER/ROD DIAMETER (in):
LOCATION:
ELEVATION (ft):

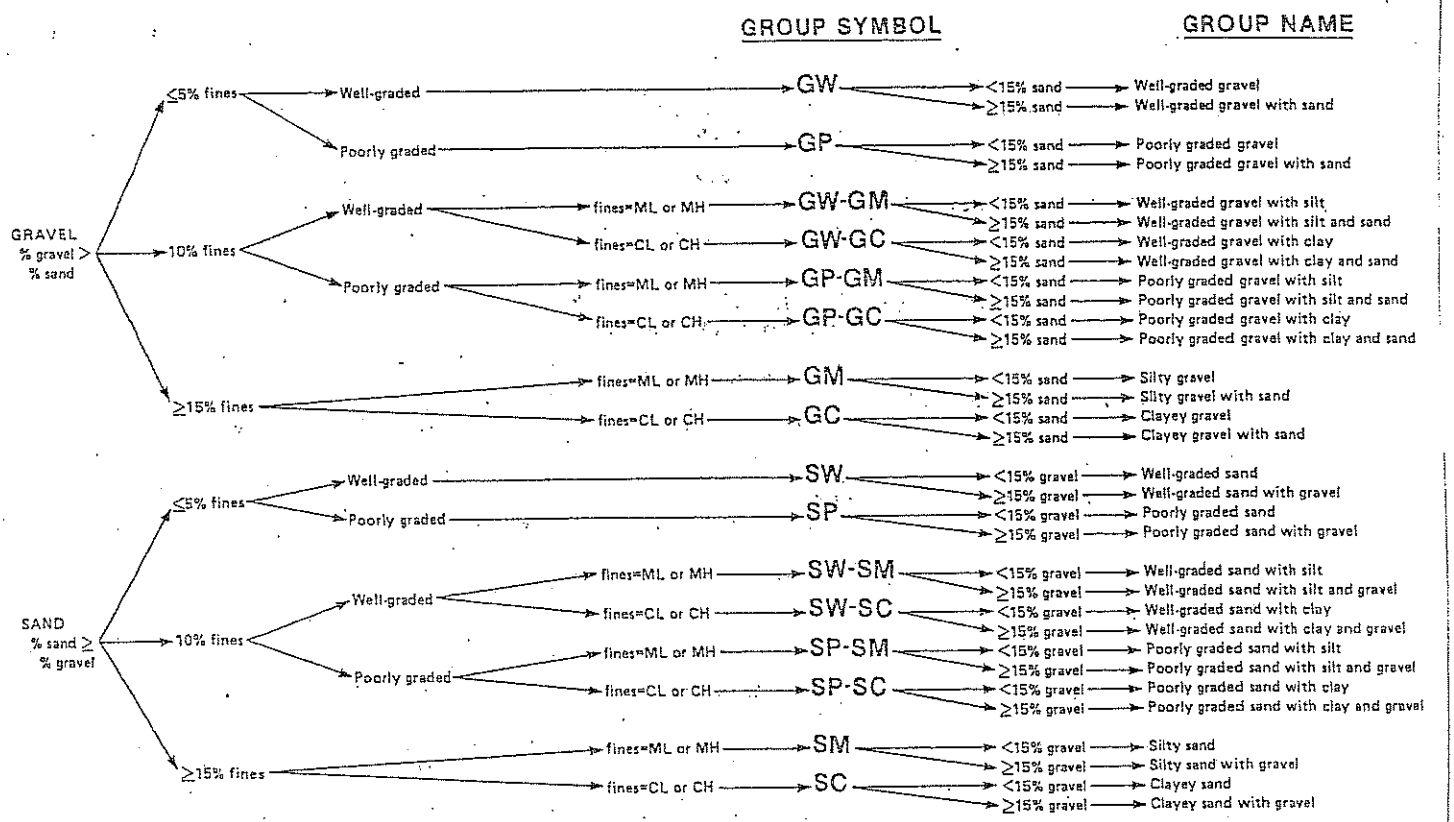
LOCATION MAP

DEPTH (ft)	COLOR (MUNSELL)	SILT AND CLAY: %CLAY	%SILT	PLASTICITY N=NONE L=LOW M=MEDIUM H=HIGH	CONSISTENCY S=SOFT F=FIRM ST=STIFF H=HARD	SAND AND GRAVEL: %SAND F=FINE M=MEDIUM C=COARSE	%GRAVEL F=FINE M=MEDIUM C=COARSE	SHAPE/ANGULARITY	DENSITY L=LOOSE MD=MEDIUM DENSE D=DENSE VH=VERY ~~HARD~~ dense	ASTM D-2488 GROUP SYMBOL	MOISTURE D=DRY M=MOIST W=WET S=SATURATED	% ORGANICS	ODOR	PID (ppm)	SAMPLE A=AUGER SS=SPLIT-SPOON CC=CONTINUOUS CORE PT=PUSH TUBE	OTHER REMARKS
14.8	brn	30	20	N L M H	S F ST H	F M C 30	F M C 10		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S		HC		A SS CC PT	
16.0	"	50	40	N L M H	S F ST H	F M C 10	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	
16.5	"	10	20	N L M H	S F ST H	F M C 70	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	
16.8		10	20	N L M H	S F ST H	F M C 60	F M C 10		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	fine to coarse
18.7				N L M H	S F ST H	F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	
20	HALT			N L M H	S F ST H	F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	15-20'
				N L M H	S F ST H	F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	
				N L M H	S F ST H	F M C	F M C		L MD D H	GW GP GM GC SW SP SM SC ML CL OL MH CH OH Pt	D M W S				A SS CC PT	

DEPTH TO WATER (ft):
CASING TYPE/DIAMETER (in):
SCREEN INTERVAL (ft bgs):

PURGE VOLUME:
PURGE METHOD:

SAMPLING METHOD:
ANALYTES:
CLOSURE:



NOTE—Percentages are based on estimating amounts of fines, sand, and gravel to the nearest 5 %.

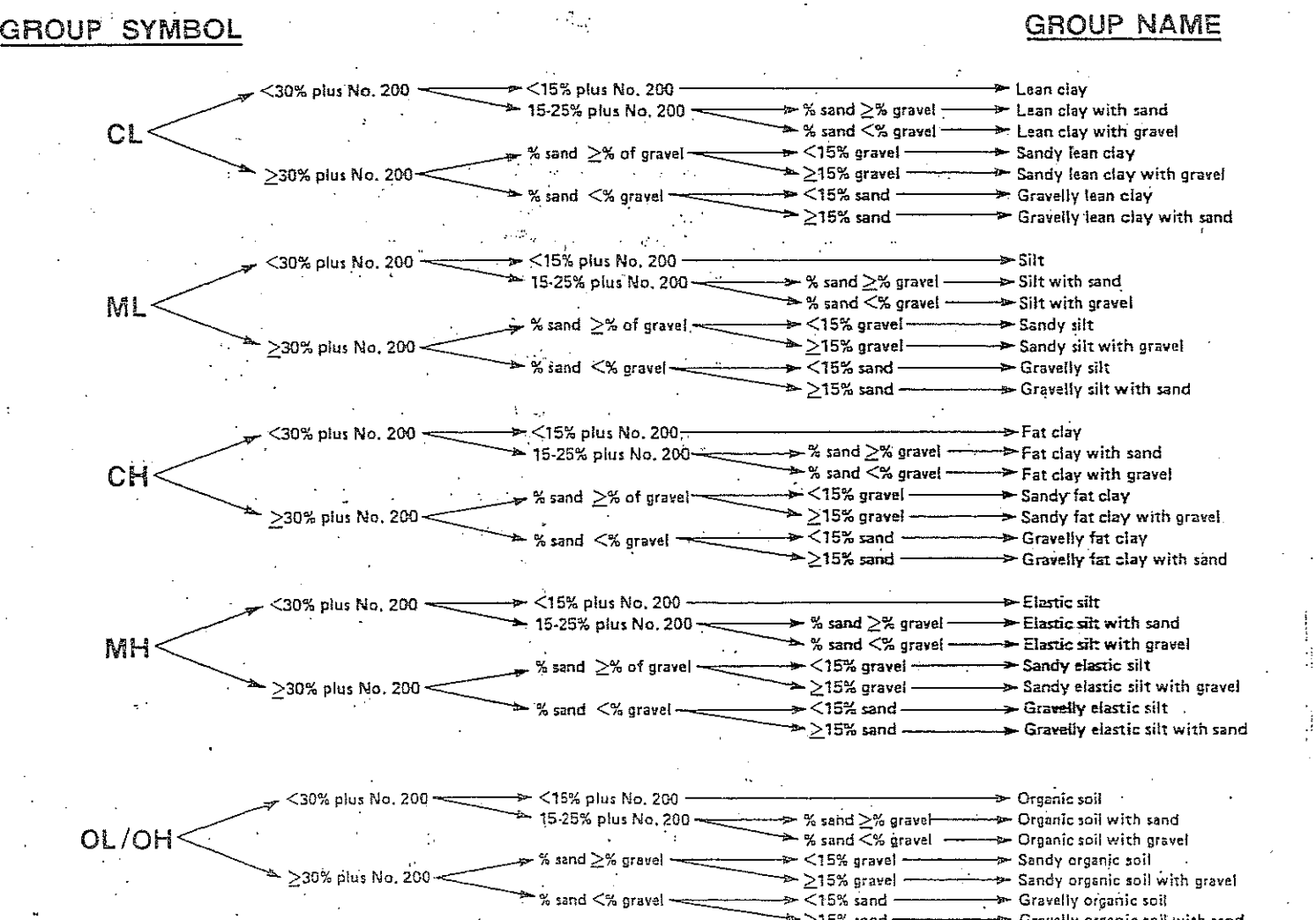


TABLE 1: RESULTS OF LABORATORY ANALYSIS FOR SOIL
Former Totem Pole Market
580 S. Fortuna Blvd., Fortuna, CA
LACO Project No. 3472.03; LOP No. 12028

Sample Identification	Depth (feet bgs)	Date	TPHg (µg/g)	TPHd (µg/g)	Benzene (µg/g)	Toluene (µg/g)	Ethylbenzene (µg/g)	Xylenes (µg/g)	MTBE (µg/g)	Additional Analytes (µg/g)
1990 Test Pits										
3472-1	---	11/6/90	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	—
3472-2	---	11/6/90	---	---	---	---	---	---	---	**Lead = 6.8**
3472-3	---	11/6/90	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
3472-4	---	11/6/90	---	---	---	---	---	---	---	**Lead = 5.7**
1994 Overexcavation										
1	---	3/1/94	**1.1**	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
2	---	3/1/94	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
3	---	3/1/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
4	---	3/1/94	---	---	---	---	---	---	---	**Lead = 7.0**
5	---	3/4/94	**3.2**	---	ND<0.0050	ND<0.0050	ND<0.020	ND<0.020	---	---
6	---	3/4/94	**8.1**	---	ND<0.0050	ND<0.0050	ND<0.060	ND<0.060	---	---
7	---	3/4/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
8	---	3/4/94	**400**	---	ND<0.050	ND<0.30	ND<10	ND<10	---	---
9	---	3/4/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
10	---	3/4/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
11	---	3/4/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
12	---	3/4/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
13	---	3/5/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
14	---	3/5/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
15	---	3/5/94	**670**	---	ND<0.10	ND<0.50	ND<10	ND<10	---	---
16	---	3/11/94	**3.9**	---	ND<0.0050	ND<0.0050	ND<0.10	ND<0.10	---	---
17	---	3/11/94	**750**	---	ND<0.25	ND<0.25	ND<0.10	ND<0.10	---	---
18	---	3/11/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
19	---	3/11/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
20	---	3/14/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
21	---	3/14/94	**1.5**	---	ND<0.0050	ND<0.0050	ND<0.010	ND<0.010	---	---
22	---	3/16/94	**670**	**35**	ND<1.0	ND<5.0	ND<5.0	ND<5.0	---	**Lead = 7.7**
23	---	3/21/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	—
24	---	3/21/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	—
25	---	3/21/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
26	---	3/22/94	**4,600**	---	ND<1.3	ND<10	ND<50	ND<50	---	---
27	---	3/22/94	**590**	---	ND<0.25	ND<2.0	ND<10	ND<10	---	---
28	---	3/22/94	**980**	---	**0.52**	ND<5.0	ND<20	ND<20	---	---
1A, 1B, 1C, 1D	---	4/1/94	**450**	---	ND<0.10	ND<1.0	ND<10	ND<10	---	**Lead = 11**
2A, 2B, 2C, 2D	---	4/1/94	**1.4**	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	**Lead = 17**

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Sample Identification	Depth (feet bgs)	Date	TPHg (µg/g)	TPHd (µg/g)	Benzene (µg/g)	Toluene (µg/g)	Ethylbenzene (µg/g)	Xylenes (µg/g)	MTBE (µg/g)	Additional Analytes (µg/g)
1996 Investigation										
B-1	3.0'	2/27/96	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.050	---
B-2	2.5'	2/27/96	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.050	---
B-2	8.0'	2/27/96	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.050	---
B-3	2.0'	2/27/96	**480**	---	**0.15**	ND<0.30	ND<5.0	ND<5.0	ND<0.50	---
B-3	7'-9'	2/27/96	**370**	---	ND<0.10	ND<0.20	ND<4.0	ND<4.0	ND<1.0	---
B-3	12'-14'	2/27/96	**50**	---	**0.049**	ND<0.050	ND<1.0	ND<1.0	ND<0.050	---
B-5	2.5'	2/27/96	**57**	---	**0.042**	ND<0.050	ND<0.50	ND<0.50	ND<0.050	---
B-5	7.0'	2/27/96	**5.1**	---	**0.037**	**0.012**	**0.056**	**0.243**	ND<0.050	---
B-6	2.5'	3/1/96	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.050	---
B-6	7.0'	3/1/96	ND<1.0	---	ND<0.0050	ND<0.0050	0.014	**.029**	ND<0.050	---
MW-1	4.5'-6.5'	6/25/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
MW-1	10'-11.5'	6/25/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
MW-1	15'-16.5'	6/25/96	**30**	---	ND<0.025	ND<0.025	ND<0.5	ND<0.5	ND<0.25	**Lead = 5.5**
MW-2	5'-6.5'	6/25/96	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	**Lead = 5.2**
MW-2	10'-11.5'	6/25/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
MW-2	15'-16.5'	6/25/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
PZ-3	5'-6.5'	6/25/96	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	**Lead = 5.7**
PZ-3	10'-11.5'	6/25/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	
PZ-3	15'-16.5'	6/25/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	
1997 Investigation										
B-1/1-15	5.0'	1/15/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-1/1-15	10.0'	1/15/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-2/1-15	3.0'	1/15/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-2/1-15	5.0'	1/15/97	**1.1**	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-2/1-15	10.0'	1/15/97	**49**	---	ND<0.005	ND<0.5	ND<0.5	ND<0.5	ND<0.05	---
B-3/1-15	5.0'	1/15/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-3/1-15	10.0'	1/15/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-4/1-15	5.0'	1/15/97	**1,700**	---	ND<0.5	ND<2.5	ND<20	ND<20	ND<5.0	---
B-4/1-15	10.0'	1/15/97	ND<1.0	---	**0.0052**	ND<0.005	**0.02**	**0.027**	ND<0.05	---
B-5/1-15	3.0'	1/15/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-5/1-15	5.0'	1/15/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-5/1-15	10.0'	1/15/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-6/1-16	2.5'	1/16/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-6/1-16	5.0'	1/16/97	**910**	---	ND<0.5	ND<0.5	ND<10	ND<10	ND<5.0	---
B-7/1-16	1.5'	1/16/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-7/1-16	5.0'	1/16/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-8/1-16	3.0'	1/16/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-8/1-16	5.0'	1/16/97	**83**	---	**0.62**	**3.3**	**0.77**	**2.9**	ND<0.25	---
B-9/1-16	5.0'	1/16/97	**130**	---	ND<0.13	ND<0.13	ND<0.5	ND<0.5	ND<1.3	---
B-9/1-16	10.0'	1/16/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-9/1-16	15.0'	1/16/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---

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LACO Project No. 3472.03; LOP No. 12028

Sample Identification	Depth (feet bgs)	Date	TPHg (µg/g)	TPHd (µg/g)	Benzene (µg/g)	Toluene (µg/g)	Ethylbenzene (µg/g)	Xylenes (µg/g)	MTBE (µg/g)	Additional Analytes (µg/g)
1999 Investigation										
3472 B1-0299	5'	2/17/99	39 (1)	---	ND<0.0050	ND<0.0050	ND<0.50	ND<0.50	ND<0.050	---
3472 B2-0299	5'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B2-0299	9'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B2-0299	14'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B2-0299	19'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B3-0299	5'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B3-0299	9'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B3-0299	14'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B3-0299	19'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B4-0299	5'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B4-0299	9'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B4-0299	14'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B4-0299	19'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B5-0299	5'	2/18/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B5-0299	9'	2/18/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B5-0299	14'	2/18/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B5-0299	19'	2/18/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
2001 Investigation										
HB1-01	4.5'	1/5/01	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
HB2-01	4.5'	1/5/01	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
HB3-01	4.5'	1/5/01	**1.7**	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
HB4-01	4.5'	1/5/01	**1.0**	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
HB5-01	4.5'	1/5/01	**1,100**	---	ND<0.25	ND<0.25	ND<2.0	ND<2.5	ND<2.5	---
HA-EJF1	5.0'	6/21/01	**1.2**	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
2005 Investigation										
B10	8	2/2/05	ND<1.0	**3.1**	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B10	12	2/2/05	ND<1.0	**1.6**	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B10	16	2/2/05	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B10	20	2/2/05	ND<1.0	**3.1**	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B11	4	2/2/05	**53**	**14**	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B11	8	2/2/05	ND<1.0	**4.0**	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B11	12	2/2/05	ND<1.0	**1.7**	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B11	16	2/2/05	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B11	20	2/2/05	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B12	4	2/2/05	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B12	8	2/2/05	ND<1.0	**2.3**	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B12	12	2/2/05	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B12	16	2/2/05	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B12	20	2/2/05	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50

TABLE 2: RESULTS OF LABORATORY ANALYSIS FOR GROUNDWATER - BORINGS
Former Totem Pole Market
580 S. Fortuna Blvd., Fortuna, CA
LACO Project No. 3472.03; LOP No. 12028

Sample Identification	Date	TPHg (µg/L)	TPHd (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	Additional Analytes (µg/L)
1990 Test Pits									
3472-5	11/6/1990	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<0.50	---	---
3472-6	11/6/1990	---	---	---	---	---	---	---	Lead ND<20
3472-7	11/6/1990	**550**	---	ND<0.25	ND<0.50	ND<2.0	ND<2.0	---	---
3472-9	11/6/1990	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
1994 Overexcavation									
3472	3/1/1994	**27,000**	**1,500**	**200**	**1,700**	**280**	**1,950**	---	**Lead = 1,600**
3472 TANK #3	3/21/1994	**1,300**	---	**2.0**	ND<10	ND<10	ND<10	---	---
1A, 1B, 1C, 1D	4/1/1994	---	---	---	---	---	---	---	Lead = ND<500
2A, 2B, 2C, 2D	4/1/1994	---	---	---	---	---	---	---	Lead = ND<500
1996 Investigation									
B-1	2/27/1996	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<5.0	---
B-3	2/27/1996	**14,000**	---	**120**	ND<50	**370**	**80**	ND<130	---
1997 Investigation									
B-1/1-15	1/15/1997	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	---
B-2/1-15	1/15/1997	**3,200**	---	ND<2.5	ND<7.0	ND<20	ND<20	ND<25.0	---
B-3/1-15	1/15/1997	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	---
B-4/1-15	1/15/1997	**1,600**	---	ND<4.0	ND<5.0	ND<12	ND<12	ND<5.0	---
B-5/1-15	1/15/1997	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	---
B-6/1-16	1/16/1997	**2,500**	---	ND<5.0	ND<5.0	ND<30	ND<30	ND<50.0	---
B-7/1-16	1/16/1997	**50**	---	ND<0.5	ND<0.5	ND<1.5	ND<1.5	ND<5.0	---
B-8/1-16	1/16/1997	**470**	---	ND<0.5	ND<4.0	ND<8.0	ND<8.0	ND<5.0	---
B-9/1-16	1/16/1997	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	---

TABLE 2: RESULTS OF LABORATORY ANALYSIS FOR GROUNDWATER - BORINGS
Former Totem Pole Market
580 S. Fortuna Blvd., Fortuna, CA
LACO Project No. 3472.03; LOP No. 12028

Sample Identification	Date	TPHg (µg/L)	TPHd (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	Additional Analytes (µg/L)
1999 Investigation									
3472 B2-0299	2/17/1999	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	---
3472 B3-0299	2/17/1999	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	---
3472 B4-0299	2/17/1999	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	---
3472 B5-0299	2/17/1999	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	---
2001 Investigation									
HA-EJF1	6/21/2001	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<3.0	---
2005 Investigation									
B10-W16-20	2/2/2005	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<1.0-10

TABLE 3: MONITORING WELL DATA AND GROUNDWATER ANALYTICAL RESULTS
Former Totem Pole Market; LACO Project No. 3472.04
580 South Fortuna Boulevard, Fortuna, CA
LOP No. 12028

Groundwater Measurements				Analytical Results							
WELL/ Sample Date	Well Head Elevation (feet NAVD88)	Hydraulic Head (feet NAVD88)	Depth to Water (feet)	TPHg (µg/L)	TPHd (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	Additional Analytes (µg/L)
MW-1											
8/12/96	98.70	84.78	13.92	1,700	ND<500	72	ND<3.0	24	72	ND<10	---
9/9/96		84.30	14.40	---	---	---	---	---	---	---	---
10/8/96		84.30	14.40	---	---	---	---	---	---	---	---
11/25/96		92.70	6.00	1,700	110	31	ND<5.0	38	59	ND<5.0	Lead = ND<0.02
1/9/97		93.92	4.78	---	---	---	---	---	---	---	---
2/4/97		93.78	4.92	930	330	1.8	ND<10	14	20	ND<5.0	---
3/19/97		88.65	10.05	---	---	---	---	---	---	---	---
4/7/97		87.04	11.66	---	---	---	---	---	---	---	---
5/1/97		86.59	12.11	790	480	1.3	2.7	5.9	16.7	ND<5.0	---
6/3/97		86.06	12.64	---	---	---	---	---	---	---	---
7/7/97		85.13	13.57	---	---	---	---	---	---	---	---
8/13/97		84.72	13.98	---	---	---	---	---	---	---	---
1/16/98		89.38	9.32	---	---	---	---	---	---	---	---
5/5/98		88.91	9.79	1,000	190	2.8	ND<2.0	15	ND<10	ND<5.0	---
2/22/99		91.09	7.61	---	---	---	---	---	---	---	---
3/5/99		---	---	830	120	ND<5.0	ND<5.0	12	ND<5.0	ND<5.0	---
5/3/01		86.48	12.22	4,700	300	14	ND<30	28	38	ND<20	---
9/4/01		84.75	13.95	---	---	---	---	---	---	---	---
11/9/01		84.80	13.90	---	---	---	---	---	---	---	---
2/25/03		89.16	9.54	1,900	140	0.85	ND<0.50	5.5	0.74	ND<1.0	---
5/16/03		90.88	7.82	1,500	220	ND<0.50	ND<0.50	3.8	ND<0.50	ND<1.0	**DIPE = 3.9** All others ND
8/6/03		85.11	13.59	2,000	280	1.4	ND<0.50	4.4	1.0	ND<1.0	**DIPE = 4.3** All others ND
11/11/03		84.73	13.97	2,000	---	4.3	ND<0.50	3.4	1.8	ND<1.0	**DIPE = 3.0** All others ND
2/17/04		92.74	5.96	2,600	290	ND<0.50	ND<0.50	5.0	0.53	ND<1.0	ND<1.0-10
5/14/04		86.39	12.31	2,200	140	1.2	ND<0.50	3.0	1.31	ND<1.0	ND<1.0-10
8/17/04		84.72	13.98	2,700	---	3.5	ND<0.50	3.1	0.87	ND<1.0	ND<1.0-10
11/30/04		84.74	13.96	2,900	---	10	ND<0.50	3.0	1.0	ND<1.0	ND<1.0-10
2/28/05	58.63	49.88	8.75	3,700	160	ND<0.50	ND<0.50	4.4	0.60	ND<1.0	**DIPE = 2.3** All others ND
MW-2											
8/12/96	99.45	82.28	17.17	ND<50	ND<500	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	---
9/9/96		84.87	14.58	---	---	---	---	---	---	---	---
10/8/96		84.89	14.56	---	---	---	---	---	---	---	---
11/25/96		94.75	4.70	ND<50	ND<500	ND<0.5	ND<0.5	ND<0.5	0.77	ND<5.0	**Lead = 0.028**
1/9/97		95.06	4.39	---	---	---	---	---	---	---	---
2/4/97		96.25	3.20	ND<50	ND<500	ND<0.5	ND<0.5	ND<0.5	ND<0.50	69	---
3/19/97		95.09	4.36	---	---	---	---	---	---	---	---
4/7/97		89.43	10.02	---	---	---	---	---	---	---	---
5/1/97		94.66	4.79	ND<50	ND<500	ND<0.5	0.55	ND<0.50	1.59	ND<5.0	---
6/3/97		85.65	13.80	---	---	---	---	---	---	---	---
7/7/97		85.27	14.18	---	---	---	---	---	---	---	---
8/13/97		85.27	14.18	---	---	---	---	---	---	---	---
1/16/98		85.82	13.63	---	---	---	---	---	---	---	---
5/5/98		87.88	11.57	ND<50	ND<500	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	---
2/22/99		86.80	12.65	---	---	---	---	---	---	---	---
3/5/99		---	---	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	---
5/3/01		87.81	11.64	---	---	---	---	---	---	---	---
9/4/01		85.37	14.08	ND<50	ND<50	ND<0.5	ND<30	ND<0.5	ND<0.5	ND<5.0	---
11/9/01		85.46	13.99	---	---	---	---	---	---	---	---
2/25/03		96.10	3.35	---	---	---	---	---	---	---	---
5/16/03		94.73	4.72	---	---	---	---	---	---	---	---
8/6/03		85.75	13.70	---	---	---	---	---	---	---	---
11/11/03		85.41	14.04	---	---	---	---	---	---	---	---
2/17/04		98.23	1.22	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<1.0-10
5/14/04		86.71	12.74	---	---	---	---	---	---	---	---
8/17/04		85.25	14.20	---	---	---	---	---	---	---	---
11/30/04		86.42	13.03	---	---	---	---	---	---	---	---
2/28/05	58.97	56.05	2.92	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<1.0-10

TABLE 3: MONITORING WELL DATA AND GROUNDWATER ANALYTICAL RESULTS
Former Totem Pole Market; LACO Project No. 3472.04
580 South Fortuna Boulevard, Fortuna, CA
LOP No. 12028

	Groundwater Measurements			Analytical Results							
WELL/ Sample Date	Well Head Elevation (feet NAVD88)	Hydraulic Head (feet NAVD88)	Depth to Water (feet)	TPHg (µg/L)	TPHd (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	Additional Analytes (µg/L)
MW-3											
8/12/96	98.89	81.94	16.95	ND<50	ND<200	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<5.0	---
9/9/96		84.96	13.93	---	---	---	---	---	---	---	---
10/8/96		84.10	14.79	---	---	---	---	---	---	---	---
11/25/96		96.35	2.54	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<5.0	**Lead = 0.021**
1/9/97		96.31	2.58	---							
2/4/97		96.85	2.04	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<5.0	---
3/19/97		95.92	2.97	---	---	---	---	---	---	---	---
4/7/97		95.58	3.31	---	---	---	---	---	---	---	---
5/1/97		96.57	2.32	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<5.0	---
6/3/97		96.34	2.55	---	---	---	---	---	---	---	---
7/7/97		88.14	10.75	---	---	---	---	---	---	---	---
8/13/97		84.75	14.14	---	---	---	---	---	---	---	---
1/16/98		98.38	0.51	---	---	---	---	---	---	---	---
5/5/98		95.57	3.32	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<5.0	---
2/22/99		97.89	1.00	---	---	---	---	---	---	---	---
3/5/99		---	---	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<5.0	---
5/3/01		95.94	2.95	---	---	---	---	---	---	---	—
9/4/01		84.74	14.15	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<5.0	---
11/9/01		87.50	11.39	---	---	---	---	---	---	---	---
2/25/03		94.65	4.24	---	---	---	---	---	---	---	---
5/16/03		95.71	3.18	---	---	---	---	---	---	---	---
8/6/03		84.87	14.02	---	---	---	---	---	---	---	---
11/11/03		96.02	2.87	---	---	---	---	---	---	---	---
2/17/04		98.15	0.74	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<1.0-10
5/14/04		89.77	9.12	---	---	---	---	---	---	---	---
8/17/04		84.74	14.15	---	---	---	---	---	---	---	---
11/30/04		95.63	3.26	---	---	---	---	---	---	---	---
2/28/05	58.85	---	---	---	---	---	---	---	---	---	---
MW4S											
2/28/05	58.15	54.76	3.39	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<1.0-10
MW4D											
2/28/05	58.03	46.10	11.93	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<1.0-10
MW5											
2/28/05	57.20	46.15	11.05	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<1.0-10

ABBREVIATIONS AND LABORATORY NOTATIONS

ND <: Not detected at or above the method detection limit shown
---: Not analyzed or available
µg/l: micrograms per liter
TPHg: total petroleum hydrocarbons as gasoline
TPHd: total petroleum hydrocarbons as diesel
MTBE: methyl tertiary butyl ether

TABLE 4: Mass Calculations of Sorbed TPHg On and Off-Site
Former Totem Pole Market
580 S. Fortuna Blvd., Fortuna, CA
LACO Project No. 3472.03; LOP No. 12028

MASS OF SORBED CONTAMINANT On-Site
Define areas of contamination by concentration amount

Concentration:	2000 μg/g	500 μg/g
Area of contamination **(A)**:	200 ft^2	800 ft^2
Depth of contamination **(B)**:	5 ft	5 ft
Volume of contamination **(A*B=C)**:	1000 ft^3	4000 ft^3
Convert ft^3 to cubic centimeters multiply 28316.8:	28316800 cc	113267200 cc
Multiply density of soil (1.5 g/cc) to get the weight of the contaminated soil:	42475200 g	169900800 g
Multiply by contaminant concentration (μg/g):	8.495E+10 μg	8.495E+10 μg
Convert to kilograms:	84.9504 kg	84.9504 kg

TOTAL CONTAMINANT MASS ON-SITE: 169.901 kg

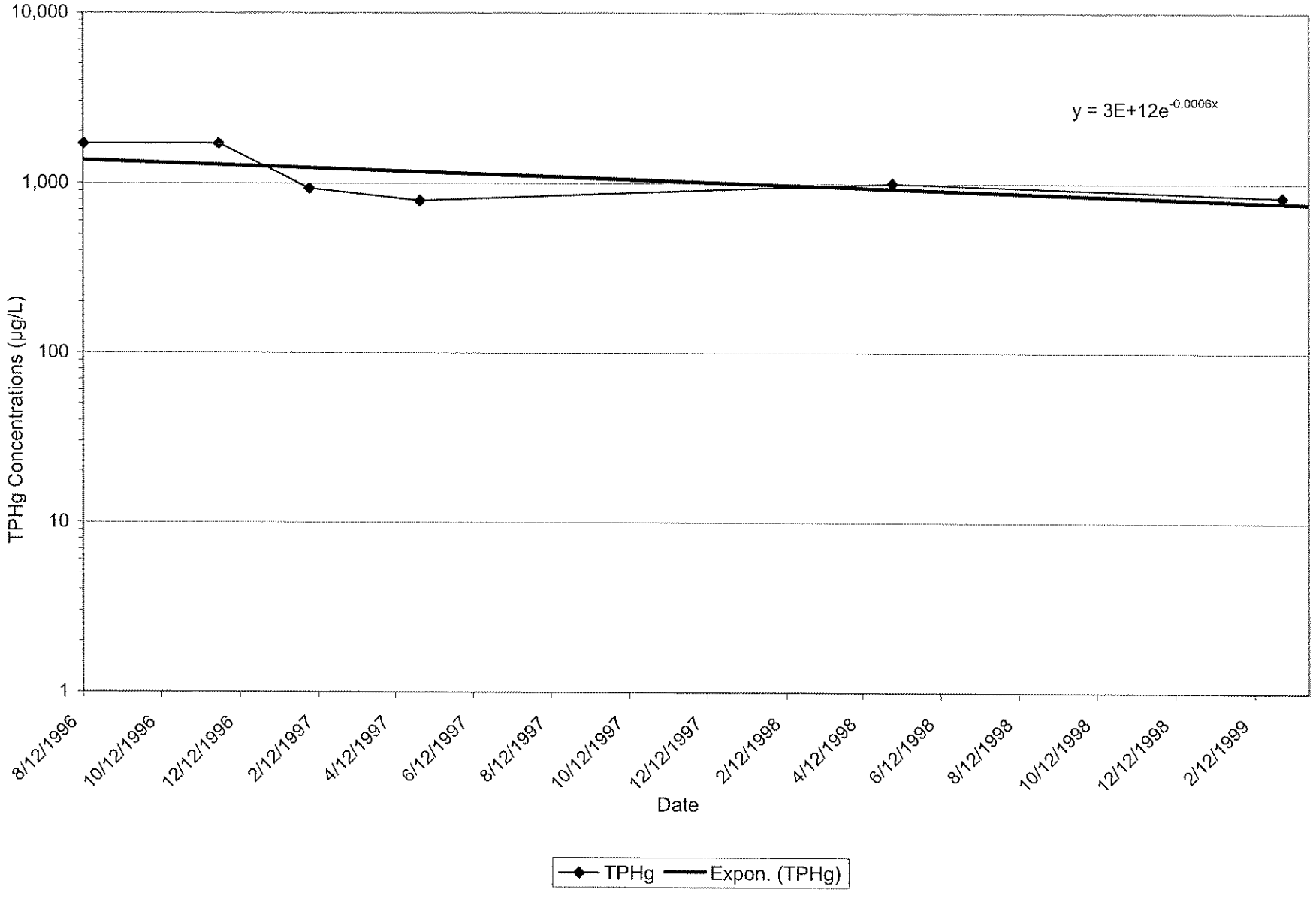
MASS OF SORBED CONTAMINANT Off-Site along First Street
Define areas of contamination by concentration amount

Concentration:	1500 μg/g	500 μg/g
Area of contamination **(A)**:	450 ft^2	300 ft^2
Depth of contamination **(B)**:	7 ft	5 ft
Volume of contamination **(A*B=C)**:	3150 ft^3	1500 ft^3
Convert ft^3 to cubic centimeters multiply 28316.8:	89197920 cc	42475200 cc
Multiply density of soil (1.5 g/cc) to get the weight of	133796880 g	63712800 g
Multiply by contaminant	2.007E+11 μg	3.186E+10 μg
Convert to kilograms:	200.69532 kg	31.8564 kg

TOTAL CONTAMINANT MASS OFF-SITE: 232.552 kg

TOTAL CONTAMINANT ASSOCIATED WITH SITE: 402.453

CHART 1: TPHg Concentrations and Trend Line August 1996 to March 1999
Former Totem Pole Market
580 S. Fortuna Blvd, Fortuna, CA
LACO Project No. 3472.03; LOP No. 12028



WORKSHEET 1: Calculations for Over-Excavation as a Remedial Option

Former Totem Pole Market
580 S. Fortuna Blvd., Fortuna, CA
LACO Project No. 3472.03; LOP No. 12028

OVER-EXCAVATION

Will use first order rate constant and distribution coefficient calculations to determine over-excavation limits and feasibility

Calculation of First Order Rate Constant

Assume cyclohexane is representative of TPHg degradation
First order rate constant will be determined using cyclohexane half-life
Half-life of cyclohexane under anaerobic aqueous biodegradation = 24 months or 730 days (Howard, 1991)
First order rate constant (k) will be calculated from the first order decay equation $C_f = C_o e^{(-kt}$
where:
C_f is the final concentration (µg/L)
C_o is the initial concentration (µg/L)
k is the degradation (bulk attenuation) rate ($days^{-1}$)
t is time in any units (days)

Which, by Newell et al (2002), is summarized into k = 0.693/(half-life)

First order rate constant is: -0.00095 $days^{-1}$

Calculation of over-excavation concentration limits

The initial groundwater concentration, C_o, can be calculated using the above first order rate constant, the RWQCB TPHg WQO of 50 µg/L as the final concentration, and times of 15 and 20 years.
C_f = 50 µg/L, the WQO for TPHg
k = -0.00095
t = 7300 days (20 years) or 5475 days (15 years)

Initial concentration to reach WQO of 50 µg/L in 20 years:	51,380.96 µg/L
Initial concentration to reach WQO of 50 µg/L in 15 years:	9,074.95 µg/L

A distribution coefficient (K_D) will correlate the dissolved TPHg concentrations, determined above, to a sorbed TPHg concentration, representing the TPHg concentration in soil the excavation should be extended to in order for impacted groundwater to reach WQO in the specified time.

WORKSHEET 1: Calculations for Over-Excavation as a Remedial Option

Former Totem Pole Market
580 S. Fortuna Blvd., Fortuna, CA
LACO Project No. 3472.03; LOP No. 12028

Due to the lack of coinciding soil and groundwater data at the site, a distribution coefficient was determined from soil and groundwater data from a site sharing similar soil and contaminant conditions.

TPHg SOIL (µg/g)	GROUND WATER (µg/L)	K_D (L/g)	K_D (mL/g)
25	400	0.0625	62.5
120	30000	0.004	4.0
380	15000	0.025	25.3
450	140000	0.0032	3.2
820	32000	0.026	25.6
AVERAGE K_D =		0.024	24.1

Limit of excavation if WQO reached in 20 years: 51,380.96*0.024= **1,240 µg/g**

Limit of excavation if WQO reached in 15 years: 9,074.95*0.024= **219 µg/g**

If 20 years is acceptable then excavation of contaminant mass may not be warranted considering TPHg concentration of 1,700 µg/g in B-4/1-15 is the only reported concentration higher than 1,240 µg/g.

WORKSHEET 2: Calculations for MONA as a Remedial Option

Former Totem Pole Market
580 S. Fortuna Blvd., Fortuna, CA
LACO Project No. 3472.03; LOP No. 12028

MONITORED NATURAL ATTENUATION (MONA)
Will use degradation rates and seepage velocities to determine if feasible

Timeline of Degradation

Based on published first order rate constant as calculated on Worksheet 1 (0.00095day^{-1})

Assume: The highest dissolved TPHg concentration reported in MW1 to date (4,700 µg/L, 5/3/01) will degrade at the same rate

10 years: $C_f = (4{,}700)e^{(-0.00095)3650}$

$C_f =$ 146.62 µg/L

15 years: $C_f = (4{,}700)e^{(-0.00095)5475}$

$C_f =$ 25.90 µg/L

20 years: $C_f = (4{,}700)e^{(-0.00095)7300}$

$C_f =$ 4.57 µg/L

Based on the published first order rate constant, MW1 will reach WQO in:

$50 = 4{,}700e^{(-0.00095)x}$

x= 4782.416 days

x= **13.1 years**

Based on observed first order decay rate as presented in Chart 2 (0.0006 day^{-1})

Assume: The highest dissolved TPHg concentration reported in MW1 to date (4,700 µg/L, 5/3/01) will degrade at the same rate

10 years: $C_f = (4{,}700)e^{(-0.0006)3650}$

$C_f =$ 526.01 µg/L

15 years: $C_f = (4{,}700)e^{(-0.0006)5475}$

$C_f =$ 175.97 µg/L

20 years: $C_f = (4{,}700)e^{(-0.0006)7300}$

$C_f =$ 58.87 µg/L

WORKSHEET 2: Calculations for MONA as a Remedial Option

Former Totem Pole Market
580 S. Fortuna Blvd., Fortuna, CA
LACO Project No. 3472.03; LOP No. 12028

Based on the observed first order rate constant, MW1 will reach WQO in:

$50=4{,}700e^{(-0.0006)x}$

x= 7572.158 days

x= **20.7 years**

If MONA, when will closest domestic well be impacted?

Observed Seepage Velocity

Assume: Source at northern over-excavation on site

1997 high hydraulic heads mobilized shallow sorbed TPHg into solution; subsequently, that plume of elevated dissolved TPHg concentrations was reported in MW-1 during the May 3, 2001 sampling event, 4 years and 5 months later (1,612 days).

Distance from over-excavation to MW-1 is approx. 35 feet

Observed seepage velocity is: 35 feet/1612 days= 7.66E-06 cm/sec or **0.022 ft/day**

This value likely represents an average seepage velocity between the aggregate base fill and silty clay, as observed in borings on site and along First Street.

Calculated Seepage Velocity

Seepage velocity equation: $V=k(i)/n_{eff}$

where:
k is the hydraulic conductivity (Freeze and Cherry, 1979)
i is the slope of groundwater, based on historical calculated gradients in NW direction at the site
n_{eff} is the effective porosity of the formation (estimated)

For **crushed aggregate base**:

$V=10^{-3}(0.01)/0.25$

V= 4.E-05 cm/sec or **0.11 ft/day**

For **silty clay/clayey silt** observed below a depth of approximately 2 feet:

$V=10^{-6}(0.01)/0.2$

V= 5.E-08 cm/sec or **1.4E-04 ft/day**

WORKSHEET 2: Calculations for MONA as a Remedial Option
Former Totem Pole Market
580 S. Fortuna Blvd., Fortuna, CA
LACO Project No. 3472.03; LOP No. 12028

Seepage velocity calculations cont'd
For **gravelly sand** observed below a depth of approximately 11 feet in MW1:

$V=10^{-3}(0.01)/0.3$

V= 3.E-05 cm/sec or **0.09 ft/day**

Approximate date the elevated 4,700 μg/L TPHg concentration will reach the domestic well

Based on the above observed and calculated seepage velocities we can estimate time when the impacted groundwater slug will reach the domestic well, approximately 80 feet north northwest of MW-1

Assumes: TPHg of 4,700 μg/L starts at MW1 in 2001.
Aggregate base fill is laterally discontinuous and the domestic well is not screened within the aggregate base fill; therefore this velocity will not be used for a time estimate.
Groundwater gradient in native soil is to the northwest, towards the domestic well.

Using observed seepage velocity:

80 ft/0.022 ft day^{-1}=	3636.4	days	or	
	9.96	years from 2001		
		approx. 2011		

Using silty clay seepage velocity:

80 ft/1.4E-4 ft day^{-1}=	564444	days	or	
	1546	years from 2001		
		approx. 3547		Likely faster, based on observed

Using gravelly sand seepage velocity:

80 ft/0.09 ft day^{-1}=	846.7	days	or	
	2.32	years from 2001		
		2003, NOW		No evidence to refute/support this

WORKSHEET 2: Calculations for MONA as a Remedial Option

Former Totem Pole Market
580 S. Fortuna Blvd., Fortuna, CA
LACO Project No. 3472.03; LOP No. 12028

TPHg concentration at domestic well assuming degradation using published (cyclohexane) and observed first order rate constants

Assumes: No dilution in domestic well

In 2011 using published first order rate constant

$C_f = (4{,}700)e^{(-0.00095)3650}$

$C_f =$ **147 µg/L**

In 2003 using published first order rate constant

$C_f = (4{,}700)e^{(-0.00095)847}$

$C_f =$ **2,102 µg/L**

In 2011 using observed first order rate constant

$C_f = (4{,}700)e^{(-0.0006)3650}$

$C_f =$ **526 µg/L**

In 2003 using observed first order rate constant

$C_f = (4{,}700)e^{(-0.0006)847}$

$C_f =$ **2,827 µg/L**

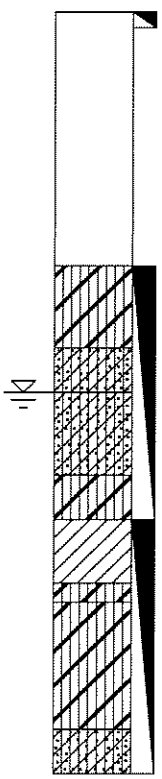
Attachment 1

ENVIRONMENTAL BORING LOG

Boring No. B10

PROJECT: Totem Pole Market
BORING LOCATION: South of Market
DRILLING METHOD: Direct-Push
DRILLER: DRL
DEPTH TO WATER: INITIAL ▽ : 14' bgs
SITE GEOLOGY: Uplifted Fluvial Terrace

PROJECT NO.: 3472.04
DATE: 2/2/05
ELEVATION: 97 feet NAVD 88
LOGGED BY: LDB
COMPLETION ▼ :



ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D. ppm	Hanby result
0 / 96			NO RECOVERY.		
3 / 93					
6 / 90					
			NO RECOVERY.		
9 / 87					
12 / 84		CL-ML	SILTY SANDY CLAY: 40% clay, 30% silt, 30% fine sand, tan with orange mottling, medium plasticity, firm, dry.		
		SC-SM	POORLY GRADED CLAYEY SILTY SAND: 40% fine sand, 30% clay, 30% silt, 20% fine gravel, tan-orange, medium dense, moist.		
		SC-SM	POORLY GRADED CLAYEY SILTY SAND AND GRAVEL: 60% fine sand, 20% fine gravel, 10% silt, 10% clay, tan-orange, medium dense, wet.		
15 / 81		CL-ML	SILTY CLAY: 50% clay, 40% silt, 10% fine sand, tan-orange, medium plasticity, stiff, dry.		
		CL	CLAY: 90% clay, 10% silt, tan-orange, high plasticity, stiff, dry.		
		CL-ML	SILTY CLAY: 70% clay, 20% silt, 10% fine sand, tan-orange, medium plasticity, stiff, dry.		
18 / 78		CL-ML	SILTY SANDY CLAY: 40% clay, 30% silt, 30% fine sand, brown and orange, medium plasticity, firm, moist to wet.		
		SC-SM	POORLY GRADED CLAYEY SILTY SAND AND GRAVEL: 30% fine sand, 30% fine and medium gravel, 20% clay, 20% silt, brown and orange, medium dense, wet.		
21 / 75			HALT AT 20 FEET BGS.		

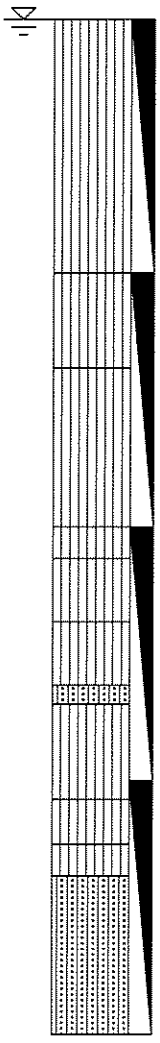
Push-tube soil samples collected at 8', 12', 16' and 20' bgs.

Figure _____

ENVIRONMENTAL BORING LOG

Boring No. B11

PROJECT: Totem Pole Market
PROJECT NO.: 3472.04
BORING LOCATION: North side of First Street
DATE: 2/2/05
DRILLING METHOD: Direct-Push
ELEVATION: 99 feet NAVD 88
DRILLER: DRL
LOGGED BY: LDB
DEPTH TO WATER: INITIAL ▽ : 4' bgs
COMPLETION ▼ :
SITE GEOLOGY: Uplifted Fluvial Terrace



ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D. ppm	Hanby result
99 — 0			NO RECOVERY.		
96 — 3					
		ML	CLAYEY SILT: 50% silt, 40% clay, 10% fine sand, tan-orange with gray, low plasticity, firm, saturated, slight hydrocarbon odor.		
93 — 6					
		ML	CLAYEY SILT: 60% silt, 40% clay, tan-orange with gray, low plasticity, stiff, moist, hydrocarbon odor.		
90 — 9					
		ML	CLAYEY SILT: 50% silt, 40% clay, 10% fine sand, tan-orange with gray, low plasticity, stiff, moist.		
87 — 12					
		ML	CLAYEY SANDY SILT: 40% silty, 30% clay, 30% sand, tan-orange with gray, low plasticity, firm, moist.		
		ML	SANDY GRAVELLY SILT: 40% silt, 30% fine and medium sand, 20% gravel, 10% clay, tan-orange with gray, medium plasticity, firm, wet.		
		ML	CLAYEY SANDY SILT: 40% silt, 30% clay, 30% fine sand, tan-orange with gray, low plasticity, firm, saturated.		
84 — 15		SM	SILTY SAND: 60% fine sand, 40% silt, tan-orange with gray, medium dense, wet.		
		ML	SANDY SILT: 70% silt, 20% fine sand, 10% clay, tan-orange with gray, no plasticity, firm, wet.		
		ML	SILT: 80% silt, 10% clay, 10% fine sand, tan- orange with dark gray, no plasticity, firm, moist, some organics.		
81 — 18		SM	SANDY SILT: 70% silt, 20% fine sand, 10% clay, dark brown with orange, no plasticity, firm, moist.		
			SILTY SAND: 60% fine sand, 30% silt, 10% clay, dark brown with orange, no plasticity, firm, wet.		
78 — 21			HALT AT 20 FEET BGS.		

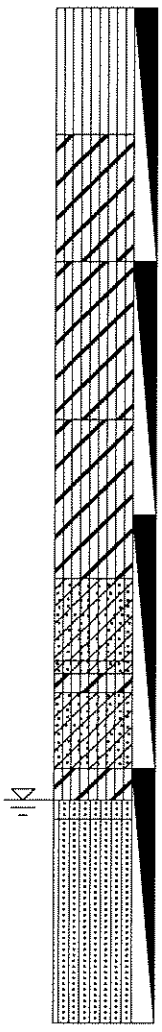
Push-tube soil samples collected at 4', 8', 12', 16' and 20' bgs.

Figure _____

ENVIRONMENTAL BORING LOG

Boring No. B12

PROJECT: Totem Pole Market
PROJECT NO.: 3472.04
BORING LOCATION: North side of First Street
DATE: 2/2/05
DRILLING METHOD: Direct-Push
ELEVATION: 98 feet NAVD 88
DRILLER: DRL
LOGGED BY: LDB
DEPTH TO WATER: INITIAL ▽ : 16.5' bgs
COMPLETION ▼ :
SITE GEOLOGY: Uplifted Fluvial Terrace



ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D. ppm	Hanby result
0			NO RECOVERY.		
96 / 3		ML	CLAYEY SILT: 50% silt, 40% clay, 10% fine sand, orange-brown, medium plasticity, stiff, dry.		
93 / 6		CL-ML	SILTY CLAY: 50% clay, 40% silt, 10% fine sand, orange-brown, medium plasticity, stiff, dry.		
90 / 9		CL-ML	SILTY CLAY: 60% clay, 30% silt, 10% fine sand, orange-brown with gray mottling, medium plasticity, stiff, dry.		
87 / 12		CL-ML	SILTY CLAY: 50% clay, 30% silt, 20% fine sand, orange-brown with gray mottling, dry.		
84		SC-SM	POORLY GRADED CLAYEY SILTY SAND: 30% fine sand, 30% clay, 30% silt, 10% fine gravel, orange-brown with gray, medium dense, dry.		
15		SC-SM CL-ML SC-SM	POORLY GRADED CLAYEY SILTY SAND: 50% fine sand, 20% clay, 20% silt, 10% fine gravel, orange-brown with gray, medium dense, moist.		
		CL-ML SM	SILTY CLAY: 60% clay, 30% silt, 10% fine sand, orange-brown with gray, medium plasticity, stiff, moist.		
81		SM	POORLY GRADED CLAYEY SILTY SAND: 30% fine sand, 30% clay, 30% silt, 10% fine gravel, brown, low plasticity, firm, moist.		
18			SILTY CLAY: 50% clay, 40% silty, 10% fine sand, brown, medium plasticity, stiff, moist.		
			SILTY SAND: 70% fine sand, 30% silt, 10% clay, brown, loose, wet to saturated.		
78			SILTY SAND: 60% fine, medium and coarse sand, 20% silt, 10% clay, 10% fine gravel, brown, medium dense, saturated.		
21			HALT AT 20 FEET BGS.		

Push-tube soil samples collected at 4', 8', 12', 16' and 20' bgs.

Figure _____

TABLE 1: RESULTS OF LABORATORY ANALYSIS FOR SOIL
Former Totem Pole Market
580 S. Fortuna Blvd., Fortuna, CA
LACO Project No. 3472.03; LOP No. 12028

Sample Identification	Depth (feet bgs)	Date	TPHg (µg/g)	TPHd (µg/g)	Benzene (µg/g)	Toluene (µg/g)	Ethylbenzene (µg/g)	Xylenes (µg/g)	MTBE (µg/g)	Additional Analytes (µg/g)
1990 Test Pits										
3472-1	---	11/6/90	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
3472-2	---	11/6/90	---	---	---	---	---	---	---	**Lead = 6.8**
3472-3	---	11/6/90	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
3472-4	---	11/6/90	---	---	---	---	---	---	---	**Lead = 5.7**
1994 Overexcavation										
1	---	3/1/94	**1.1**	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
2	---	3/1/94	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
3	---	3/1/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
4	---	3/1/94	---	---	---	---	---	---	---	**Lead = 7.0**
5	---	3/4/94	**3.2**	---	ND<0.0050	ND<0.0050	ND<0.020	ND<0.020	---	---
6	---	3/4/94	**8.1**	---	ND<0.0050	ND<0.0050	ND<0.060	ND<0.060	---	---
7	---	3/4/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
8	---	3/4/94	**400**	---	ND<0.050	ND<0.30	ND<10	ND<10	---	---
9	---	3/4/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
10	---	3/4/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
11	---	3/4/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
12	---	3/4/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
13	---	3/5/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
14	---	3/5/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
15	---	3/5/94	**670**	---	ND<0.10	ND<0.50	ND<10	ND<10	---	---
16	---	3/11/94	**3.9**	---	ND<0.0050	ND<0.0050	ND<0.10	ND<0.10	---	---
17	---	3/11/94	**750**	---	ND<0.25	ND<0.25	ND<0.10	ND<0.10	---	---
18	---	3/11/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
19	---	3/11/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
20	---	3/14/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
21	---	3/14/94	**1.5**	---	ND<0.0050	ND<0.0050	ND<0.010	ND<0.010	---	---
22	---	3/16/94	**670**	**35**	ND<1.0	ND<5.0	ND<5.0	ND<5.0	---	**Lead = 7.7**
23	---	3/21/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
24	---	3/21/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
25	---	3/21/94	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
26	---	3/22/94	**4,600**	---	ND<1.3	ND<10	ND<50	ND<50	---	---
27	---	3/22/94	**590**	---	ND<0.25	ND<2.0	ND<10	ND<10	---	---
28	---	3/22/94	**980**	---	**0.52**	ND<5.0	ND<20	ND<20	---	---
1A, 1B, 1C, 1D	---	4/1/94	**450**	---	ND<0.10	ND<1.0	ND<10	ND<10	---	**Lead = 11**
2A, 2B, 2C, 2D	---	4/1/94	**1.4**	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	**Lead = 17**

TABLE 1: RESULTS OF LABORATORY ANALYSIS FOR SOIL
Former Totem Pole Market
580 S. Fortuna Blvd., Fortuna, CA
LACO Project No. 3472.03; LOP No. 12028

Sample Identification	Depth (feet bgs)	Date	TPHg (µg/g)	TPHd (µg/g)	Benzene (µg/g)	Toluene (µg/g)	Ethylbenzene (µg/g)	Xylenes (µg/g)	MTBE (µg/g)	Additional Analytes (µg/g)
1996 Investigation										
B-1	3.0'	2/27/96	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.050	---
B-2	2.5'	2/27/96	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.050	---
B-2	8.0'	2/27/96	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.050	---
B-3	2.0'	2/27/96	**480**	---	**0.15**	ND<0.30	ND<5.0	ND<5.0	ND<0.50	---
B-3	7'-9'	2/27/96	**370**	---	ND<0.10	ND<0.20	ND<4.0	ND<4.0	ND<1.0	---
B-3	12'-14'	2/27/96	**50**	---	**0.049**	ND<0.050	ND<1.0	ND<1.0	ND<0.050	---
B-5	2.5'	2/27/96	**57**	---	**0.042**	ND<0.050	ND<0.50	ND<0.50	ND<0.050	---
B-5	7.0'	2/27/96	**5.1**	---	**0.037**	**0.012**	**0.056**	**0.243**	ND<0.050	---
B-6	2.5'	3/1/96	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.050	---
B-6	7.0'	3/1/96	ND<1.0	---	ND<0.0050	ND<0.0050	0.014	**.029**	ND<0.050	---
MW-1	4.5'-6.5'	6/25/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
MW-1	10'-11.5'	6/25/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
MW-1	15'-16.5'	6/25/96	**30**	---	ND<0.025	ND<0.025	ND<0.5	ND<0.5	ND<0.25	**Lead = 5.5**
MW-2	5'-6.5'	6/25/96	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	**Lead = 5.2**
MW-2	10'-11.5'	6/25/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
MW-2	15'-16.5'	6/25/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
PZ-3	5'-6.5'	6/25/96	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	**Lead = 5.7**
PZ-3	10'-11.5'	6/25/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	
PZ-3	15'-16.5'	6/25/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	
1997 Investigation										
B-1/1-15	5.0'	1/15/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-1/1-15	10.0'	1/15/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-2/1-15	3.0'	1/15/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-2/1-15	5.0'	1/15/97	**1.1**	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-2/1-15	10.0'	1/15/97	**49**	---	ND<0.005	ND<0.5	ND<0.5	ND<0.5	ND<0.05	---
B-3/1-15	5.0'	1/15/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-3/1-15	10.0'	1/15/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-4/1-15	5.0'	1/15/97	**1,700**	---	ND<0.5	ND<2.5	ND<20	ND<20	ND<5.0	---
B-4/1-15	10.0'	1/15/97	ND<1.0	---	**0.0052**	ND<0.005	**0.02**	**0.027**	ND<0.05	---
B-5/1-15	3.0'	1/15/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-5/1-15	5.0'	1/15/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-5/1-15	10.0'	1/15/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-6/1-16	2.5'	1/16/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-6/1-16	5.0'	1/16/97	**910**	---	ND<0.5	ND<0.5	ND<10	ND<10	ND<5.0	---
B-7/1-16	1.5'	1/16/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-7/1-16	5.0'	1/16/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-8/1-16	3.0'	1/16/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-8/1-16	5.0'	1/16/97	**83**	---	**0.62**	**3.3**	**0.77**	**2.9**	ND<0.25	---
B-9/1-16	5.0'	1/16/97	**130**	---	ND<0.13	ND<0.13	ND<0.5	ND<0.5	ND<1.3	---
B-9/1-16	10.0'	1/16/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
B-9/1-16	15.0'	1/16/97	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---

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Former Totem Pole Market
580 S. Fortuna Blvd., Fortuna, CA
LACO Project No. 3472.03; LOP No. 12028

Sample Identification	Depth (feet bgs)	Date	TPHg (µg/g)	TPHd (µg/g)	Benzene (µg/g)	Toluene (µg/g)	Ethylbenzene (µg/g)	Xylenes (µg/g)	MTBE (µg/g)	Additional Analytes (µg/g)
1999 Investigation										
3472 B1-0299	5'	2/17/99	**39 (1)**	---	ND<0.0050	ND<0.0050	ND<0.50	ND<0.50	ND<0.050	---
3472 B2-0299	5'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B2-0299	9'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B2-0299	14'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B2-0299	19'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B3-0299	5'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B3-0299	9'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B3-0299	14'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B3-0299	19'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B4-0299	5'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B4-0299	9'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B4-0299	14'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B4-0299	19'	2/17/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B5-0299	5'	2/18/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B5-0299	9'	2/18/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B5-0299	14'	2/18/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
3472 B5-0299	19'	2/18/99	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
2001 Investigation										
HB1-01	4.5'	1/5/01	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
HB2-01	4.5'	1/5/01	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
HB3-01	4.5'	1/5/01	**1.7**	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
HB4-01	4.5'	1/5/01	**1.0**	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
HB5-01	4.5'	1/5/01	**1,100**	---	ND<0.25	ND<0.25	ND<2.0	ND<2.5	ND<2.5	---
HA-EJF1	5.0'	6/21/01	**1.2**	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	---
2005 Investigation										
B10	8	2/2/05	ND<1.0	**3.1**	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B10	12	2/2/05	ND<1.0	**1.6**	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B10	16	2/2/05	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B10	20	2/2/05	ND<1.0	**3.1**	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B11	4	2/2/05	**53**	**14**	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B11	8	2/2/05	ND<1.0	**4.0**	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B11	12	2/2/05	ND<1.0	**1.7**	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B11	16	2/2/05	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B11	20	2/2/05	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B12	4	2/2/05	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B12	8	2/2/05	ND<1.0	**2.3**	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B12	12	2/2/05	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B12	16	2/2/05	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50
B12	20	2/2/05	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	ND<0.025	ND<0.010-0.50

TABLE 2: RESULTS OF LABORATORY ANALYSIS FOR GROUNDWATER - BORINGS
Former Totem Pole Market
580 S. Fortuna Blvd., Fortuna, CA
LACO Project No. 3472.03; LOP No. 12028

Sample Identification	Date	TPHg (µg/L)	TPHd (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	Additional Analytes (µg/L)
1990 Test Pits									
3472-5	11/6/1990	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<0.50	---	---
3472-6	11/6/1990	---	---	---	---	---	---	---	Lead ND<20
3472-7	11/6/1990	**550**	---	ND<0.25	ND<0.50	ND<2.0	ND<2.0	---	---
3472-9	11/6/1990	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	---	---
1994 Overexcavation									
3472	3/1/1994	**27,000**	**1,500**	**200**	**1,700**	**280**	**1,950**	---	**Lead = 1,600**
3472 TANK #3	3/21/1994	**1,300**	---	**2.0**	ND<10	ND<10	ND<10	---	---
1A, 1B, 1C, 1D	4/1/1994	---	---	---	---	---	---	---	Lead = ND<500
2A, 2B, 2C, 2D	4/1/1994	---	---	---	---	---	---	---	Lead = ND<500
1996 Investigation									
B-1	2/27/1996	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<5.0	---
B-3	2/27/1996	**14,000**	---	**120**	ND<50	**370**	**80**	ND<130	---
1997 Investigation									
B-1/1-15	1/15/1997	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	---
B-2/1-15	1/15/1997	**3,200**	---	ND<2.5	ND<7.0	ND<20	ND<20	ND<25.0	---
B-3/1-15	1/15/1997	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	---
B-4/1-15	1/15/1997	**1,600**	---	ND<4.0	ND<5.0	ND<12	ND<12	ND<5.0	---
B-5/1-15	1/15/1997	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	---
B-6/1-16	1/16/1997	**2,500**	---	ND<5.0	ND<5.0	ND<30	ND<30	ND<50.0	---
B-7/1-16	1/16/1997	**50**	---	ND<0.5	ND<0.5	ND<1.5	ND<1.5	ND<5.0	---
B-8/1-16	1/16/1997	**470**	---	ND<0.5	ND<4.0	ND<8.0	ND<8.0	ND<5.0	---
B-9/1-16	1/16/1997	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	---

TABLE 2: RESULTS OF LABORATORY ANALYSIS FOR GROUNDWATER - BORINGS
Former Totem Pole Market
580 S. Fortuna Blvd., Fortuna, CA
LACO Project No. 3472.03; LOP No. 12028

Sample Identification	Date	TPHg (µg/L)	TPHd (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	Additional Analytes (µg/L)
1999 Investigation									
3472 B2-0299	2/17/1999	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	---
3472 B3-0299	2/17/1999	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	---
3472 B4-0299	2/17/1999	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	---
3472 B5-0299	2/17/1999	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	---
2001 Investigation									
HA-EJF1	6/21/2001	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<3.0	---
2005 Investigation									
B10-W16-20	2/2/2005	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<1.0-10

TABLE 3: MONITORING WELL DATA AND GROUNDWATER ANALYTICAL RESULTS
Former Totem Pole Market; LACO Project No. 3472.04
580 South Fortuna Boulevard, Fortuna, CA
LOP No. 12028

	Groundwater Measurements			Analytical Results							
WELL/ Sample Date	Well Head Elevation (feet NAVD88)	Hydraulic Head (feet NAVD88)	Depth to Water (feet)	TPHg (µg/L)	TPHd (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	Additional Analytes (µg/L)
MW-1											
8/12/96	98.70	84.78	13.92	1,700	ND<500	72	ND<3.0	24	72	ND<10	---
9/9/96		84.30	14.40	---	---	---	---	---	---	---	---
10/8/96		84.30	14.40	---	---	---	---	---	---	---	---
11/25/96		92.70	6.00	1,700	110	31	ND<5.0	38	59	ND<5.0	Lead = ND<0.02
1/9/97		93.92	4.78	---	---	---	---	---	---	---	---
2/4/97		93.78	4.92	930	330	1.8	ND<10	14	20	ND<5.0	---
3/19/97		88.65	10.05	---	---	---	---	---	---	---	---
4/7/97		87.04	11.66	---	---	---	---	---	---	---	---
5/1/97		86.59	12.11	790	480	1.3	2.7	5.9	16.7	ND<5.0	---
6/3/97		86.06	12.64	---	---	---	---	---	---	---	---
7/7/97		85.13	13.57	---	---	---	---	---	---	---	---
8/13/97		84.72	13.98	---	---	---	---	---	---	---	---
1/16/98		89.38	9.32	---	---	---	---	---	---	---	---
5/5/98		88.91	9.79	1,000	190	2.8	ND<2.0	15	ND<10	ND<5.0	---
2/22/99		91.09	7.61	---	---	---	---	---	---	---	---
3/5/99		---	---	830	120	ND<5.0	ND<5.0	12	ND<5.0	ND<5.0	---
5/3/01		86.48	12.22	4,700	300	14	ND<30	28	38	ND<20	---
9/4/01		84.75	13.95	---	---	---	---	---	---	---	---
11/9/01		84.80	13.90	---	---	---	---	---	---	---	---
2/25/03		89.16	9.54	1,900	140	0.85	ND<0.50	5.5	0.74	ND<1.0	---
5/16/03		90.88	7.82	1,500	220	ND<0.50	ND<0.50	3.8	ND<0.50	ND<1.0	DIPE = 3.9 All others ND
8/6/03		85.11	13.59	2,000	280	1.4	ND<0.50	4.4	1.0	ND<1.0	DIPE = 4.3 All others ND
11/11/03		84.73	13.97	2,000	---	4.3	ND<0.50	3.4	1.8	ND<1.0	DIPE = 3.0 All others ND
2/17/04		92.74	5.96	2,600	290	ND<0.50	ND<0.50	5.0	0.53	ND<1.0	ND<1.0-10
5/14/04		86.39	12.31	2,200	140	1.2	ND<0.50	3.0	1.31	ND<1.0	ND<1.0-10
8/17/04		84.72	13.98	2,700	---	3.5	ND<0.50	3.1	0.87	ND<1.0	ND<1.0-10
11/30/04		84.74	13.96	2,900	---	10	ND<0.50	3.0	1.0	ND<1.0	ND<1.0-10
2/28/05	58.63	49.88	8.75	3,700	160	ND<0.50	ND<0.50	4.4	0.60	ND<1.0	DIPE = 2.3 All others ND
MW-2											
8/12/96	99.45	82.28	17.17	ND<50	ND<500	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	---
9/9/96		84.87	14.58	---	---	---	---	---	---	---	---
10/8/96		84.89	14.56	---	---	---	---	---	---	---	---
11/25/96		94.75	4.70	ND<50	ND<500	ND<0.5	ND<0.5	ND<0.5	0.77	ND<5.0	Lead = 0.028
1/9/97		95.06	4.39	---	---	---	---	---	---	---	---
2/4/97		96.25	3.20	ND<50	ND<500	ND<0.5	ND<0.5	ND<0.5	ND<0.50	69	---
3/19/97		95.09	4.36	---	---	---	---	---	---	---	---
4/7/97		89.43	10.02	---	---	---	---	---	---	---	---
5/1/97		94.66	4.79	ND<50	ND<500	ND<0.5	0.55	ND<0.50	1.59	ND<5.0	---
6/3/97		85.65	13.80	---	---	---	---	---	---	---	---
7/7/97		85.27	14.18	---	---	---	---	---	---	---	---
8/13/97		85.27	14.18	---	---	---	---	---	---	---	---
1/16/98		85.82	13.63	---	---	---	---	---	---	---	---
5/5/98		87.88	11.57	ND<50	ND<500	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	---
2/22/99		86.80	12.65	---	---	---	---	---	---	---	---
3/5/99		---	---	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	---
5/3/01		87.81	11.64	---	---	---	---	---	---	---	---
9/4/01		85.37	14.08	ND<50	ND<50	ND<0.5	ND<30	ND<0.5	ND<0.5	ND<5.0	---
11/9/01		85.46	13.99	---	---	---	---	---	---	---	---
2/25/03		96.10	3.35	---	---	---	---	---	---	---	---
5/16/03		94.73	4.72	---	---	---	---	---	---	---	---
8/6/03		85.75	13.70	---	---	---	---	---	---	---	---
11/11/03		85.41	14.04	---	---	---	---	---	---	---	---
2/17/04		98.23	1.22	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<1.0-10
5/14/04		86.71	12.74	---	---	---	---	---	---	---	---
8/17/04		85.25	14.20	---	---	---	---	---	---	---	---
11/30/04		86.42	13.03	---	---	---	---	---	---	---	---
2/28/05	58.97	56.05	2.92	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<1.0-10

TABLE 3: MONITORING WELL DATA AND GROUNDWATER ANALYTICAL RESULTS
Former Totem Pole Market; LACO Project No. 3472.04
580 South Fortuna Boulevard, Fortuna, CA
LOP No. 12028

Groundwater Measurements				Analytical Results							
WELL/ Sample Date	Well Head Elevation (feet NAVD88)	Hydraulic Head (feet NAVD88)	Depth to Water (feet)	TPHg (µg/L)	TPHd (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	Additional Analytes (µg/L)
MW-3											
8/12/96	**98.89**	81.94	16.95	ND<50	ND<200	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<5.0	---
9/9/96		84.96	13.93	---	---	---	---	---	---	---	---
10/8/96		84.10	14.79	---	---	---	---	---	---	---	---
11/25/96		96.35	2.54	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<5.0	**Lead = 0.021**
1/9/97		96.31	2.58	---							
2/4/97		96.85	2.04	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<5.0	---
3/19/97		95.92	2.97	---	---	---	---	---	---	---	---
4/7/97		95.58	3.31	---	---	---	---	---	---	---	---
5/1/97		96.57	2.32	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<5.0	---
6/3/97		96.34	2.55	---	---	---	---	---	---	---	---
7/7/97		88.14	10.75	---	---	---	---	---	---	---	---
8/13/97		84.75	14.14	---	---	---	---	---	---	---	---
1/16/98		98.38	0.51	---	---	---	---	---	---	---	---
5/5/98		95.57	3.32	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<5.0	---
2/22/99		97.89	1.00	---	---	---	---	---	---	---	---
3/5/99		---	---	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<5.0	---
5/3/01		95.94	2.95	---	---	---	---	---	---	---	---
9/4/01		84.74	14.15	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<5.0	---
11/9/01		87.50	11.39	---	---	---	---	---	---	---	---
2/25/03		94.65	4.24	---	---	---	---	---	---	---	---
5/16/03		95.71	3.18	---	---	---	---	---	---	---	---
8/6/03		84.87	14.02	---	---	---	---	---	---	---	---
11/11/03		96.02	2.87	---	---	---	---	---	---	---	---
2/17/04		98.15	0.74	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<1.0-10
5/14/04		89.77	9.12	---	---	---	---	---	---	---	---
8/17/04		84.74	14.15	---	---	---	---	---	---	---	---
11/30/04		95.63	3.26	---	---	---	---	---	---	---	---
2/28/05	**58.85**	---	---	---	---	---	---	---	---	---	---
MW4S											
2/28/05	**58.15**	54.76	3.39	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<1.0-10
MW4D											
2/28/05	**58.03**	46.10	11.93	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<1.0-10
MW5											
2/28/05	**57.20**	46.15	11.05	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<1.0-10

ABBREVIATIONS AND LABORATORY NOTATIONS

ND <: Not detected at or above the method detection limit shown
---: Not analyzed or available
µg/l: micrograms per liter
TPHg: total petroleum hydrocarbons as gasoline
TPHd: total petroleum hydrocarbons as diesel
MTBE: methyl tertiary butyl ether

TABLE 4: Mass Calculations of Sorbed TPHg On and Off-Site
Former Totem Pole Market
580 S. Fortuna Blvd., Fortuna, CA
LACO Project No. 3472.03; LOP No. 12028

MASS OF SORBED CONTAMINANT On-Site
Define areas of contamination by concentration amount

Concentration:	2000 μg/g	500 μg/g
Area of contamination **(A)**:	200 ft^2	800 ft^2
Depth of contamination **(B)**:	5 ft	5 ft
Volume of contamination **(A*B=C)**:	1000 ft^3	4000 ft^3
Convert ft^3 to cubic centimeters multiply 28316.8:	28316800 cc	113267200 cc
Multiply density of soil (1.5 g/cc) to get the weight of the contaminated soil:	42475200 g	169900800 g
Multiply by contaminant concentration (μg/g):	8.495E+10 μg	8.495E+10 μg
Convert to kilograms:	84.9504 kg	84.9504 kg

TOTAL CONTAMINANT MASS ON-SITE: 169.901 kg

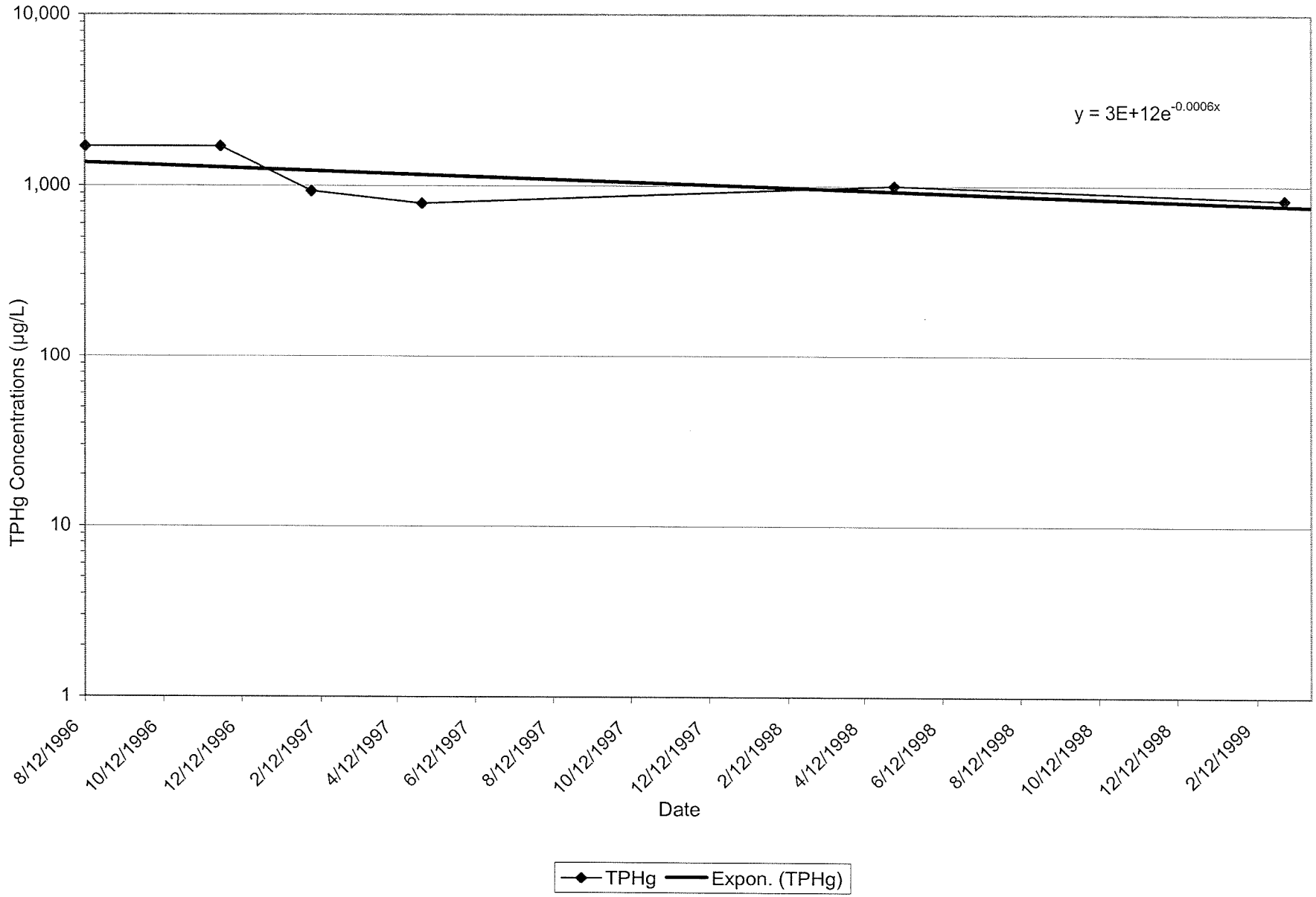
MASS OF SORBED CONTAMINANT Off-Site along First Street
Define areas of contamination by concentration amount

Concentration:	1500 μg/g	500 μg/g
Area of contamination **(A)**:	450 ft^2	300 ft^2
Depth of contamination **(B)**:	7 ft	5 ft
Volume of contamination **(A*B=C)**:	3150 ft^3	1500 ft^3
Convert ft^3 to cubic centimeters multiply 28316.8:	89197920 cc	42475200 cc
Multiply density of soil (1.5 g/cc) to get the weight of	133796880 g	63712800 g
Multiply by contaminant	2.007E+11 μg	3.186E+10 μg
Convert to kilograms:	200.69532 kg	31.8564 kg

TOTAL CONTAMINANT MASS OFF-SITE: 232.552 kg

TOTAL CONTAMINANT ASSOCIATED WITH SITE: 402.453

CHART 1: TPHg Concentrations and Trend Line August 1996 to March 1999
Former Totem Pole Market
580 S. Fortuna Blvd, Fortuna, CA
LACO Project No. 3472.03; LOP No. 12028



WORKSHEET 1: Calculations for Over-Excavation as a Remedial Option

Former Totem Pole Market
580 S. Fortuna Blvd., Fortuna, CA
LACO Project No. 3472.03; LOP No. 12028

OVER-EXCAVATION

Will use first order rate constant and distribution coefficient calculations to determine over-excavation limits and feasibility

Calculation of First Order Rate Constant

Assume cyclohexane is representative of TPHg degradation
First order rate constant will be determined using cyclohexane half-life
Half-life of cyclohexane under anaerobic aqueous biodegradation = 24 months or 730 days (Howard, 1991)
First order rate constant (k) will be calculated from the first order decay equation $C_f = C_o e^{(-kt}$
where:
C_f is the final concentration (µg/L)
C_o is the initial concentration (µg/L)
k is the degradation (bulk attenuation) rate ($days^{-1}$)
t is time in any units (days)

Which, by Newell et al (2002), is summarized into k = 0.693/(half-life)

First order rate constant is: -0.00095 $days^{-1}$

Calculation of over-excavation concentration limits

The initial groundwater concentration, C_o, can be calculated using the above first order rate constant, the RWQCB TPHg WQO of 50 µg/L as the final concentration, and times of 15 and 20 years.
C_f = 50 µg/L, the WQO for TPHg
k = -0.00095
t = 7300 days (20 years) or 5475 days (15 years)

Initial concentration to reach WQO of 50 µg/L in 20 years:	51,380.96 µg/L
Initial concentration to reach WQO of 50 µg/L in 15 years:	9,074.95 µg/L

A distribution coefficient (K_D) will correlate the dissolved TPHg concentrations, determined above, to a sorbed TPHg concentration, representing the TPHg concentration in soil the excavation should be extended to in order for impacted groundwater to reach WQO in the specified time.

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Due to the lack of coinciding soil and groundwater data at the site, a distribution coefficient was determined from soil and groundwater data from a site sharing similar soil and contaminant conditions.

TPHg SOIL (µg/g)	GROUND WATER (µg/L)	K_D (L/g)	K_D (mL/g)
25	400	0.0625	62.5
120	30000	0.004	4.0
380	15000	0.025	25.3
450	140000	0.0032	3.2
820	32000	0.026	25.6
	AVERAGE K_D =	0.024	24.1

Limit of excavation if WQO reached in 20 years: 51,380.96*0.024= **1,240 µg/g**

Limit of excavation if WQO reached in 15 years: 9,074.95*0.024= **219 µg/g**

If 20 years is acceptable then excavation of contaminant mass may not be warranted considering TPHg concentration of 1,700 µg/g in B-4/1-15 is the only reported concentration higher than 1,240 µg/g.

WORKSHEET 2: Calculations for MONA as a Remedial Option

Former Totem Pole Market
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MONITORED NATURAL ATTENUATION (MONA)
Will use degradation rates and seepage velocities to determine if feasible

Timeline of Degradation

Based on published first order rate constant as calculated on Worksheet 1 (0.00095day^{-1})

Assume: The highest dissolved TPHg concentration reported in MW1 to date (4,700 µg/L, 5/3/01) will degrade at the same rate

10 years: $C_f = (4{,}700)e^{(-0.00095)3650}$

$C_f =$ 146.62 µg/L

15 years: $C_f = (4{,}700)e^{(-0.00095)5475}$

$C_f =$ 25.90 µg/L

20 years: $C_f = (4{,}700)e^{(-0.00095)7300}$

$C_f =$ 4.57 µg/L

Based on the published first order rate constant, MW1 will reach WQO in:

$50 = 4{,}700e^{(-0.00095)x}$

x= 4782.416 days

x= **13.1 years**

Based on observed first order decay rate as presented in Chart 2 (0.0006 day^{-1})

Assume: The highest dissolved TPHg concentration reported in MW1 to date (4,700 µg/L, 5/3/01) will degrade at the same rate

10 years: $C_f = (4{,}700)e^{(-0.0006)3650}$

$C_f =$ 526.01 µg/L

15 years: $C_f = (4{,}700)e^{(-0.0006)5475}$

$C_f =$ 175.97 µg/L

20 years: $C_f = (4{,}700)e^{(-0.0006)7300}$

$C_f =$ 58.87 µg/L

WORKSHEET 2: Calculations for MONA as a Remedial Option
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Based on the observed first order rate constant, MW1 will reach WQO in:

$50=4{,}700e^{(-0.0006)x}$

x= 7572.158 days
x= **20.7 years**

If MONA, when will closest domestic well be impacted?

Observed Seepage Velocity

Assume: Source at northern over-excavation on site
1997 high hydraulic heads mobilized shallow sorbed TPHg into solution; subsequently, that plume of elevated dissolved TPHg concentrations was reported in MW-1 during the May 3, 2001 sampling event, 4 years and 5 months later (1,612 days).

Distance from over-excavation to MW-1 is approx. 35 feet

Observed seepage velocity is: 35 feet/1612 days= 7.66E-06 cm/sec or **0.022 ft/day**

This value likely represents an average seepage velocity between the aggregate base fill and silty clay, as observed in borings on site and along First Street.

Calculated Seepage Velocity

Seepage velocity equation: $V=k(i)/n_{eff}$

where:
k is the hydraulic conductivity (Freeze and Cherry, 1979)
i is the slope of groundwater, based on historical calculated gradients in NW direction at the site
n_{eff} is the effective porosity of the formation (estimated)

For **crushed aggregate base**:

$V=10^{-3}(0.01)/0.25$

V= 4.E-05 cm/sec or **0.11 ft/day**

For **silty clay/clayey silt** observed below a depth of approximately 2 feet:

$V=10^{-6}(0.01)/0.2$

V= 5.E-08 cm/sec or **1.4E-04 ft/day**

WORKSHEET 2: Calculations for MONA as a Remedial Option
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Seepage velocity calculations cont'd
For **gravelly sand** observed below a depth of approximately 11 feet in MW1:

$V=10^{-3}(0.01)/0.3$

V= 3.E-05 cm/sec or **0.09 ft/day**

Approximate date the elevated 4,700 μg/L TPHg concentration will reach the domestic well

Based on the above observed and calculated seepage velocities we can estimate time when the impacted groundwater slug will reach the domestic well, approximately 80 feet north northwest of MW-1

Assumes: TPHg of 4,700 μg/L starts at MW1 in 2001.
Aggregate base fill is laterally discontinuous and the domestic well is not screened within the aggregate base fill; therefore this velocity will not be used for a time estimate.
Groundwater gradient in native soil is to the northwest, towards the domestic well.

Using observed seepage velocity:

80 ft/0.022 ft day^{-1}=	3636.4	days	or
	9.96	years from 2001	
		approx. 2011	

Using silty clay seepage velocity:

80 ft/1.4E-4 ft day^{-1}=	564444	days	or
	1546	years from 2001	
		approx. 3547	Likely faster, based on observed

Using gravelly sand seepage velocity:

80 ft/0.09 ft day^{-1}=	846.7	days	or
	2.32	years from 2001	
		2003, NOW	No evidence to refute/support this

WORKSHEET 2: Calculations for MONA as a Remedial Option

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TPHg concentration at domestic well assuming degradation using published (cyclohexane) and observed first order rate constants

Assumes: No dilution in domestic well

In 2011 using published first order rate constant

$C_f = (4{,}700)e^{(-0.00095)3650}$

$C_f =$ **147 µg/L**

In 2011 using observed first order rate constant

$C_f = (4{,}700)e^{(-0.0006)3650}$

$C_f =$ **526 µg/L**

In 2003 using published first order rate constant

$C_f = (4{,}700)e^{(-0.00095)847}$

$C_f =$ **2,102 µg/L**

In 2003 using observed first order rate constant

$C_f = (4{,}700)e^{(-0.0006)847}$

$C_f =$ **2,827 µg/L**

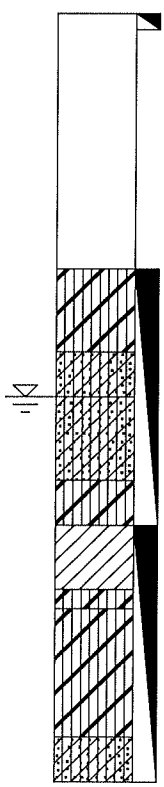
Attachment 1

ENVIRONMENTAL BORING LOG

Boring No. B10

PROJECT: Totem Pole Market
BORING LOCATION: South of Market
DRILLING METHOD: Direct-Push
DRILLER: DRL
DEPTH TO WATER: INITIAL ▽ : 14' bgs
SITE GEOLOGY: Uplifted Fluvial Terrace

PROJECT NO.: 3472.04
DATE: 2/2/05
ELEVATION: 97 feet NAVD 88
LOGGED BY: LDB
COMPLETION ▼ :



ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D. ppm	Hanby result
0 / 96			NO RECOVERY.		
3 / 93					
6 / 90					
9 / 87			NO RECOVERY.		
12 / 84		CL-ML	SILTY SANDY CLAY: 40% clay, 30% silt, 30% fine sand, tan with orange mottling, medium plasticity, firm, dry.		
		SC-SM	POORLY GRADED CLAYEY SILTY SAND: 40% fine sand, 30% clay, 30% silt, 20% fine gravel, tan-orange, medium dense, moist.		
15 / 81		SC-SM	POORLY GRADED CLAYEY SILTY SAND AND GRAVEL: 60% fine sand, 20% fine gravel, 10% silt, 10% clay, tan-orange, medium dense, wet.		
		CL-ML	SILTY CLAY: 50% clay, 40% silt, 10% fine sand, tan-orange, medium plasticity, stiff, dry.		
		CL	CLAY: 90% clay, 10% silt, tan-orange, high plasticity, stiff, dry.		
		CL-ML	SILTY CLAY: 70% clay, 20% silt, 10% fine sand, tan-orange, medium plasticity, stiff, dry.		
18 / 78		CL-ML	SILTY SANDY CLAY: 40% clay, 30% silt, 30% fine sand, brown and orange, medium plasticity, firm, moist to wet.		
		SC-SM	POORLY GRADED CLAYEY SILTY SAND AND GRAVEL: 30% fine sand, 30% fine and medium gravel, 20% clay, 20% silt, brown and orange, medium dense, wet.		
21 / 75			HALT AT 20 FEET BGS.		

Push-tube soil samples collected at 8', 12', 16' and 20' bgs.

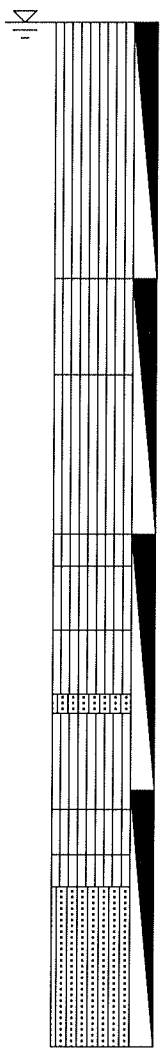
Figure _____

ENVIRONMENTAL BORING LOG

Boring No. B11

PROJECT: Totem Pole Market
BORING LOCATION: North side of First Street
DRILLING METHOD: Direct-Push
DRILLER: DRL
DEPTH TO WATER: INITIAL ▽ : 4' bgs
SITE GEOLOGY: Uplifted Fluvial Terrace

PROJECT NO.: 3472.04
DATE: 2/2/05
ELEVATION: 99 feet NAVD 88
LOGGED BY: LDB
COMPLETION ▼ :



ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D. ppm	Hanby result
99 — 0			NO RECOVERY.		
96 — 3					
		ML	CLAYEY SILT: 50% silt, 40% clay, 10% fine sand, tan-orange with gray, low plasticity, firm, saturated, slight hydrocarbon odor.		
93 — 6					
		ML	CLAYEY SILT: 60% silt, 40% clay, tan-orange with gray, low plasticity, stiff, moist, hydrocarbon odor.		
90 — 9					
		ML	CLAYEY SILT: 50% silt, 40% clay, 10% fine sand, tan-orange with gray, low plasticity, stiff, moist.		
87 — 12					
		ML	CLAYEY SANDY SILT: 40% silty, 30% clay, 30% sand, tan-orange with gray, low plasticity, firm, moist.		
		ML	SANDY GRAVELLY SILT: 40% silt, 30% fine and medium sand, 20% gravel, 10% clay, tan-orange with gray, medium plasticity, firm, wet.		
		ML	CLAYEY SANDY SILT: 40% silt, 30% clay, 30% fine sand, tan-orange with gray, low plasticity, firm, saturated.		
84 — 15		SM	SILTY SAND: 60% fine sand, 40% silt, tan-orange with gray, medium dense, wet.		
		ML	SANDY SILT: 70% silt, 20% fine sand, 10% clay, tan-orange with gray, no plasticity, firm, wet.		
		ML	SILT: 80% silt, 10% clay, 10% fine sand, tan- orange with dark gray, no plasticity, firm, moist, some organics.		
		SM	SANDY SILT: 70% silt, 20% fine sand, 10% clay, dark brown with orange, no plasticity, firm, moist.		
81 — 18			SILTY SAND: 60% fine sand, 30% silt, 10% clay, dark brown with orange, no plasticity, firm, wet.		
			HALT AT 20 FEET BGS.		
78 — 21					

Push-tube soil samples collected at 4', 8', 12', 16' and 20' bgs.

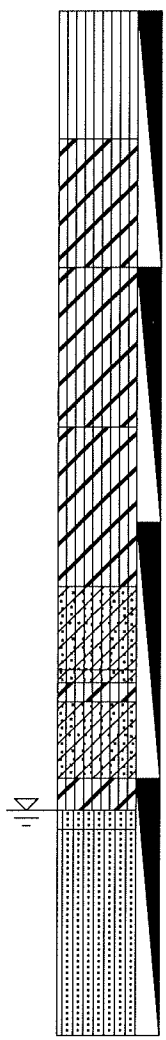
Figure _____

ENVIRONMENTAL BORING LOG

Boring No. B12

PROJECT: Totem Pole Market
BORING LOCATION: North side of First Street
DRILLING METHOD: Direct-Push
DRILLER: DRL
DEPTH TO WATER: **INITIAL** ▽ : 16.5' bgs
SITE GEOLOGY: Uplifted Fluvial Terrace

PROJECT NO.: 3472.04
DATE: 2/2/05
ELEVATION: 98 feet NAVD 88
LOGGED BY: LDB
COMPLETION ▼ :



ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D. ppm	Hanby result
0			NO RECOVERY.		
96 / 3		ML	CLAYEY SILT: 50% silt, 40% clay, 10% fine sand, orange-brown, medium plasticity, stiff, dry.		
93 / 6		CL-ML	SILTY CLAY: 50% clay, 40% silt, 10% fine sand, orange-brown, medium plasticity, stiff, dry.		
90 / 9		CL-ML	SILTY CLAY: 60% clay, 30% silt, 10% fine sand, orange-brown with gray mottling, medium plasticity, stiff, dry.		
87 / 12		CL-ML	SILTY CLAY: 50% clay, 30% silt, 20% fine sand, orange-brown with gray mottling, dry.		
84		SC-SM	POORLY GRADED CLAYEY SILTY SAND: 30% fine sand, 30% clay, 30% silt, 10% fine gravel, orange-brown with gray, medium dense, dry.		
15		SC-SM CL-ML SC-SM	POORLY GRADED CLAYEY SILTY SAND: 50% fine sand, 20% clay, 20% silt, 10% fine gravel, orange-brown with gray, medium dense, moist.		
81	▽	CL-ML SM	SILTY CLAY: 60% clay, 30% silt, 10% fine sand, orange-brown with gray, medium plasticity, stiff, moist.		
18		SM	POORLY GRADED CLAYEY SILTY SAND: 30% fine sand, 30% clay, 30% silt, 10% fine gravel, brown, low plasticity, firm, moist.		
			SILTY CLAY: 50% clay, 40% silty, 10% fine sand, brown, medium plasticity, stiff, moist.		
78			SILTY SAND: 70% fine sand, 30% silt, 10% clay, brown, loose, wet to saturated.		
21			SILTY SAND: 60% fine, medium and coarse sand, 20% silt, 10% clay, 10% fine gravel, brown, medium dense, saturated. HALT AT 20 FEET BGS.		

Push-tube soil samples collected at 4', 8', 12', 16' and 20' bgs.

Figure _____