On-site Water well Abandonment
and Well Installation
for MW-3 and MW-4
1/31/90

CTTS, Inc.
toxic technology services

90

toxic technology services inc.

January 31, 1990
File No. 89-12

Mr. Jack Worthington
Durham Transportation
27577 (A) Industrial Blvd.
Hayward, California 94545

Subject: Well Abandonment and
Groundwater Monitoring Well Installations
19984 Meekland Road
Hayward, California

Dear Mr. Worthington:

CTTS, Inc. (Toxic Technology Services) is pleased to present this report on the abandonment of one existing well and the installation of two groundwater monitoring wells at 19984 Meekland Road in Hayward, California.

This report contains the following seven (7) sections:

Introduction
Site History
Hydrogeologic Setting
Groundwater Monitoring Well Installation and Sampling
Well Abandonment
Chemical Data Summary
Conclusions and Recommendations

The purpose of this investigation was to install two groundwater monitoring wells, sample and analyze the soils during installation, develop the wells and sample and analyze the water and finally, prior to abandonment of the existing well, sample and analyze the water.

Contaminants were found in the water of all three wells. Soils from the borings of the new wells were also contaminated. Contamination was predominantly petroleum hydrocarbons as gasoline and Benzene, Toluene, Ethylbenzene and Xylenes, however chlorinated solvents were found in the water of the abandoned well and in both the soil and water of MW-3 located in the northwest corner of the subject site. Lead was found in the waters of MW-3 and MW-4 (located in the southwest corner of the subject site).

These data now indicate that the subject site not only requires soil remediation, but also a groundwater remediation program. Sources of contamination other than the tank pits are suspected,

particularly the sump located under the washrack on the north end of the property. Recommendations for further investigation are contained within this report.

It is a pleasure to provide Durham Transportation with these environmental services. A cost proposal for the next phase of work will be sent to you under separate cover. If you have any questions, please contact either of the undersigned at (415) 799-1140.

Sincerely,

Lisa A. Polos

original signed by Mr. Alt

Lisa A. Polos, R.E.A.
Senior Scientist
Toxic Technology Services
CTTS, Inc.

John N. Alt, CEG #1136
Consulting Geologist
Toxic Technology Services
CTTS, Inc.

LAP/JNA/lap

Enclosure

FINAL REPORT
WELL ABANDONMENT AND
GROUNDWATER MONITORING WELL INSTALLATIONS
19984 MEEKLAND ROAD
HAYWARD, CALIFORNIA

INTRODUCTION

In November 1989, CTTS, Inc. (Toxic Technology Services) was contracted to manage the installation of two groundwater monitoring wells and the abandonment of an unregistered on-site well at 19984 Meekland Road in the Hayward area of Alameda County, California.

This report is the follow-up to a preliminary report dated December 11, 1989 to Mr. Jack Worthington of Durham Transportation. For the sake of completeness, much of that information has been repeated in this final report.

On November 28, 1989, HEW drilling of East Palo Alto installed two groundwater monitoring wells. Supervision of well installations and soil sampling was conducted by Lisa A. Polos, REA of CTTS, Inc. and John Alt, CEG, Consulting Geologist for CTTS, Inc.. Prior to drilling, permits were granted from Zone 7 of the Alameda County Flood Control and Water Conservation District for the installation of the wells. Copies of these permits are presented under Appendix A.

Soil samples were taken at various depths, sampled in brass tubes, sealed in teflon tape and capped with plastic. All samples were kept cool in an ice chest and submitted to TMA Norcal in Richmond, a State certified hazardous waste laboratory, for analysis.

On November 29, 1989, the monitoring wells were developed and samples by Lisa Polos and John Alt. After several well volumes were purged, water samples were taken with disposable bailers. A new bailer was used for each well. Waters were collected in 40ml VOA vial, which already contained the proper preservative.

On December 12, 1989, HEW drilling abandoned, by pressure grouting, the existing, unregistered water well, located at the northeast end of the subject site, behind the washrack. As requested by Tom Peacock of the Alameda County Health Care Agency, Hazardous Materials Division, the well was purged and sampled prior to abandonment. Samples were submitted to TMA Norcal.

Prior to abandonment and closure of this well, a permit was obtained from Zone 7. A copy of this document is presented under Appendix A.

On the same day, two on-site sumps were located. One is located under the washrack. This structure is a concrete, two-stage sump and contains waste in both sections. There was a pipe, that could be a drain, under one of the metal covers associated with the sump. It is unknown where this pipe leads to, but it is possible that there is a tank under the washrack that was used in conjunction with this sump.

The second sump, also containing product, is located in the service station building and is piped to the waste oil tank, formerly located behind the building.

SITE HISTORY

The subject site is located at the northeast corner of the intersection of Meekland Avenue and Blossom Way in the unincorporated area of Alameda County near the City of Hayward (Plate 1).

According to Mr. Scott Owen of the Alameda County Public Works Department, the subject site was a service station and opened in 1946. Mr. Owen assumes that tanks 1, 2 and 4 (Plate 2) were installed in 1947 when the service station started operation. Tank 3 was installed in 1972. In July, 1986, when the property was owned by Harbert Transportation, a subsurface investigation was conducted by Applied Geosystems of Fremont, California.

Soil samples indicated that petroleum hydrocarbons were found at a level of over 200 ppm in B-1 and <1 ppm in B-2 (Plate 2). Groundwater was encountered at 24', and B-1 was converted into a monitoring well (MW-1). MW-1 had 42 ppm of gasoline and BTX values ranging from 5-6 ppm.

Durham Transportation took possession of the property in December, 1986.

In May 1988, precision tank tests using the Horner Ezy-Chek method were conducted on the gasoline tanks. Tanks 1 & 2 were found to be manifolded together above the tank top and the system appeared to be leaking. The test suggested that the leak was in the piping. Tank 3 tested tight.

Durham shut down the leaking system and pumped out the product. In April 1989, tanks 3 & 4 were shut down and product was pumped out and removed. The site is now vacant.

In July 1989, CTTS, Inc. (Toxic Technology Services) was contracted to manage the removal of the four underground storage tanks at the subject site. The actual excavation and removal was conducted by Verl's Construction of San Leandro.

Tank removal took place, following state and local regulations, on August 11, 1989 under the supervision of Ms. Polos and Mr.

John Alt and witnessed by representatives of the Eden Fire District. Product lines to the gasoline dispensers were excavated and removed on August 15, 1989.

Soil samples from the tank and pipe excavation were collected for analysis. The existing groundwater monitoring well (MW-1) was purged and sampled.

Analytical data from the soil samples taken in the pit excavation show significant gasoline, benzene, toluene, ethylbenzene and xylene contamination, particularly around tanks 1 and 2. Soil from the waste oil excavation contained low levels of contaminants. The groundwater sample had detectable levels of toluene and xylene.

On November 28, 1989, two groundwater monitoring wells were installed (Plate 3). Prior to drilling, permits were obtained. On November 29, 1989, the wells were developed and sampled. On December 12, 1989. The existing water well behind the building was purged, sampled and then abandoned according to state and local regulations.

HYDROGEOLOGIC SETTING

The subject site is underlain by generally fine-grained alluvial fan and flood plain deposits derived from the hills located approximately two miles east of the site. The deposits are late Quaternary in age and overlie rock of the Franciscan Assemblage at an unknown but probably great depth.

Three to four feet of fill generally overlies the Quaternary deposits at the site. The fill consists primarily of a clayey to sandy gravel.

The native deposits underlying the fill consist primarily of silty clay to clayey silt with minor and varying amounts of sand and gravel. Lenses of silty sand and gravel, approximately 3 to 4 inches thick, were encountered in the two borings. No other significant bedding or stratification of the units was observed to the depth explored (40 feet) and the deposits are considered to be homogeneous for hydrologic considerations.

The groundwater gradient at the site is essentially flat. The elevation of the groundwater was measured in the three monitoring wells on-site by surveying the elevation of the top of the casing and measuring the depth to groundwater using an electronic probe. The elevations are based on Alameda County benchmark BLO-MEEK located in the middle of the intersection of Blossom Way and Meekland Ave. The depth to groundwater was measured on December 19, 1989 and again on January 29, 1990. The data are presented on Table 1. They indicate a very low westward to northwestward gradient. The elevations of groundwater in the three wells are within 0.1 foot and are about at the level of error in the

measuring techniques. Therefore an exact gradient was not calculated.

TABLE 1
DEPTH TO GROUNDWATER

Monitoring Well	Elev. Top of Casing	12/19/89 Depth	12/19/89 Elev.	1/29/90 Depth	1/29/90 Elev.
MW-1	55.13	29.07	26.06	28.73	26.35
MW-3	54.34	28.35	25.99	28.00	26.34
MW-4	54.61	28.59	26.02	28.18	26.43

Note: All measurements are in feet.

GROUNDWATER MONITORING WELL INSTALLATION AND SAMPLING

On November 28, 1989, two groundwater monitoring wells, identified as MW-3 and MW-4, were installed at the subject site by HEW Drilling, Inc., using a CME 55 drill rig with hollow stem augers. Mr. John Alt, CEG and Ms. Lisa Polos supervised the installation. The locations of the wells are shown on Plate 2. Augers were steam cleaned prior to the drilling of the wells. A standard split barrel sampler with 2-5/8" OD and 2" ID was used for soil sampling. It had the capacity for obtaining an 18 inch sample using three six-inch long brass liners. Prior to obtaining each sample, the disassembled sampler and the brass liners were washed in a solution of TSP in water. Each piece was triple rinsed, with the final rinse being distilled water.

A boring log was prepared for each well. Copies of these logs are presented in Appendix B. Blow counts were recorded for each six inches of penetration of the sampler, and the time at which each sample was taken was noted on the field log. Soil samples were collected at five foot intervals during the drilling. The lower-most sample liner (next to the shoe) was retained for any required chemical analysis. The soil exposed in the ends of the tube was quickly noted, and the ends were then sealed with teflon tape and snug-fitting plastic caps. The edges of the caps were sealed with plastic tape. The cap was labeled with the sample number, depth, date, and project name. The soil samples were placed in a chilled ice chest as they were collected, and selected soil samples were marked to be sent to TMA/Norcal, a State certified hazardous waste laboratory for analysis. The second and third samples were inspected and used for the sample description.

Two-inch (ID) Schedule 40 PVC pipe was used for the well casings. Each well was screened with slotted (0.020 inch openings) casings in the lower 15 feet of the well and capped at the bottom with a slip on cap. The 8-inch diameter borings were filled in the annular space between the casing and bore wall with clean #3 sand to a depth of approximately 2 feet above the top of the slotted

casing. Above the sand-pack, at least two feet of bentonite pellets was used as a seal, and the remainder of the annulus was filled with cement grout. Monitoring Well Installation Reports with more detailed information on each of the well installations were recorded and are in the files.

The units encountered in the borings for monitoring wells MW-3 and MW-4 are shown on the boring logs (Appendix B). The soil samples collected from MW-3 had no odor above a depth of 20 feet The sample at 20 feet had a slight solvent odor. The sample was moist and was probably within the capillary fringe of the groundwater table. The sample at a depth of 25 feet had a very strong odor of gasoline. Below 25 feet the samples were from the saturated zone and had a slight odor of gasoline. The sample at 25 feet is probably within the zone of groundwater fluctuation and the contamination in the soil was deposited during a period of a higher groundwater level.

The soil samples from MW-4 had a slight odor of gasoline from a depth of 20 feet to the bottom of the boring. A very slight odor was detected in the sample from a depth of 15 feet.

Photographs taken during the sampling and installation of MW-3 and MW-4 are enclosed with this report.

During the well installation, Mr. Tom Peacock of the Alameda County Health Agency, Hazardous Materials Division, visited the site. He requested that a water sample be taken from the well that was to be abandoned and submitted for chemical analysis. A copy of Mr. Peacock's Hazardous Materials Inspection Form is presented under Appendix C.

On November 29, 1989, Mr. John Alt and Ms. Lisa Polos developed the wells by evacuating 15 gallons of water from each well by bailing prior to sampling. After the wells were developed, groundwater samples were collected using separate three-foot disposable bailers.

The first sample from each well was retrieved from the surface of the water, and the contents of the bailer were inspected to assess whether or not there was any floating product present. Groundwater from both wells had odor and sheen, but both were more noticeable in MW-3. Sample vials and jars, provided by the laboratory, were filled from the bailer.

MW-1, which was installed in 1986, was not sampled at this time, however, upon opening the well cap and checking the water level, a strong odor was detected. A sheen was observed on the water purged from this well in August 1989.

WELL ABANDONMENT

A water well was located at the northeast corner of the building

and connected to a holding water tank inside the building by a galvanized surface pipe. Previous attempts to activate the pump to sample the well were not successful.

Alameda County Public Works Department has no record of a well at the subject site prior to the 1986 installation of one monitoring well by Applied Geosystems. No data were available regarding the total depth, screened interval or condition of the well. Because of the potential that the well could act as a conduit for downward migration of the near surface contamination, it was decided that the well should be grouted and abandoned.

The grouting was done on December 12, 1989 by HEW Drilling, Inc.

The well head and surface piping was removed and the pump was then taken out of the well. The well was four inches in diameter with a PVC casing. The total depth of the well was measured at 67.9 feet to the ground surface. The top of the casing was approximately one foot below the ground surface.

The depth to standing water in the well was measured at 29.9 feet from the ground surface. The well was purged by bailing and a water sample collected. The initial bailer of water has no odor, sheen or product. After bailing approximately 2 gallons, a solvent odor was detected. The odor increased in intensity as more water was extracted from the well, however, the samples collected had no noticeable odor. The sample was shipped in a cooled ice chest to TMA/Norcal and analyzed for Volatile Halogenated Hydrocarbons, Total Petroleum Hydrocarbons as gasoline and Benzene, Toluene, Ethylbenzene and Xylenes (BTEX). Results are presented in the following section.

The well was pressured grouted using a tremie pipe starting from the bottom and continuing upward. The grout mix was one 90lb. sack of Lonestar Cement Type I & II per five gallons of water. A total of 22 sacks of cement were used to grout the well. The level of the cement grout was brought up to where it overflowed the top of the casing.

Photos of the abandoned well are presented at the end of this report.

CHEMICAL DATA SUMMARY

Table 2 is a summary of positive analytical results from the soil and water samples collected.

TABLE 2
ANALYTICAL SUMMARY

Monitoring Well 3 (MW-3) is located at the northwest corner of the subject site.

Soils

20.5'	Trichloroethene	200 ug/kg (ppb)
	Benzene	130 ug/kg
	Toluene	22 ug/kg
25.5'	Benzene	440 ug/kg
	Toluene	480 ug/kg
	Ethylbenzene	200 ug/kg
	Xylenes	930 ug/kg
	Gasoline	52 ug/g (ppm)
30.5'	Benzene	540 ug/kg
	Toluene	188 ug/kg
	Ethylbenzene	210 ug/kg
	Xylenes	400 ug/kg
	Gasoline	23 ug/g

Water

MW-3	Benzene	4600 ug/L (ppb)
	Toluene	1100 ug/L
	Ethylbenzene	680 ug/L
	Xylenes	1100 ug/L
	Gasoline	29 mg/L (ppm)
	1,2-Dichloroethane	36 ug/L
	Total Lead	0.04 mg/L (ppm)

MW-4 is located at the southwest corner of the subject site.

Soils

15.5'	Benzene	20 ug/kg (ppb)
	Toluene	19 ug/kg
	Ethylbenzene	13 ug/kg
20.5'	Benzene	75 ug/kg
	Toluene	20 ug/kg
	Ethylbenzene	26 ug/kg
	Xylenes	15 ug/kg

Water

MW-4	Benzene	33 ug/L (ppb)
	Toluene	1.0 ug/L
	Ethylbenzene	1.3 ug/L

	Xylenes	5.2 ug/L
	Total Lead	0.012 mg/L (ppm)

ABW is the water well used for on-site operations and was abandoned.

Water

ABW	Benzene	200 ug/L (ppb)
	Toluene	18 ug/L
	Ethylbenzene	24 ug/L
	Xylenes	34 ug/L
	1,2-Dichloroethane	1.5 ug/L
	Gasoline	1.8 mg/L (ppm)

Complete laboratory results and chain of custody sheets are presented under Appendix D.

CONCLUSIONS AND RECOMMENDATIONS

The data indicates that there is significant hydrocarbon contamination in the groundwater on-site and that it is particularly high at the northwest corner of the property. The extent of this contamination is not yet known.

Soils at the depths where groundwater is encountered have relatively low levels of contamination and probably get this contamination from the groundwater fluctuation. The fact that there was no visible contamination in the borings until approximately twenty feet, lends credence to this.

The data also indicates that a chlorinated solvent is present in the groundwater of the downgradient well at a level higher that acceptable for drinking waters. Lead levels are higher in this well also, but not at a level that is particularly significant when compared to the other constituents.

Even though this particular groundwater aquifer is not currently a drinking water source, the Water Quality Control Board and Alameda County can require clean-up to levels determined by them.

The appearance of the chlorinated solvents and the lead raise the possibility of sources of contamination other than the underground tank pits on the east side of the property. Certainly the sump under the washrack is suspect, but it is possible that there is another underground tank that the sump drained into, or exists independently, and is leaking into the soil and groundwater.

It is appropriate to send a copy of this report to Zone 7, Alameda County Environmental Health, the Water Quality Control Board and the Eden Fire Department. Upon authorization from

Durham Transportation, Toxic Technology Services will dispatch these copies.

The next phase of work is to define the vertical and lateral extent of the on-site contamination and characterize it. The recommended steps to accomplish this are outlined below. A proposal detailing the scope of work and the estimated costs will be sent to Durham Transportation under separate cover.

1. Take monthly monitoring well water levels.

2. Sample and analyze monitoring wells on a quarterly basis.

3. Sample and analyze the contents of the sump under the washrack.

4. Dispose of washrack sump and waste oil sump as a hazardous waste.

5. Demolish building and hook up temporary utilities.

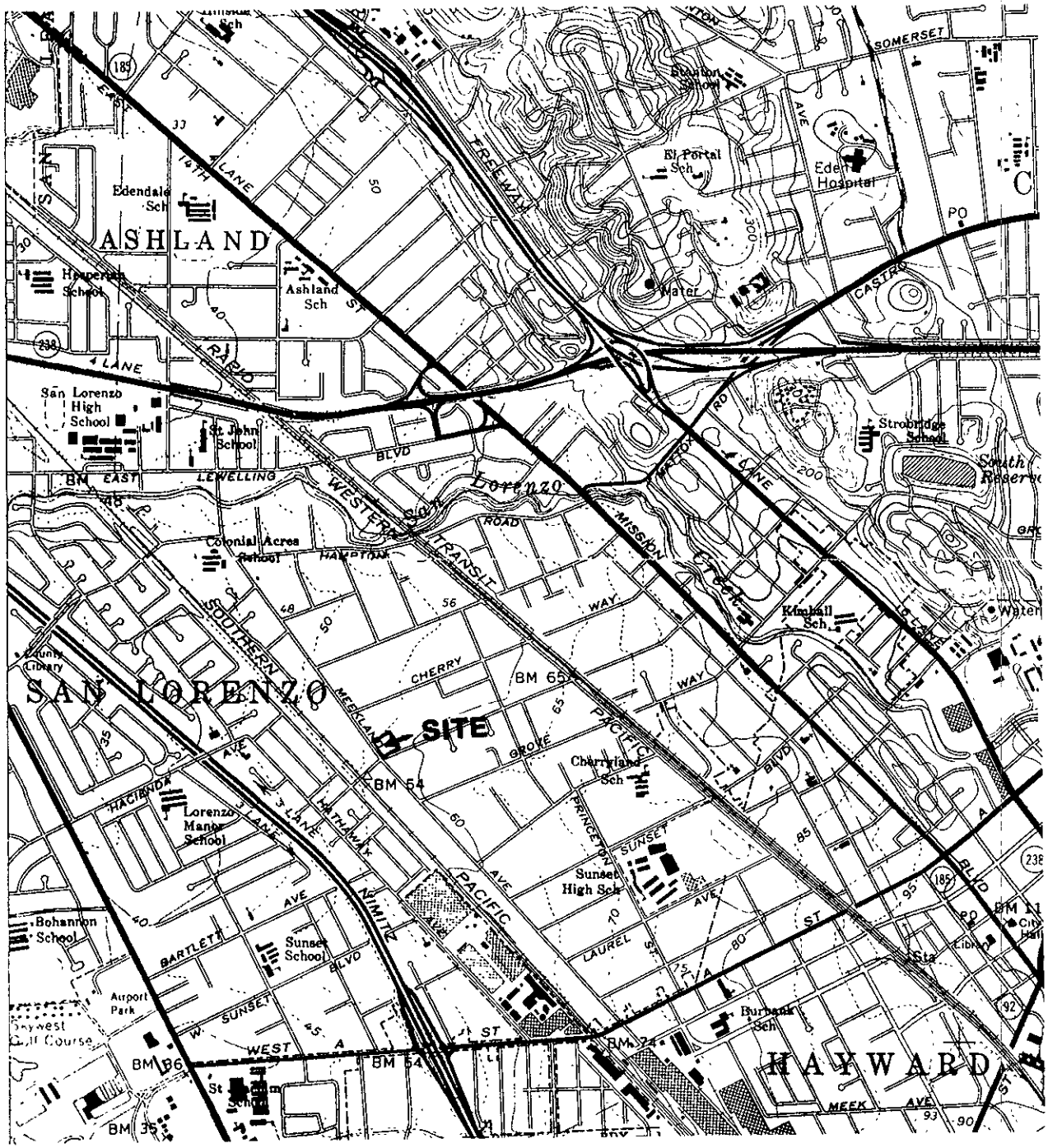
6. Conduct a soil gas survey, analyzing for gasoline hydrocarbons and BTEX over the entire site and additionally, volatile halogenated hydrocarbons on the north side of the site.

7. Install, at a minimum, two additional groundwater monitoring wells, at locations determined by the outcome of the soil gas survey.

8. Conduct trenching exploration and sampling around the tank excavations, the sumps and any "hotspots" discovered by the soil gas survey.

9. Prepare a remediation plan detailing soil and groundwater clean-up, timetables and costs.

PLATES



1 0 1/2

MILES

1000 0 1000 2000 3000

FEET

PLATE	No. 1

SITE LOCATION MAP

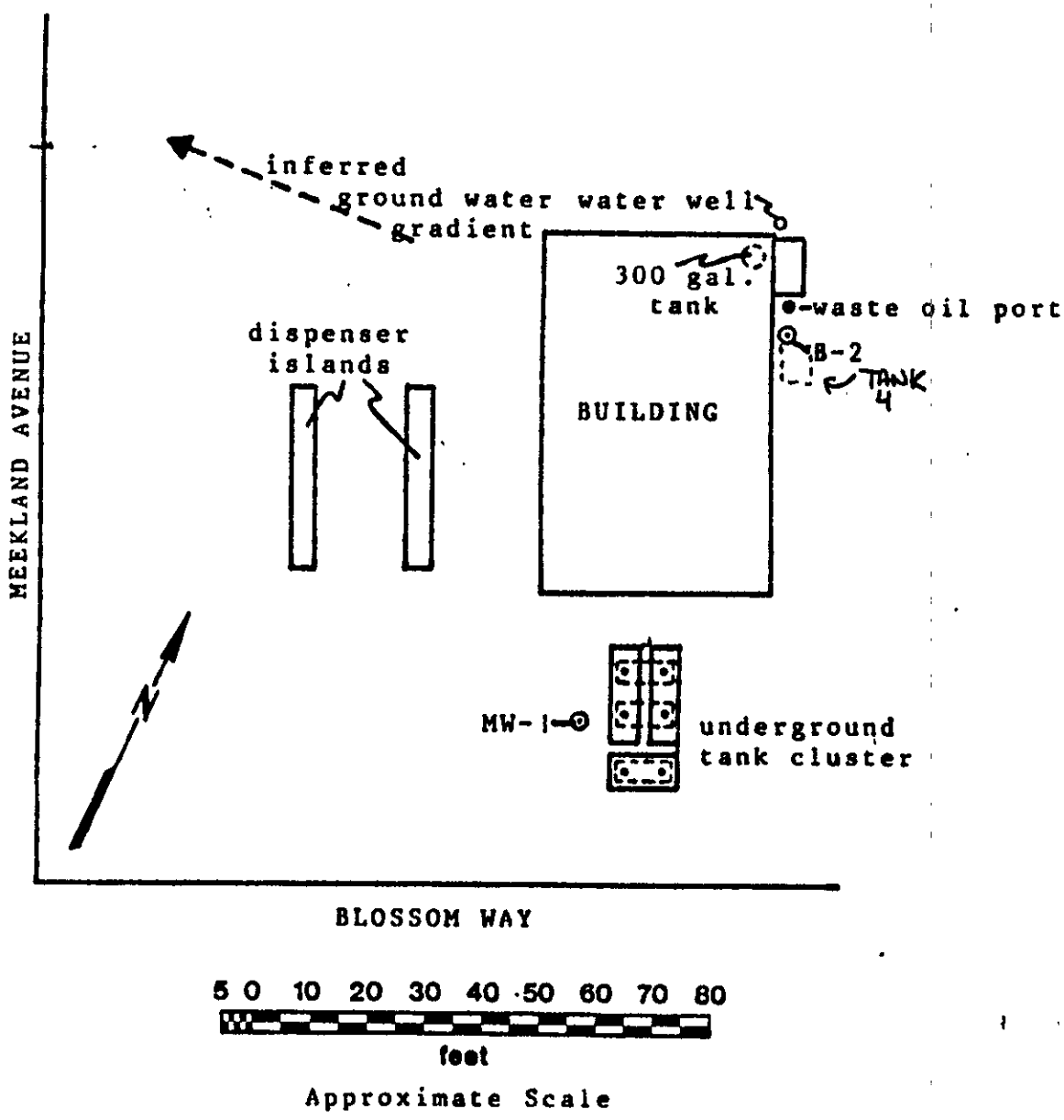


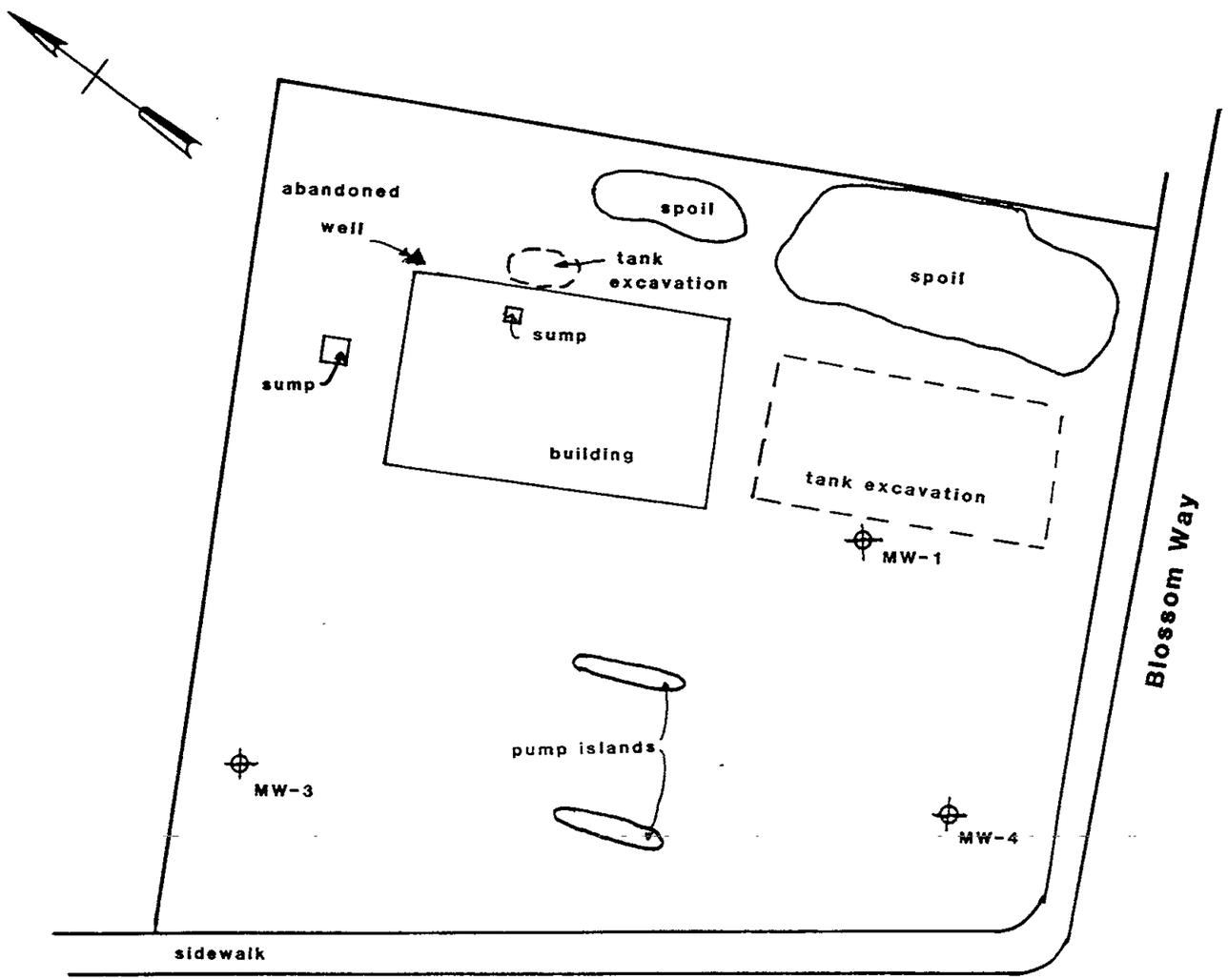
PLATE 2

Boring and Well Locations From 1986

Site Location: 19984 Meekland Road, Hayward

Toxic Technology Services
P.O. Box 515
Rodeo, California 94572

Project #89-6
Durham Transportation
27577 (A) Industrial Blvd.
Hayward, CA 94545



SITE PLAN - DURHAM TRANSPORTION		
SCALE 1" = 20'	APPROVED BY	DRAWN BY
DATE JANUARY 1990		REVISED
CTTS, Inc.		DRAWING NUMBER 3

APPENDIX A

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94566 • (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

(1) LOCATION OF PROJECT 19984 Meekland Road
Hayward, CA

(2) CLIENT
Name Durham Transportation (415)
Address 27577(A) Industrial Phone 887-6005
City Hayward, CA Zip 94545

(3) APPLICANT
Name Lisa Polos
CITS, Inc. (415)
Address PO Box 515 Phone 799-1140
City Rodeo, CA Zip 94572

(4) DESCRIPTION OF PROJECT
Water Well Construction X Geotechnical Investigation
Cathodic Protection ___ General ___
Well Destruction ___ Contamination X

(5) PROPOSED WATER WELL USE
Domestic ___ Industrial ___ Irrigation ___
Municipal ___ Monitoring X Other ___

(6) PROPOSED CONSTRUCTION
Drilling Method:
Mud Rotary ___ Air Rotary ___ Auger ___
Cable ___ Other Hollow-Stem Auger

DRILLER'S LICENSE NO. 384167

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 40 ft.
Surface Seal Depth 19.0 ft. Number 2

GEOTECHNICAL PROJECTS
Number of Borings 2 Maximum
Hole Diameter 8 in. Depth 40 ft.

(7) ESTIMATED STARTING DATE Nov. 28, 1989
ESTIMATED COMPLETION DATE Nov. 29, 1989

(8) I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Lisa A. Polos Date 11-22-89

FOR OFFICE USE

PERMIT NUMBER 89690
LOCATION NUMBER

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as arrive at the Zone 7 office five days prior proposed starting date.
2. Submit to Zone 7 within 60 days after complet of permitted work the original Department Water Resources Water Well Drillers Report equivalent for well projects, or drilling l and location sketch for geotechnical projects.
3. Permit is void if project not begun within days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal Industrial wells or 20 feet for domestic, irri tion, and monitoring wells unless a lesser de is specially approved.

(C.) GEOTECHNICAL. Backfill bore hole with compacted c tings or heavy bentonite and upper two feet with c pacted material. In areas of known or suspec contamination, tremied cement grout shall be used place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concr placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved Todd N. Wendler Date 22 Nov

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE ♦ PLEASANTON, CALIFORNIA 94566 ♦ (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

(1) LOCATION OF PROJECT 19984 Mookland Rd. Hayward, CA

(2) CLIENT
Name Durham Transportation (415)
Address 27577 (A) Industrial Phone 887-6005
City Hayward, CA Zip 94545

(3) APPLICANT
Name Lisa Polos
GTTS, Inc (415)
Address PO Box 515 Phone 777-1140
City Bodega, CA Zip 94572

(4) DESCRIPTION OF PROJECT

Water Well Construction	___	Geotechnical Investigation	
Cathodic Protection	___	General	___
Well Destruction	X	Contamination	___

(5) PROPOSED WATER WELL USE

Domestic	___	Industrial	___	Irrigation	___
Municipal	___	Monitoring	___	Other	___

(6) PROPOSED CONSTRUCTION
Drilling Method:
Mud Rotary ___ Air Rotary ___ Auger ___
Cable ___ Other ___

DRILLER'S LICENSE NO. 384167

WELL PROJECTS
Drill Hole Diameter ___ in. Maximum
Casing Diameter ___ in. Depth ___ ft.
Surface Seal Depth ___ ft. Number ___

GEOTECHNICAL PROJECTS
Number of Borings ___ Maximum
Hole Diameter ___ in. Depth ___ ft.

(7) ESTIMATED STARTING DATE Nov. 28, 1989
ESTIMATED COMPLETION DATE Nov. 29, 1989

(8) I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Lisa A. Polos Date 11-22-89

FOR OFFICE USE

PERMIT NUMBER 89691
LOCATION NUMBER 3S/2W 17G80

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as arrive at the Zone 7 office five days prior proposed starting date.
2. Submit to Zone 7 within 60 days after complet of permitted work the original Department Water Resources Water Well Drillers Report equivalent for well projects, or drilling l and location sketch for geotechnical projects.
3. Permit is void if project not begun within days of approval date.

B. WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal Industrial wells or 20 feet for domestic, irri tion, and monitoring wells unless a lesser de is specially approved.

C. GEOTECHNICAL. Backfill bore hole with compacted c tings or heavy bentonite and upper two feet with c pacted material. In areas of known or suspec contamination, tremied cement grout shall be used place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concr placed by tremie.

(E.) WELL DESTRUCTION. See attached.

Approved Todd N. Wendler Date 22 Nov

APPENDIX B

BORING LOCATION: Meekland and Blossom Ave		ELEVATION AND DATUM	
DRILLING CONTRACTOR: HEW Drilling	DRILLER: Jeff	DATE STARTED: 11-28-89	DATE FINISHED: 11-28-89
DRILLING EQUIPMENT: CME 55		COMPLETION DEPTH (FT): 40	ROCK DEPTH (FT): -
DIAMETER OF BORING		NO. OF SAMPLES: UNDIST. 7	CORE
PURPOSE OF BORING: Monitoring Well		WATER DEPTH(FT): FIRST 34	COMPL.
SAMPLING EQUIPMENT		LOGGED BY: J. Alt	CHECKED BY:
COMMENTS			

DEPTH (FEET)	DESCRIPTION	GRAPHIC LOG LITHOLOGY	SAMPLES NO.	SAMPLES TYPE	BLOW COUNT	DRILLING RATE/ TIME	REMARKS
	Fill						
	dark brown clay, dry, adobe						
5					6		
					8		
	reddish brown fine sandy silt with some clay, dry				10		
	Tan sandy silt to silty sand. Thin lens of coarse sand at 11 ft.; dry, becoming moist at 15 ft.						
10					3		
					5		
					8		
15					2		
					4		
					6		
20					2		
	Gray clay, moist, mottled brown, moderately plastic				4		
					5		
25					4		
					7		
					10		
30							

Project Durham Site

Project No.

LOG OF BORING

B-3

DEPTH (FEET)	DESCRIPTION	GRAPHIC LOG LITHOLOGY	SAMPLES NO.	SAMPLES TYPE	SAMPLES BLOW COUNT	DRILLING RATE/ TIME	REMARKS
30	Gray clay mottled brown, moist, moderately plastic.				4 4 5		
35	Brown clayey sand and gravel, grades downward to brown clayey silt.				5 7 11		
40	Bottom of boring No sample						
45							
50							
55							
60							
65							
70							

Project

Project No.

CONT. LOG OF BORING B-3

BORING LOCATION: Meekland and Blossom Ave		ELEVATION AND DATUM	
DRILLING CONTRACTOR: HEW Drilling	DRILLER: Jeff	DATE STARTED: 11-28-89	DATE FINISHED: 11-28-89
DRILLING EQUIPMENT: CME 55		COMPLETION DEPTH (FT): 40	ROCK DEPTH (FT): -
DIAMETER OF BORING		NO. OF SAMPLES: UNDIST. 7	CORE
PURPOSE OF BORING: Monitoring Well		WATER DEPTH(FT): FIRST	COMPL.
SAMPLING EQUIPMENT		LOGGED BY: J. Alt	CHECKED BY:
COMMENTS			

DEPTH (FEET)	DESCRIPTION	GRAPHIC LOG LITHOLOGY	SAMPLES NO.	SAMPLES TYPE	SAMPLES BLOW COUNT	SAMPLES DRILLING RATE/TIME	REMARKS
	Fill - Sand and Gravel						
5	Dark brown clay, dry				8 6 4		
	Tan silty clay, dry						
10	brown sandy gravel				5 6 9		
15	Gray clayey silt to silty clay, locally sandy				2 4 4		
20	Same as above moist				1 4 4		
25	Same as above with brown mottlings				4 5 6		
30							

Project: Durham Site

Project No.

LOG OF BORING B-4

DEPTH (FEET)	DESCRIPTION	GRAPHIC LOG LITHOLOGY	SAMPLES NO.	SAMPLES TYPE	SAMPLES BLOW COUNT	DRILLING RATE/ TIME	REMARKS
30	Gray clay, moist, mottled brown				4 7 13		
35	Brown silty clay, wet				6 7 9		
40	bottom of boring						
45							
50							
55							
60							
65							
70							

Project

Project No.

CONT. LOG OF BORING

B-4

APPENDIX C

white -env.health
yellow -facility
pink -files

ALAMEDA COUNTY, DEPARTMENT OF ENVIRONMENTAL HEALTH

80 Swan Way, #200
Oakland, CA 94621
(415) 271-4320

Hazardous Materials Inspection Form

II,III

Site ID # ____ Site Name Durham Trans. Today's Date 2/8/89

Site Address 19984 Meekland Ave.

City Hayward Zip 94541 Phone ______

____ MAX AMT stored > 500 lbs, 55 gal., 200 cft.?

Inspection Categories:

____ I. Haz. Mat/Waste GENERATOR/TRANSPORTER
____ II. Business Plans, Acute Hazardous Materials
✓ III. Underground Tanks
Removal - well installation

* Calif. Administration Code (CAC) or the Health & Safety Code (HS&C)

Comments: Installing 2 monitoring well + 1 existing immediately to the West of the gasoline tank by NW & SW corners of lot.

Well near washrack behind the station near the waste oil pit to be abandoned and closed.

Recommend collecting water sample from well in back prior to closing.

II.A BUSINESS PLANS (Title 19)

___	1. Immediate Reporting	2703
___	2. Bus Plan Stds.	25503(b)
___	3. RR Cars > 30 days	25503.7
___	4. Inventory Information	25504(a)
___	5. Inventory Complete	2730
___	6. Emergency Response	25504(b)
___	7. Training	25504(c)
___	8. Deficiency	25505(a)
___	9. Modification	25505(b)

II.B ACUTELY HAZ. MAT'LS

___	10. Registration Form Filed	25533(a)
___	11. Form Complete	25533(b)
___	12. RMPP Contents	25534(c)
___	13. Implement Sch. Req'd? (Y/N)	___
___	14. Offsite Conseq. Assess.	25524(c)
___	15. Probable Risk Assessment	25534(d)
___	16. Persons Responsible	25534(g)
___	17. Certification	25534(f)
___	18. Exemption Request? (Y/N)	25536(b)
___	19. Trade Secret Requested?	25538

III. UNDERGROUND TANKS (Title 23)

General

___	1. Permit Application	25284 (H&S)
___	2. Pipeline Leak Detection	25292 (H&S)
___	3. Records Maintenance	2712
___	4. Release Report	2651
___	5. Closure Plans	2670

Monitoring for Existing Tanks

___ 6. Method
1) Monthly Test
2) Daily Vadose
Semi-annual gndwater
One time soils
3) Daily Vadose
One time soils
Annual tank test
4) Monthly Gndwater
One time soils
5) Daily Inventory
Annual tank testing
Cont pipe leak det
Vadose/gndwater mon.
6) Daily Inventory
Annual tank testing
Cont pipe leak det
7) Weekly Tank Gauge
Annual tank tstng
8) Annual Tank Testing
Daily Inventory
9) Other ________

___	7. Precis Tank Test Date: ______	2643
___	8. Inventory Rec.	2644
___	9. Soil Testing.	2646
___	10. Ground Water.	2647

New Tanks

___	11. Monitor Plan	2632
___	12. Access. Secure	2634
___	13. Plans Submit Date: ______	2711
___	14. As Built Date: ______	2635

Rev 6/88

II, III

Contact: Lisa Polos
Title: Senior Scientist
Signature: Lisa Polos

Inspector: [signature]
Signature: ______

APPENDIX D

TMA
Thermo Analytical Inc.

TMA/Norcal
2030 Wright Avenue
P.O. Box 4040
Richmond, CA 94804-0040
(415) 235-2633

December 11, 1989

Toxic Technology Services
P.O. Box 515
Rodeo, CA 94572

Attention: Lisa Polos

TMA/Norcal Reference: 6721-3

Dear Lisa:

Enclosed are the results of the analyses of soil samples received November 28, 1989.

Please feel free to call with any questions.

Sincerely,

Victoria Taylor
Organics Department
Manager

VT/td

EPA METHOD 8010
TARGET ANALYTE RESULTS

Client: Toxic Technology Services
Client Sample I.D.: B-3,20.5'
TMA/Norcal I.D.: 6721-3-2

Date Received: 11/28/89
Date Analyzed: 12/1/89

CAS. NO.	COMPOUND	RESULTS (ug/kg)	DETECTION LIMITS (ug/kg)
75-71-8	Dichlorodifluoromethane	ND	50
29479-9	Chloromethane	ND	10
29584-5	Bromomethane	ND	30
75-01-4	Vinyl Chloride	ND	10
29480-2	Chloroethane	ND	10
75-09-2	Dichloromethane	ND	10
75-69-4	Trichlorofluoromethane	ND	20
75-35-4	1,1-Dichloroethene	ND	10
75-34-3	1,1-Dichloroethane	ND	10
156-60-5	trans-1,2-Dichloroethene	ND	10
76-66-3	Chloroform	ND	10
107-06-2	1,2-Dichloroethane	ND	10
71-55-6	1,1,1-Trichloroethane	ND	10
56-23-5	Carbon Tetrachloride	ND	10
75-27-4	Bromodichloromethane	ND	10
78-87-5	1,2-Dichloropropane	ND	10
10061-02-6	trans-1,3-Dichloropropene	ND	10
79-01-6	Trichloroethene	200	10
124-48-1	Chlorodibromomethane	ND	10
79-00-5	1,1,2-Trichloroethane	ND	10
10061-01-5	cis-1,3-Dichloropropene	ND	10
110-75-8	2-Chloroethylvinyl ether	ND	10
75-25-2	Bromoform	ND	10
79-34-5	1,1,2,2-Tetrachloroethane	ND	10
127-18-4	Tetrachloroethene	ND	10
108-90-7	Chlorobenzene	ND	10
541-73-1	1,3-Dichlorobenzene	ND	10
95-50-1	1,2-Dichlorobenzene	ND	10
106-46-7	1,4-Dichlorobenzene	ND	10

C. S Smith
Analyst

Data Release Authorized By

EPA METHOD 8010
TARGET ANALYTE RESULTS

Client: Toxic Technology Services
Client Sample I.D.: B-3,25.5'
TMA/Norcal I.D.: 6721-3-3

Date Received: 11/28/89
Date Analyzed: 12/8/89

CAS. NO.	COMPOUND	RESULTS (ug/L)	DETECTION LIMITS (ug/L)
75-71-8	Dichlorodifluoromethane	<50	50
29479-9	Chloromethane	<10	10
29584-5	Bromomethane	<30	30
75-01-4	Vinyl Chloride	<10	10
29480-2	Chloroethane	<10	10
75-09-2	Dichloromethane	<10	10
75-69-4	Trichlorofluoromethane	<20	20
75-35-4	1,1-Dichloroethene	<10	10
75-34-3	1,1-Dichloroethane	<10	10
156-60-5	trans-1,2-Dichloroethene	<10	10
76-66-3	Chloroform	<10	10
107-06-2	1,2-Dichloroethane	<10	10
71-55-6	1,1,1-Trichloroethane	<10	10
56-23-5	Carbon Tetrachloride	<10	10
75-27-4	Bromodichloromethane	<10	10
78-87-5	1,2-Dichloropropane	<10	10
10061-02-6	trans-1,3-Dichloropropene	<10	10
79-01-6	Trichloroethene	<10	10
124-48-1	Chlorodibromomethane	<10	10
79-00-5	1,1,2-Trichloroethane	<10	10
10061-01-5	cis-1,3-Dichloropropene	<10	10
110-75-8	2-Chloroethylvinyl ether	<10	10
75-25-2	Bromoform	<10	10
79-34-5	1,1,2,2-Tetrachloroethane	<10	10
127-18-4	Tetrachloroethene	<10	10
108-90-7	Chlorobenzene	<10	10
541-73-1	1,3-Dichlorobenzene	<10	10
95-50-1	1,2-Dichlorobenzene	<10	10
106-46-7	1,4-Dichlorobenzene	<10	10

Analyst

Data Release Authorized By

EPA METHOD 8020
TARGET ANALYTE RESULTS

Client: Toxic Technology Services
Client Sample I.D.: N/A
TMA/Norcal I.D.: Method Blank

Date Received: N/A
Date Analyzed: 11/30/89

CAS. NO.	COMPOUND	RESULTS (ug/kg)	DETECTION LIMITS (ug/kg)
71-43-2	Benzene	ND	5
108-88-3	Toluene	15	5
100-41-4	Ethylbenzene	ND	5
1330-20-7	Xylenes	ND	15

G. D Smith
Analyst

Date Release Authorized By

EPA METHOD 8020
TARGET ANALYTE RESULTS

Client: Toxic Technology Services
Client Sample I.D.: B-3,20.5'
TMA/Norcal I.D.: 6721-3-2

Date Received: 11/28/89
Date Analyzed: 11/30/89

CAS. NO.	COMPOUND	RESULTS (ug/kg)	DETECTION LIMITS (ug/kg)
71-43-2	Benzene	130	5
108-88-3	Toluene	22	5
100-41-4	Ethylbenzene	<5.0	5
1330-20-7	Xylenes	<15	15

Analyst

Date Release Authorized By

EPA METHOD 8020
TARGET ANALYTE RESULTS

Client: Toxic Technology Services
Client Sample I.D.: B-3,25.5'
Method: 6721-3-3

Date Received: 11/28/89
Date Analyzed: 11/30/89

CAS. NO.	COMPOUND	RESULTS (ug/kg)	DETECTION LIMITS (ug/kg)
71-43-2	Benzene	440	5
108-88-3	Toluene	480	5
100-41-4	Ethylbenzene	200	5
1330-20-7	Xylenes	930	15

G.W. Smith
Analyst

Victoria Taylor
Date Release Authorized By

EPA METHOD 8020
TARGET ANALYTE RESULTS

Client: Toxic Technology Services
Client Sample I.D.: B-3,30.5'
Method: 6721-3-4

Date Received: 11/28/89
Date Analyzed: 11/30/89

CAS. NO.	COMPOUND	RESULTS (ug/kg)	DETECTION LIMIT (ug/kg)
71-43-2	Benzene	540	5
108-88-3	Toluene	188	5
100-41-4	Ethylbenzene	210	5
1330-20-7	Xylenes	400	15

G. S. Smith
Analyst

Victoria Davalos
Data Release Authorized By

EPA METHOD 8020
TARGET ANALYTE RESULTS

Client: Toxic Technology Services
Client Sample I.D.: B-4,15.5'
Method: 6721-3-5

Date Received: 11/28/89
Date Analyzed: 11/30/89

CAS. NO.	COMPOUND	RESULTS (ug/kg)	DETECTION LIMIT (ug/kg)
71-43-2	Benzene	20	5
108-88-3	Toluene	19	5
100-41-4	Ethylbenzene	13	5
1330-20-7	Xylenes	<15	15

C.O Smith
Analyst

Victoria Taylor
Data Release Authorized By

EPA METHOD 8020
TARGET ANALYTE RESULTS

Client: Toxic Technology Services
Client Sample I.D.: B-4,20.5'
Method: 6721-3-6

Date Received: 11/28/89
Date Analyzed: 11/30/89

CAS. NO.	COMPOUND	RESULTS (ug/kg)	DETECTION LIMIT (ug/kg)
71-43-2	Benzene	75	5
108-88-3	Toluene	20	5
100-41-4	Ethylbenzene	26	5
1330-20-7	Xylenes	15	15

Analyst

Data Release Authorized By

EPA METHOD 8020
TARGET ANALYTE RESULTS

Client: Toxic Technology Services
Client Sample I.D.: B-4,35.5'
Method: 6721-3-7

Date Received: 11/28/89
Date Analyzed: 11/30/89

CAS. NO.	COMPOUND	RESULTS (ug/kg)	DETECTION LIMIT (ug/kg)
71-43-2	Benzene	<5	5
108-88-3	Toluene	13*	5
100-41-4	Ethylbenzene	<5	5
1330-20-7	Xylenes	<15	15

* Less than Blank

C.D. Smith
Analyst

Victoria Taylor
Data Release Authorized By

ANALYSIS RESULTS REPORT
TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

Client: Toxic Technology Services
Sample Delivery Group: 3
Method: MOD 8015 - P&T

Date Received: 11/28/89
Date Analyzed: 11/30/89

TMA SAMPLE I.D.	CLIENT I.D.	GASOLINE (UG/G)	DETECTION LIMIT (UG/G)
BLANK	NA	<10	10
6721-3-2	B-3,20.5'	<10	10
6721-3-3	B-3,25.5'	52	10
6721-3-4	B-3,30.5'	23	10
6721-3-5	B-4,15.5'	<10	10
6721-3-6	B-4,20.5'	<10	10
6721-3-7	B-4,35.5'	<10	10

TMA
Thermo Analytical Inc.

TMA/Norcal
2030 Wright Avenue
P.O. Box 4040
Richmond, CA 94804-0040

(415) 235-2633

December 8, 1989

Toxic Technology Services
P.O. Box 515
Rodeo, CA 94572

Attention: Lisa Polos

TMA/Norcal Reference: 6721-4

Dear Lisa:

Enclosed are the results of the analyses of water samples for Benzene, Toluene, Ethylbenzene, Xylenes, and Total Petroleum Hydrocarbons. The results for 6721-4-3 is unconfirmed. The confirmation analysis will be available Monday.

Please feel free to call with any questions.

Sincerely,

Victoria Taylor
Organics Department
Manager

VT/td

EPA METHOD 8020
TARGET ANALYTE RESULTS

Client: Toxic Technology Services

Date Received: 11/29/89

Client Sample I.D.: N/A

Date Analyzed: 12/11/89

TMA/Norcal I.D.: Method Blank

CAS. NO.	COMPOUND	RESULTS (ug/L)	DETECTION LIMITS (ug/L)
71-43-2	Benzene	<0.3	0.3
108-88-3	Toluene	<0.3	0.3
100-41-4	Ethylbenzene	<0.3	0.3
1330-20-7	Xylenes	<0.3	0.3

Analyst

Data Release Authorized By

EPA METHOD 8020
TARGET ANALYTE RESULTS

Client: Toxic Technology Services

Date Received: 11/29/89

Client Sample I.D.: MW3

Date Analyzed: 11/30/89

TMA/Norcal I.D.: 6742-4-1

CAS. NO.	COMPOUND	RESULTS (ug/L)	DETECTION LIMITS (ug/L)
71-43-2	Benzene	O.R.*	7.5
108-88-3	Toluene	1100	7.5
100-41-4	Ethylbenzene	680	7.5
1330-20-7	Xylenes	1100	7.5

* Over range

Analyst

Date Release Authorized By

EPA METHOD 8020
TARGET ANALYTE RESULTS

Client: Toxic Technology Services
Date Received: 11/29/89

Client Sample I.D.: MW3 DL
Date Analyzed: 12/1/89

TMA/Norcal I.D.: 6742-4-1 DL

CAS. NO.	COMPOUND	RESULTS (ug/L)	DETECTION LIMITS (ug/L)
71-43-2	Benzene	4600	15
108-88-3	Toluene	NQ	—
100-41-4	Ethylbenzene	NQ	—
1330-20-7	Xylenes	NQ	—

Diem Nguyen
Analyst

Victoria L Taylor
Date Release Authorized By

EPA METHOD 8020
TARGET ANALYTE RESULTS

Client: Toxic Technology Services

Date Received: 11/29/89

Client Sample I.D.: BKUP-MW4

Date Analyzed: 11/30/89

TMA/Norcal I.D.: 6721-4-2

CAS. NO.	COMPOUND	RESULTS (ug/L)	DETECTION LIMITS (ug/L)
71-43-2	Benzene	33	0.3
108-88-3	Toluene	1.0	0.3
100-41-4	Ethylbenzene	1.3	0.3
1330-20-7	Xylenes	5.2	0.3

Analyst

Date Release Authorized By

ANALYSIS RESULTS REPORT
TOTAL PETROLEUM HYDROCARBONS
WATER MATRIX

Client: Toxic Technology Services

Date Received: 11/29/89

Client Sample I.D.: 4

Date Analyzed: 11/30/89

Method: MOD 8015 P & T

TMA/SAMPLE I.D.	CLIENT I.D.	GASOLINE (mg/L)	DETECTION LIMITS (ug/L)
Method Blank	N/A	<0.5	0.5
6721-4-1	MW3	29	0.5
6721-4-2	BKUP-MW4	<0.5	0.5

Analyst

Date Release Authorized By

EPA METHOD 8010
TARGET ANALYTE RESULTS

NORCAL I.D.: 6721-4-3

CLIENT I.D.: MW3-BKUP

CAS. NO.	COMPOUND	RESULTS (ug/L)	DETECTION LIMIT (ug/L)
75-71-8	Dichlorodifluoromethane	ND	2.00
29479-9	Chloromethane	ND	0.50
29584-5	Bromomethane	ND	1.20
75-01-4	Vinyl Chloride	ND	0.50
29480-2	Chloroethane	ND	0.52
75-09-2	Dichloromethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.80
75-35-4	1,1-Dichloroethene	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
76-66-3	Chloroform	ND	0.50
107-06-2	1,2-Dichloroethane	36	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
56-23-5	Carbon Tetrachloride	ND	0.50
75-27-4	Bromodichloromethane	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-01-6	Trichloroethene	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	0.50
75-25-2	Bromoform	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
127-18-4	Tetrachloroethene	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50

Analyst

Data Release Authorized By

TMA
Thermo Analytical Inc.

TMA/Norcal
2030 Wright Avenue
P O Box 4040
Richmond, CA 94804-0040

(415) 235-2633

December 18, 1989

Toxic Technology Services
P.O. Box 515
Rodeo, CA 94572

Attention: Lisa Polos

TMA/Norcal Reference: 6721-6

Dear Lisa:

Enclosed are the results of the analyses of soil samples received December 12, 1989.

Please feel free to call with any questions.

Sincerely,

Victoria Taylor
Organics Department
Supervisor

VT/td

EPA METHOD 601
TARGET ANALYTE RESULTS

Client: Toxic Technology Services
Client Sample I.D.: ABW 12-12
TMA/Norcal I.D.: 6721-6-2

Date Received: 12/12/89
Date Analyzed: 12/14/89

CAS. NO.	COMPOUND	RESULTS (ug/L)	DETECTION LIMITS (ug/L)
75-71-8	Dichlorodifluoromethane	<2.00	2.00
29479-9	Chloromethane	<0.50	0.50
29584-5	Bromomethane	<1.20	1.20
75-01-4	Vinyl Chloride	<0.50	0.50
29480-2	Chloroethane	<0.52	0.52
75-09-2	Dichloromethane	<0.50	0.50
75-69-4	Trichlorofluoromethane	<0.80	0.80
75-35-4	1,1-Dichloroethene	<0.50	0.50
75-34-3	1,1-Dichloroethane	<0.50	0.50
156-60-5	trans-1,2-Dichloroethene	<0.50	0.50
76-66-3	Chloroform	<0.50	0.50
107-06-2	1,2-Dichloroethane	1.5	0.50
71-55-6	1,1,1-Trichloroethane	<0.50	0.50
56-23-5	Carbon Tetrachloride	<0.50	0.50
75-27-4	Bromodichloromethane	<0.50	0.50
78-87-5	1,2-Dichloropropane	<0.50	0.50
10061-02-6	trans-1,3-Dichloropropene	<0.50	0.50
79-01-6	Trichloroethene	<0.50	0.50
124-48-1	Chlorodibromomethane	<0.50	0.50
79-00-5	1,1,2-Trichloroethane	<0.50	0.50
10061-01-5	cis-1,3-Dichloropropene	<0.50	0.50
110-75-8	2-Chloroethylvinyl ether	<0.50	0.50
75-25-2	Bromoform	<0.50	0.50
79-34-5	1,1,2,2-Tetrachloroethane	<0.50	0.50
127-18-4	Tetrachloroethene	<0.50	0.50
108-90-7	Chlorobenzene	<0.50	0.50
541-73-1	1,3-Dichlorobenzene	<0.50	0.50
95-50-1	1,2-Dichlorobenzene	<0.50	0.50
106-46-7	1,4-Dichlorobenzene	<0.50	0.50

G. Johnson
Analyst

Data Release Authorized By

EPA METHOD 8020
TARGET ANALYTE RESULTS

Client: Toxic Technology Services
Client Sample I.D.: ABW-12-12
TMA/Norcal I.D.:

Date Received: 12/12/89
Date Analyzed: 12/13/89

CAS. NO.	COMPOUND	RESULTS (ug/kg)	DETECTION LIMITS (ug/kg)
71-43-2	Benzene	200 ug/L	2.5 ug/L
108-88-3	Toluene	18 ug/L	0.3 ug/L
100-41-4	Ethylbenzene	24	0.3
108-38-3	Xylenes	34	0.5

Analyst

Data Release Authorized By

ANALYSIS RESULTS REPORT
TOTAL PETROLEUM HYDROCARBONS
WATER MATRIX

Client: Toxic Technology Services
Sample Delivery Group: 6
Analysis Method: P & T FULV

Date Received: 12/12/89
Date Analyzed: 12/13/89
Date Report: 12/15/89

TMA Sample I.D.	Client I.D.	Gasoline (mg/l)	Detection Limits (mg/l)
Blank	N/A	<1.0	0.5
6721-6-1	ABW 12-12	1.8	0.5

C. V. Smith
Analyst

Victoria Taylor
Date Release Authorized By

TMA
Thermo Analytical Inc.

TMA/Norcal
2030 Wright Avenue
P.O. Box 4040
Richmond, CA 94804-0040
(415) 235-2633 Fax No (415) 235-0438

January 15, 1990

Toxic Technologies
P.O. Box 515
Rodeo, CA 94572

Attention: Lisa Polos

Dear Lisa:

Enclosed are the results of the metals analysis for samples received November 29, 1989.

I am leaving TMA/Norcal as of January 17, 1990. Robert Fox will handle your projects from that time forward.

Sincerely,

Victoria Taylor
Program Manager

VT/td
Enclosures

ES
ENGINEERING-SCIENCE, INC.

RESEARCH AND DEVELOPMENT
LABORATORY
600 BANCROFT WAY
BERKELEY, CALIFORNIA 94710
(415) 841-7353

Date: December 11, 1989

Job No.: 5261-4202

Work Order No.: 1560

Client: TMA/NORCAL
Attention: Sample Control
Address: 2030 Wright Avenue
Richmond, Ca. 94804

Attached are the analytical reports for the sample(s) received by this laboratory on 10-20-89. Samples were received intact and at room temperature.

Sample Preparation Data

Laboratory Sample No.	Client Sample ID	Test	Date collected	Date* extracted	Date* 2nd col.
89120002	MW-3-6721-5-1	3020	N/A	12-05-89	
89120002	MW-3-6721-5-1	PB-F	11-29-89		
89120003	MW-4-6721-5-2	3020	N/A	12-05-89	
89120003	MW-4-6721-5-2	PB-F	11-29-89		

* If applicable

ES-ENGINEERING SCIENCE, INC.

600 Bancroft Way
Berkeley, CA 94710

INORGANIC ANALYTICAL REPORT

Work Order No.: 1560 % Moisture: NA

Client ID: MW-3-6721-5-1 11/29/89 Matrix: WATER
T-1117

Laboratory ID: 89120002 Unit: mg/L

Parameter	Result	Reporting Limit	Analytical Method	Date Analyzed
LEAD	0.04	0.005	GF-AA	12/06/89

NA- Not Applicable
ND- Not Detected

ANALYST: J. Michael

GROUP LEADER: 12/11/89

ES-ENGINEERING SCIENCE, INC.

600 Bancroft Way
Berkeley, CA 94710

INORGANIC ANALYTICAL REPORT

Work Order No.: 1560 % Moisture: NA

Client ID: MW-4-6721-5-2 11/29/89 Matrix: WATER
T-1054

Laboratory ID: 89120003 Unit: mg/L

Parameter	Result	Reporting Limit	Analytical Method	Date Analyzed
LEAD	0.012	0.005	GF-AA	12/06/89

NA- Not Applicable
ND- Not Detected

ANALYST: J. Michael

GROUP LEADER: 12/11/89

ES-ENGINEERING SCIENCE, INC.

600 Bancroft Way
Berkeley, CA 94710

INORGANIC ANALYTICAL REPORT

Work Order No.: 1560 % Moisture: NA

Client ID: NA Matrix: WATER

Laboratory ID: PREPARATION BLANK Unit: mg/L

Parameter	Result	Reporting Limit	Analytical Method	Date Analyzed
LEAD	ND	0.005	GF-AA	12/06/89

NA- Not Applicable
ND- Not Detected

ANALYST: J. Michaud

GROUP LEADER: 12/11/89

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ENGINEERING SCIENCE, INC.

W.O. 1560

CHAIN OF CUSTODY RECORD

Proj. No.	Project Name
521-4202	TMM-Norcal, Richmond, CA

SAMPLERS (Signature)

STA. NO.	DATE	TIME	STATION LOCATION	NO. OF CONTAINERS	PB-F	REMARKS
	11/29	1117	MW-3-6721-5-1	1	X	89120002
	"	1054	MW-4-6721-5-2	1	X	89120003

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Remarks	
			11/30/89 1615	Cool + Intact Rm. Temp. °C	

Coordinator Field Files

2030 Wright Avenue
Richmond, California 94804
(415) 235-2633
(TWX) 910-382-8132

TMA

Thermo Analytical Inc.

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
89-12	Durham - Meadland

(Signature)

CTTS, Inc.
(Toxic Technology Services)
(415) 791-1140

Sample ID	Depth	NO. OF CONTAINERS	Analyses: GCS (BTEX)	Chlorinated Aliphatics (8010)	REMARKS
B-3	15'	1			HOLD
B-3	20.5'	1	X		
B-3	25.5'	1	X	X	
B-3	30.5'	1	X		
					TAT = 3-4 days for All analyses
B-4	15.5'	1	X		
B-4	20.5'	1	X		
B-4	35.5'	1	X		

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
Lisa A. Polsi	11/28/89 16:41	Deborah L. Fisher	11/28/89 16:41		

2030 Wright Avenue
Richmond, California 94804
(415) 235-2633
(TWX) 910-382-8132

TMA
Thermo Analytical Inc.

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME	NO. OF CONTAINERS	analyses: Gas/BTEX	Total Pb	REMARKS
89-12	~~Past~~ CTTS, Inc				
(Signature) Lisa A. Polosi					
location					
MW3		3	X	X	
MW4		3	X	X	~~Run~~ use back-up vial for Gas/BTEX

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
Lisa A. Polosi	11/29/89 14:30	Deborah Fisher	11/29/89 14:30	

(415) 235-2633

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
89-12	Durham-Neekland

CTTS, Inc
PO Box 515
Rodeo, CA 94572 Attn: Lisa Polos

Location	Date	Time				NO. OF CONTAINERS	analyses: Gas/BTEX	8010 (chlorinated Hydrocarbons)					REMARKS
~~MW-~~													
ABW	12-12	11:00				2-VOAs	X						
ABW	12-12	11:50				2-VOAs		X					use back-up VOA

Please run on 3-4 wkday TA.

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Lisa A. Polos	12/12/89 15:45				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
		[illegible]	12-12 350		

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

"quality environmental analyses"