GROUND WATER QUALITY REPORT
FOR
1829 CLEMENT AVENUE
ALAMEDA, CALIFORNIA

Kaldveer Associates
Geoscience Consultants

Oakland, CA • San Jose, CA • Bellevue, WA • Tacoma, WA

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November 5, 1990
KE1179-1A-272, 17107

Mr. Loren Smith
3527 Magnolia Drive
Alameda, California 94501

RE: GROUND WATER QUALITY REPORT
1829 CLEMENT AVENUE
ALAMEDA, CALIFORNIA

Dear Mr. Smith:

Kaldveer Associates is pleased to submit our ground water quality report for the property at 1829 Clement Avenue in Alameda, California. The enclosed report contains a description of our investigation, results of ground water analyses, and our conclusions and recommendations regarding ground water quality at the site.

We appreciate the opportunity to provide services to you on this project and trust this report meets your needs at this time. If you have any questions or require additional information, please don't hesitate to call.

Very truly yours,

KALDVEER ASSOCIATES, INC.

Dennis Laduzinsky, C.E.G.
Senior Engineering Geologist

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Environmental/Geological Services
Associate

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Alameda County Dept. of Environmental Health (2)
Attention: Mr. Ariu Levi
Alameda Marina (1)
Attention: Mr. Wayne Milani
California Regional Water Quality Control Board (1)
Attention: Hossain Kazemi

GROUND WATER QUALITY REPORT

For
1829 CLEMENT AVENUE
ALAMEDA, CALIFORNIA

To
Mr. Loren Smith
3527 Magnolia Drive
Alameda, California 94501

November, 1990

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GROUND WATER QUALITY REPORT
FOR
1829 CLEMENT AVENUE
ALAMEDA, CALIFORNIA

I. INTRODUCTION

This report presents the results of an investigation of ground water quality at the site of the former photo-chemical machining job shop at 1829 Clement Avenue in Alameda, California. The location of the site is shown on the Site Vicinity Map, Figure 1.

The purpose of this investigation has been to evaluate the chemical quality of the shallow ground water at the site. The work was performed to satisfy the ground water quality investigation requirements of the Alameda County Health Care Services Agency, Department of Environmental Health, as outlined in their site remediation letter of April 17, 1990. The field work was performed in accordance with Kaldveer Associates', "Work Plan for Ground Water Quality Investigation", dated July 30, 1990. Work proceeded following agency acceptance of the work plan and authorization by Mr. Loren Smith.

Kaldveer Associates previously conducted a soil quality investigation at the site and observed clean-up of contaminated soil from beneath the building. The programs are described in detail in reports entitled, "Soil Testing Report for 1829 Clement Avenue", dated April 4, 1990 and "Soil Clean-Up Report, 1829 Clement Avenue", dated July 18, 1990.

During the present investigation, three ground water monitoring wells were installed at the site to evaluate whether prior contaminant releases beneath the building had impacted the ground water quality at the site. This investigation included two rounds of ground water sampling for select metals, and three rounds of ground water sampling for cyanide.

II. CONCLUSIONS

A. Summary

In summary, concentrations of chromium III in ground water samples from MW-2, and cyanide from MW-1 exceed State primary drinking water standards. Arsenic, copper, and lead were variously detected at levels below the State drinking water standard. Chromium VI and molybdenum were not detected in ground water at the site. Total

cyanide concentrations detected in the soil samples were all below the ACDEH specified clean-up level of 6 ppm soluble cyanide.

B. Ground Water Flow

Based on the evaluations of ground water flow performed during this investigation, ground water beneath the site flows in a north to northwest direction. Based on our analysis of flow direction, the wells appear to be properly located down-gradient of the known areas of reported chemical releases at the site.

C. Cyanide

During the initial round of sampling, 2.4 parts per million (ppm) cyanide was detected in Monitoring Well MW-1 adjacent to the former treatment room area at the site. No cyanide was detected in the downgradient wells, Monitoring Wells MW-2 or MW-3. During the second sampling event, split samples were collected and sent to two different laboratories. The laboratories again reported no detectable cyanide present in Monitoring Wells MW-2 and MW-3. However, the laboratories reported conflicting results of non-detectable (ND) and 0.35 ppm cyanide, for Monitoring Well MW-1. Because the reported levels were in conflict, a third round of sampling was initiated. During the third round of sampling, all of the wells were sampled for total cyanide only. Split samples were collected from each well and sent to separate laboratories for analysis. Non-detectable concentrations were again reported for MW-2 and MW-3. Cyanide was the reported in the samples from MW-1 at concentrations of 0.95 and 1.3 ppm. The levels of cyanide measured in Monitoring Well MW-1 exceed the State primary drinking standard of 0.200 ppm.

D. Metals

Water samples from the three wells were analyzed for arsenic, chromium III, chromium VI, copper, molybdenum, and lead. Molybdenum and chromium VI were not detected in any of the samples collected from the site.

Chromium III detected in Monitoring Well MW-2 was the only metal found to exceed State primary drinking water standards. The concentrations of chromium III in MW-2 were reported at 0.083 and 0.17 ppm for the first and second sampling rounds, respectively. The State drinking water standard for chromium is 0.05 ppm.

Arsenic was detected in all three wells at concentrations of 0.005 to 0.04 ppm. These levels are below the State drinking water standard of 0.05 ppm.

Copper was detected in all three wells at concentrations of 0.01 to 0.053 ppm. The reported levels are below the primary drinking water standard of 1.3 ppm.

Lead was not detected in any of the wells with the exception of one of the split samples collected from Monitoring Well MW-1 during the second sampling round. As this is the only report of lead present in water from three samples collected from this well, there is some doubt as to whether lead is actually present or whether the results indicate potential laboratory error. In either case, the reported lead concentration of 0.046 ppm is below the State drinking water standard of 0.05ppm.

E. Soil Chemical Quality

Soil cuttings generated during drilling were stored onsite in three, 55-gallon drums. Two soil samples were subsequently collected from each of the three drums and analyzed for cyanide and metals.

Four of the six soils samples analyzed had total cyanide concentrations ranging 1.1 to 5.1 ppm total cyanide. The cyanide clean-up level of 6 ppm soluble cyanide was established by the Alameda County Department of Environmental Health (ACDEH) prior to the soil clean-up at the site. During our previous investigation we found that soluble cyanide concentrations were approximately 20 percent of the total cyanide concentrations. Since the total cyanide concentrations reported for the soil samples are less than the ACDEH limit of 6 ppm, the soluble cyanide concentrations should be well below the established limit concentration.

III. SCOPE OF SERVICES

The work performed during this investigation consisted of the following tasks:

1. Installation of three ground water monitoring wells to a depth of approximately 15 feet.

2. Development of the monitoring wells.

3. Measuring the depth to ground water and surveying the monitoring well elevations to determine the direction of ground water flow.

4. Collection of three rounds of representative ground water samples from the wells on September 12 and 26, and October 9, 1990.

5. Collection of six soil samples from the drummed soil cuttings.

6. Chemical analysis of the water and soil samples by the contract analytical laboratory for the following constituents: cyanide, arsenic, total chromium, chromium VI, lead, copper, and molybdenum.

7. Preparation of this report.

IV. FIELD INVESTIGATION

A. Site Description

The site is located along the southern boundary of the Alameda Marina in Alameda, California. The site is bounded to the north, east and west by the Marina and includes asphalt parking areas, small businesses and boat repair facilities. South of the site are Clement Avenue and several light industrial businesses and residences. The topography is generally level. A two-story, wood-framed building currently occupies the site. The building is currently used as office space.

B. Drilling and Soil Sampling

The drilling and installation of three ground water monitoring wells was performed on September 11, 1990. The three monitoring wells were installed at the approximate locations shown on the Site Plan, Figure 2. Soils encountered during drilling were classified in the field by a Kaldveer geologist by visual examination in accordance with the Unified Soil Classification System (Figure A-1). Logs of the borings are presented in Appendix A. The well borings were drilled using a CME 45 drill rig equipped with 8-inch diameter hollow stem augers. Soil samples were collected in the field for the purpose of visual inspection and logging using split-spoon standard penetration sampler.

The sampler was driven with a standard 140-pound hammer falling 30 inches. The number of blows required to drive the sampler the last 12 inches of an 18-inch drive are recorded as the penetration resistance (blows/foot) on the boring logs. The augers were steam-cleaned prior to drilling, and the sampler was thoroughly cleaned with a laboratory grade detergent between samples to reduce the potential for cross-contamination.

C. Subsurface Conditions

The surficial soils encountered during drilling consisted of medium-dense to very-loose, poor to well-graded sand. A three-

foot thick layer of clayey sand may locally be present between the depths of four and seven feet below ground surface. Ground water was generally encountered at a depth of approximately 9 to 11 feet at the time of drilling.

The attached boring logs and related information depict location-specific subsurface conditions encountered during our field investigation. The approximate locations of the borings were determined by tape measure and should be considered accurate only to the degree implied by the method used. The passage of time could result in changes in the surface or subsurface conditions due to natural occurrences or human intervention.

D. Site Hydrologic Conditions

Ground water beneath the site generally flows north to northwest as indicated on the Ground Water Contour Maps, Figures 3, 4 and 5. Well survey and water level measurements are summarized on Table 1. Ground water was first encountered at the time of drilling at a depth of approximately 9 to 11 feet below the ground surface. The stabilized ground water level ranged from approximately 3.2 to 3.8 feet below the ground surface. The ground water gradient at the site is relatively flat, with slight elevation differences measured between the monitoring wells. The average ground water elevation difference between the highest and lowest measurement ranged from 0.06 to 0.19 feet. The ground water elevations measured prior to each sampling event show alternating ground water flow directions ranging from north to northwest. The variation in flow direction indicates that Bay tidal fluctuations affect the gradient and direction of ground water flow at the site. While tidal influences have been recognized, the general flow direction remains relatively constant.

Ground water elevations were determined in the field by surveying the elevations of the tops of the PVC well casings to an arbitrary datum and measuring the depth to ground water with a flat tape sounding probe. The contours and elevations shown on the Ground Water Contour Map should not be confused with actual elevations relative to mean sea level. Ground water contours were determined by straight line interpolation between wells.

E. Well Construction Details

Details of the well installations are included along with the boring logs in Appendix A. Well construction commenced immediately following the drilling and sampling of each boring. The three wells were completed to approximately 15 feet below ground surface using Schedule 40, 2-inch nominal, flush threaded, PVC well casing. Each well was completed with one 10-foot section of 0.010-inch (10

slot) slotted well screen packed with a Lonestar #2/12 gravel filter material. The well seal was completed by adding 6-inches of 3/8-inch, hydrated bentonite pellets to the top of the filter pack and then filling the remaining annular space with a Portland cement grout mixture. The wells were completed at the surface with a steel, locking, protective casing enclosed in a traffic-rated, water-tight box.

F. Well Development

Well development was performed September 11, 1990 by gentle surging and slow pumping of the wells. Conductivity, pH and temperature, were intermittently monitored during development of the wells.

The depth to water measured in the wells prior to development ranged from 3.2 to 3.8 feet below the top of the well casing. Ground water in each of the wells was drawn down to within two feet of the bottom at a pumping rate of approximately 1 gpm. A total of approximately 15 gallons was pumped from MW-1, 23 gallons from MW-2 and 15 gallons from MW-3. Initially, the wells produced odor-free, moderately turbid, brown, silty water. The water was relatively silt free and significantly clearer following development. All of the water collected during the development of the wells was contained in appropriately labelled 55 gallon drums.

F. Well Sampling

Samples were collected from the wells on three occasions: the first time on September 12, 1990, again on September 26, 1990, and finally on October 9, 1990. A minimum of five casing volumes of water were removed from each well with a teflon bailer prior to sampling. Temperature, pH and conductivity were intermittently monitored during the purging of the wells. Ground water samples were collected from the wells with a teflon bailer immediately following the purging of the wells. The bailer was cleaned with a laboratory grade detergent and rinsed with distilled water prior to use at each of the wells. Water samples were decanted into laboratory-supplied containers, labelled and placed in refrigerated storage immediately after sampling. Samples were delivered to the laboratory on the day of sampling for filtration and preservation, as necessary. The samples were delivered to the laboratory under chain-of-custody control. Purge water collected during sampling of the wells was contained in appropriately labeled, 55 gallon drums.

G. Soil Sampling

Soil cuttings generated during drilling were placed in three, 55-gallon drums. Six soil samples were collected from the drummed

soil cuttings. Samples were collected from 0.5' and 2.0' below the surface of the soils contained in the drums. Samples were collected by hand auguring to the desired depth and collecting a composite soil sample from the hand auger cuttings. The auger was washed in a laboratory grade detergent and rinsed twice with distilled water between samples to reduce the possibility of cross-contamination between samples. The samples were immediately placed in refrigerated storage and delivered to the laboratory on the day of sampling. Samples were delivered under chain-of-custody control.

V. ANALYTICAL RESULTS

A. Laboratory Procedures

Ground water samples collected during the September 12 and 26, 1990 sampling events were analyzed by Med-Tox Associates of Pleasant Hill, California. One split sample of ground water collected from Monitoring Well MW-1 during the September 26, 1990 sampling was submitted to Sequoia Analytical Laboratory of Redwood City, California for quality assurance. On October 9, 1990 the ground water samples collected from all three wells were analyzed for cyanide by Brown and Caldwell (B&C) and International Technology Corporation Laboratories (IT). Med-Tox, IT, B&C and Sequoia Analytical Laboratories are certified by the California Department of Health Services for the analyses performed. The ground water samples from the wells were analyzed for chromium, molybdenum and copper using EPA Method 6010, lead using EPA Method 7421, chromium VI using EPA Method 7195, arsenic using EPA Method 7060, and cyanide using EPA Method 335.2 and 9010.

B. Analytical Results of Ground Water

Results of the three rounds of ground water sampling are summarized in Table 1. Copies of the analytical reports are included as Appendix C. Molybdenum and chromium VI were not detected in any of the ground water samples collected during this investigation. Concentrations of arsenic and copper were detected in the wells at concentrations below the State primary drinking water standard. The concentrations of chromium III (or total chromium) in samples from monitoring wells MW-1 and MW-3 ranged from non-detectable to 0.007 ppm, which is below the State limit of 0.050 ppm. Chromium III concentrations reported for samples from MW-2 were 0.083 and 0.17, ppm, which is in excess of the State drinking water standard of 0.050 ppm.

Lead was detected at a concentration of 0.046 ppm in the split sample sent to Sequoia Analytical Laboratory on September 26, 1990. Lead was not detected in any of the other samples submitted. The

detected concentration of lead is below the maximum contaminant level of 0.050. Additionally, because lead was not detected by either the primary laboratory or by the previous sampling event, the reported lead concentration in our opinion, may be due to laboratory error.

Three rounds of samples were collected for cyanide analysis on September 12 and 26, and October 9, 1990. No detectable concentration of cyanide was reported for samples from MW-2 and MW-3 for any of the sampling events. Cyanide was detected in the ground water from MW-1 on September 12, 1990 at a concentration of 2.4 ppm. On September 26, 1990, the primary laboratory reported no detectable cyanide while the split sample, submitted to a second laboratory, reported 0.35 ppm. The discrepancy between the results prompted a third sampling of all of the wells on October 9, 1990 to confirm the absence or presence of cyanide. Samples were submitted to IT and B&C Laboratories for cyanide analysis only. Cyanide was not detected in MW-2 and MW-3 while concentrations reported for MW-1 were 0.95 and 1.3 ppm. These levels exceed the primary drinking water standard for cyanide of 0.20 ppm.

C. Analytical Results of Soil Samples

The analytical results of soil samples collected from the drummed drill cuttings are presented in Table 3. Copies of the analytical results are included in Appendix C. Molybdenum and chromium VI were not detected in any of the soils analyzed. Arsenic was detected all of the samples analyzed at concentrations ranging from 5.9 to 14 ppm. Copper concentrations were detected in the samples in the range of 9.4 to 15 ppm. Chromium was detected in all of the samples at concentrations ranging from 25 to 43 ppm. Cyanide was detected in four of the six samples at concentrations from 1.1 to 5.1 ppm. The reported concentrations of cyanide are all below the ACDEH limit of 6 ppm soluble cyanide.

VI. DISCUSSION

The concentrations of metals detected in ground water collected from the monitoring wells were all below laboratory detection limits or below State drinking water standards with the exception of chromium III measured in Monitoring Well MW-3. In our opinion, the metals concentrations reported for the site soil and ground water do not represent a significant environmental concern.

Cyanide concentrations ranging from 2.4 ppm to non-detectable were reported in monitoring well MW-1. The elevated concentrations of cyanide reported for the water sample from Monitoring Well MW-1 on September 12, 1990 was confirmed by the split sample for the third sampling event on October 9, 1990 (0.95 and 1.3 ppm). However,

cyanide does not appear to be widespread or have migrated significantly in a detectable manner.

Soluble cyanide analyses were not performed on the soil samples. However, previous solubility tests using the Title 22, WET, on samples analyzed for total cyanide were reported at concentrations of approximately 20 percent of the total cyanide concentration. Therefore, since the reported total cyanide concentrations for all samples is below the ACDEH limit of 6 ppm, the soluble cyanide concentrations should be well below the established, 6 ppm limit.

VII. LIMITATIONS

Our services have been performed in accordance with generally accepted engineering and environmental principles and practices within the area at the time of our investigation. No other warranty, either expressed or implied as to the professional advice provided is made. It should be recognized that certain limitations are inherent in the evaluation of subsurface conditions, and that certain conditions may not be detected during an investigation of this type. If you wish to reduce the level of uncertainty associated with this study, we should be contacted for additional consultation.

The analysis and conclusions contained in this report are based on the site conditions as they existed at the time of our reconnaissance. Changes in the information or the data obtained could result in changes in our conclusions. If such changes do occur, we should be advised so that we can review our report in light of those changes.

* * * * * * * * * * * * * * * * * * *

TABLE 1

GROUND WATER ELEVATION DATA
(All Measurements in Feet)

Date and Well Number	Well-Top Elevation (1)	Depth to Water	Relative Ground Water Elevation
September 13, 1990			
MW-1	91.52	3.82	87.70
MW-2	91.36	3.67	87.69
MW-3	90.81	3.17	87.64
September 26, 1990			
MW-1	91.52	3.83	87.69
MW-2	91.36	3.73	87.63
MW-3	90.81	3.21	87.60
October 9, 1990			
MW-1	91.52	3.40	87.62
MW-2	91.36	3.83	87.53
MW-3	90.81	3.38	87.43

Note:

(1) = Relative well-top elevation surveyed by Kaldveer Associates and is based on an arbitrary datum.

TABLE 2

ANALYTICAL RESULTS - WATER
METALS, ARSENIC AND CYANIDE
(Reported in parts per million, mg/L)

Well and Sampling Date	Lab	Constituent As	Cr	CrVI	Cu	CN	Mo	Pb
MW-1								
9/12/90	MED	0.005	0.007	ND	0.02	2.4	ND	ND
9/26/90	MED	ND	ND	ND	0.04	ND*	ND	ND
9/26/90	SEQ	0.021	NA	NA	0.053	0.35	ND	0.046*
10/9/90	IT	NA	NA	NA	NA	0.95	NA	NA
10/9/90	B&C	NA	NA	NA	NA	1.3	NA	NA
MW-2								
9/12/90	MED	0.04	0.083	ND	0.01	ND	ND	ND
9/26/90	MED	ND	0.17	ND	0.03	ND	ND	ND
10/9/90	IT	NA	NA	NA	NA	ND	NA	NA
10/9/90	B&C	NA	NA	NA	NA	ND	NA	NA
MW-3								
9/12/90	MED	0.005	ND	ND	ND	ND	ND	ND
9/26/90	MED	ND	ND	ND	0.02	ND	ND	ND
10/9/90	IT	NA	NA	NA	NA	ND	NA	NA
10/9/90	B&C	NA	NA	NA	NA	ND	NA	NA
State or EPA Limit		0.050	0.050	0.050	1.3	0.20	0.010	0.050

Notes:

NA = Not analyzed
ND = Not detected
MED = Med-Tox Laboratory
SEQ = Sequoia Analytical Laboratory
IT = IT Laboratory
B&C = Brown and Caldwell Laboratory
As = Arsenic
Cr = Chromium III
CrVI= Hexavalent Chromium
Cu = Copper
CN = Cyanide
Mo = Molybdenum
Pb = Lead
* = Suspect analytical result (see text)

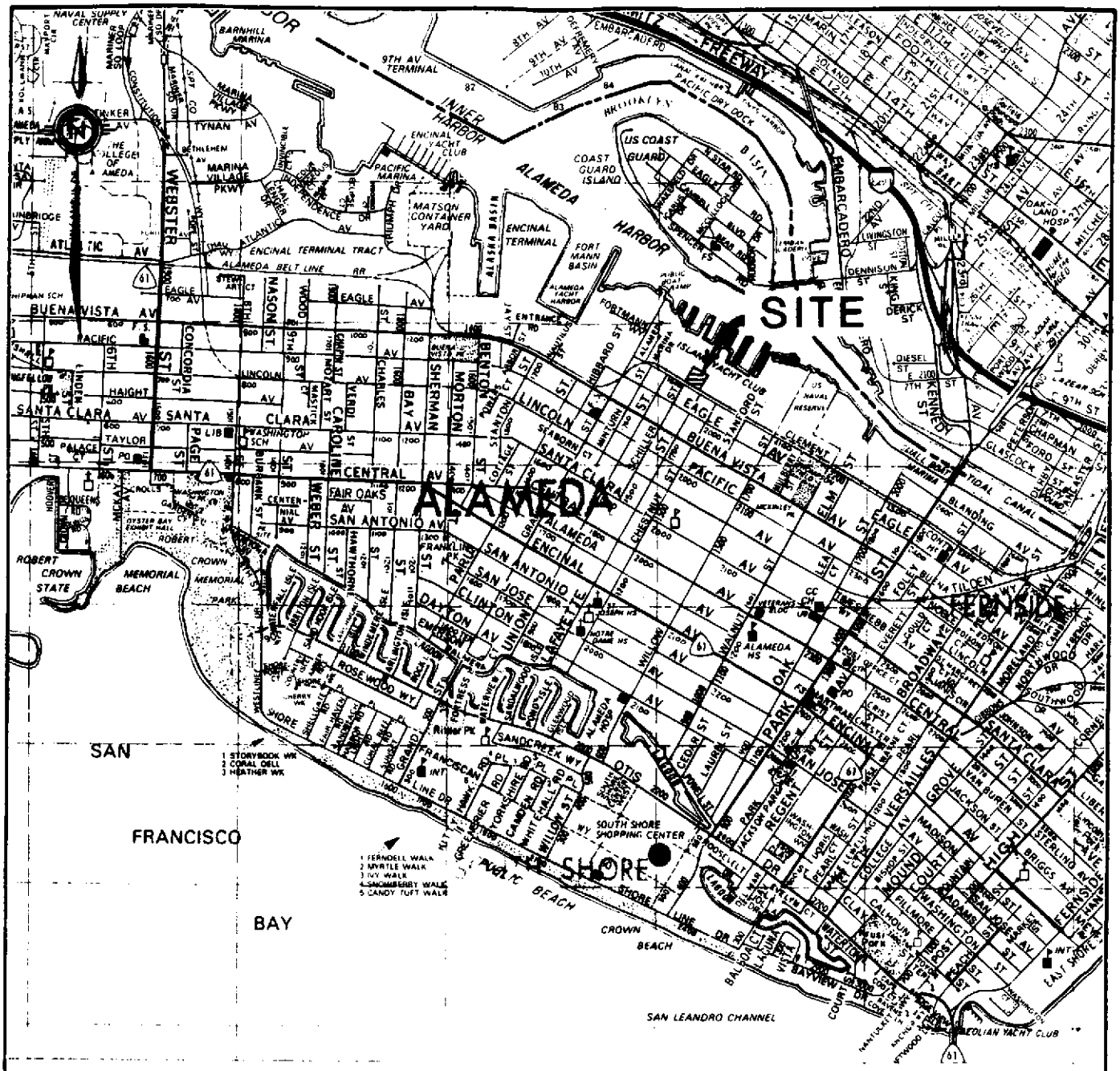
TABLE 3

ANALYTICAL RESULTS - SOIL
METALS, ARSENIC AND CYANIDE
(Reported in parts per million, mg/kg)

Sample Location and Depth (Feet)	Constituent						
	As	Cr	CrVI	Cu	CN	Mo	Pb
DS-1							
0.5	12	31	ND	13	ND	ND	5.3
2.0	9.5	25	ND	15	1.1	ND	11
DS-2							
0.5	9.3	25	ND	15	5.1	ND	7.2
2.0	5.9	4.3	ND	9.3	1.3	ND	3.5
DS-3							
0.5	14	38	ND	13	2.3	ND	5.8
2.0	10	29	ND	9.9	ND	ND	14
TTLC	500	2500	500	2500	6*	3500	1000

Notes:

Samples analyzed by Sequoia Analytical Laboratory
ND = Not detected
TTLC = Total Threshold Limit Concentration
As = Arsenic
Cr = Chromium
CrVI= Hexavalent Chromium
Cu = Copper
CN = Cyanide
Mo = Molybdenum
Pb = Lead
* = Alameda County Department of Environmental Health specified limit for Title 22 WET Method (soluble cyanide)



Base: Thomas Bros. Maps, Alameda county, page 11, 1989.

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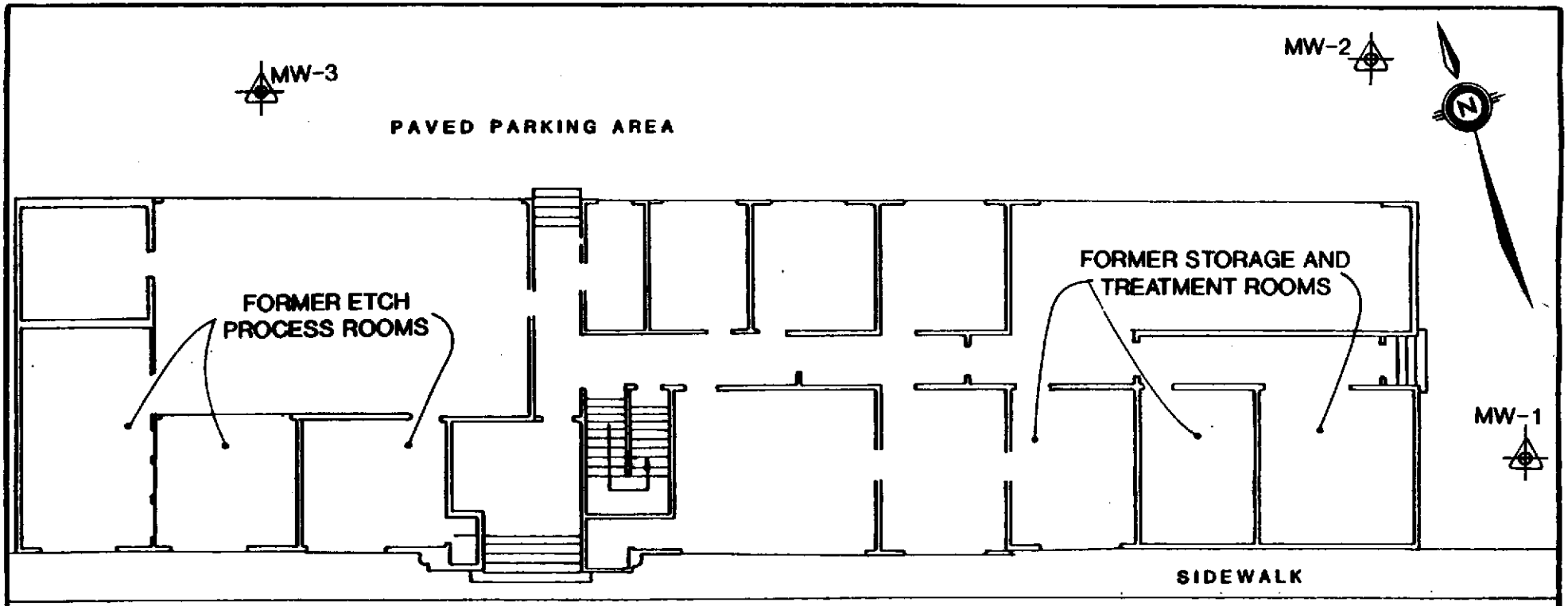
SITE VICINITY MAP

1829 CLEMENT
Alameda, California

PROJECT NO.	DATE	Figure 1
KE1179-1A-272	November 1990	



LEGEND

MW-3 Approximate Location of Monitoring Well

APPROXIMATE SCALE IN FEET

0 15 30

Note: Monitoring wells installed 9-11-90.

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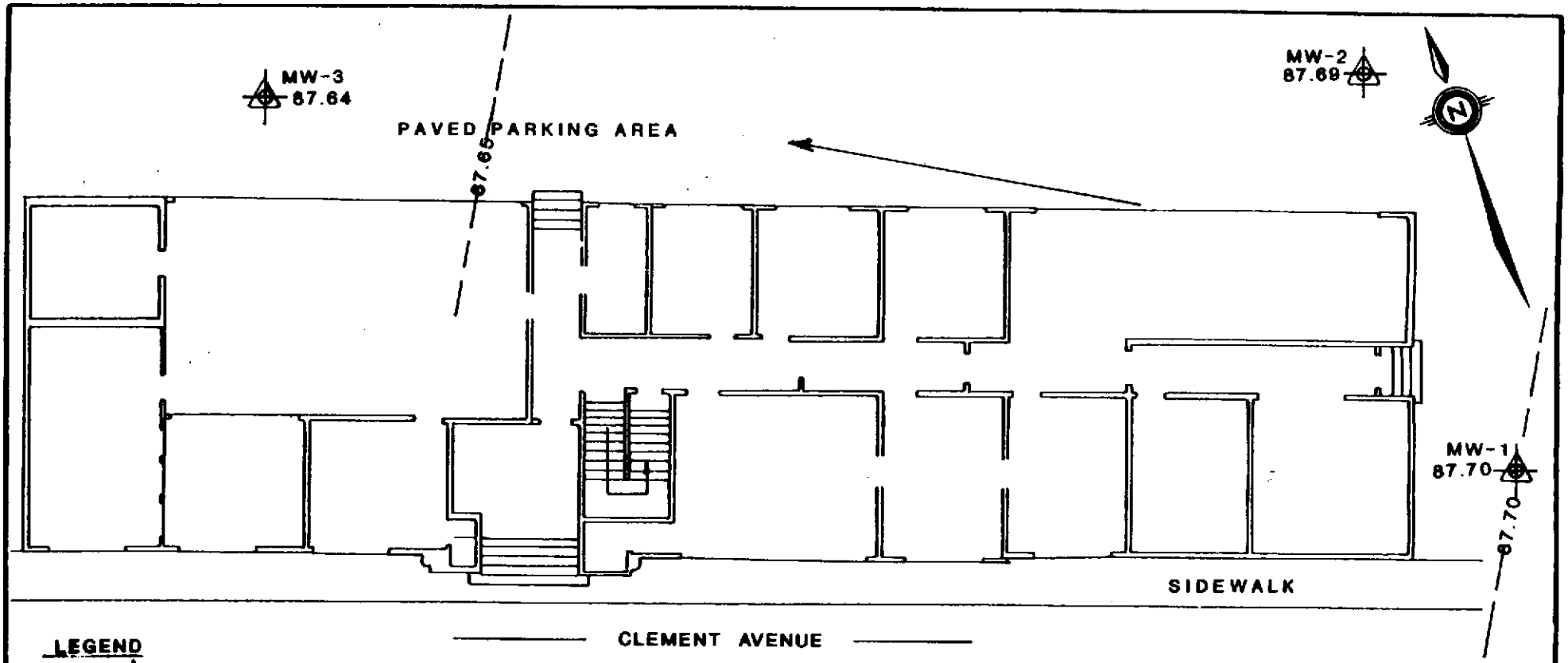
SITE PLAN

1829 CLEMENT AVENUE
Alameda, California

PROJECT NO.	DATE	Figure 2
KE1179-1A-272	November 1990	



LEGEND

MW-3 87.50 — Approximate Location of Monitoring Well and Groundwater Elevation.

87.70 — Groundwater Contour with Arrow Indicating Flow Direction.

Approximate Scale (feet)

0 10 20 30

Note:

1. Groundwater contours calculated by straight-line interpolation between wells.
2. Water level measured to the nearest 1/100 of foot, 9-13-90.
3. All wells surveyed to an arbitrary datum, water levels do not reflect actual elevations.

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GROUND WATER CONTOUR MAP 9-13-90

1829 CLEMENT AVENUE
Alameda, California

PROJECT NO.	DATE	
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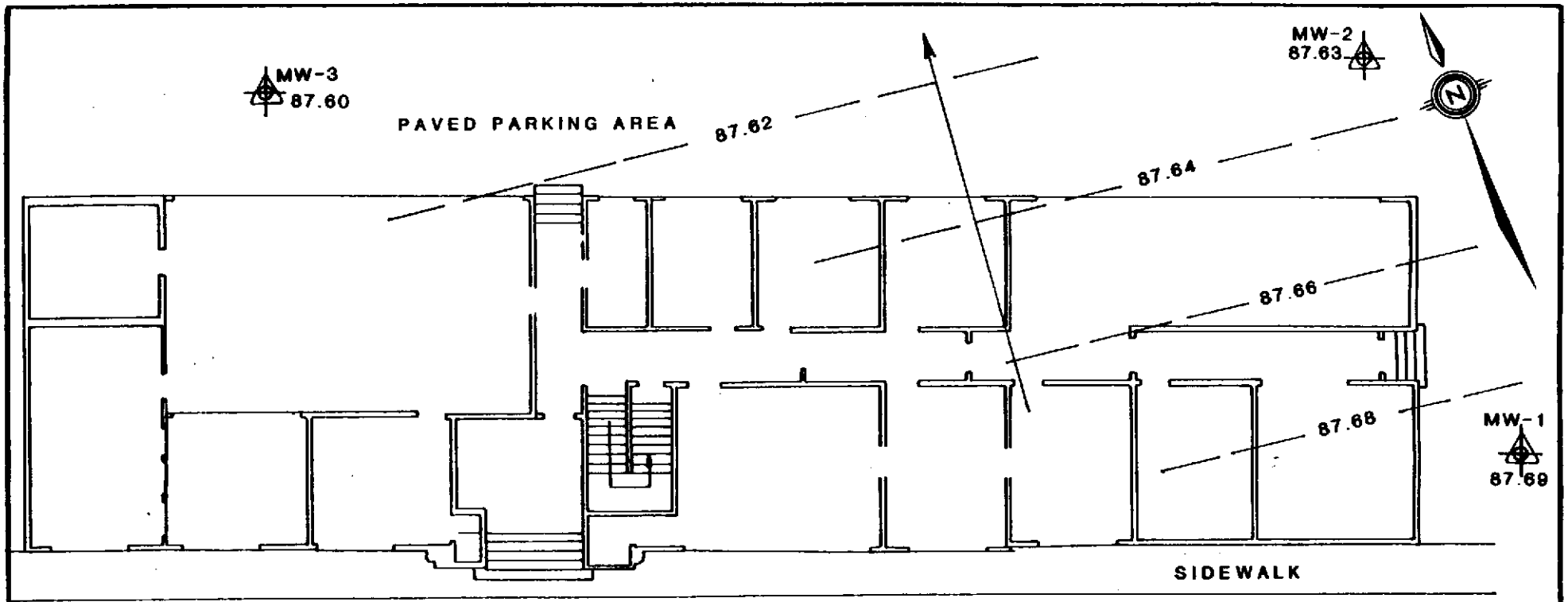

LEGEND

MW-3 87.50 — Approximate Location of Monitoring Well and Groundwater Elevation.

87.66 — Groundwater Contour with Arrow Indicating Flow Direction.

Approximate Scale (feet)

0 10 20 30

Note:

1. Groundwater contours calculated by straight-line interpolation between wells.
2. Water level measured to the nearest 1/100 of foot, 9-26-90.
3. All wells surveyed to an arbitrary datum, water levels do not reflect actual elevations.

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GROUND WATER CONTOUR MAP 9-26-90

1829 CLEMENT AVENUE
Alameda, California

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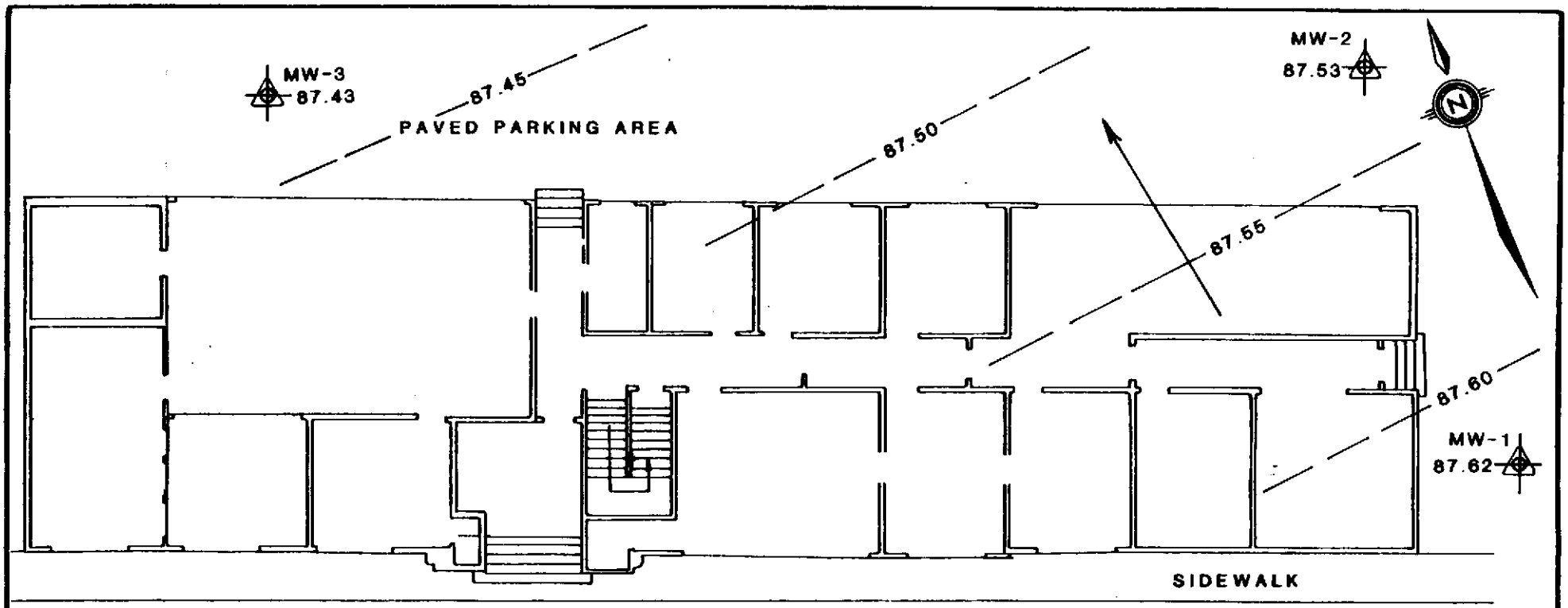

CLEMENT AVENUE

LEGEND

MW-3 87.50 — Approximate Location of Monitoring Well and Groundwater Elevation.

87.60 — Groundwater Contour with Arrow Indicating Flow Direction.

Approximate Scale (feet)

0 10 20 30

Note:

1. Groundwater contours calculated by straight-line interpolation between wells.
2. Water level measured to the nearest 1/100 of foot, 10-9-90.
3. All wells surveyed to an arbitrary datum, water levels do not reflect actual elevations.

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GROUND WATER CONTOUR MAP 10-9-90

1829 CLEMENT AVENUE
Alameda, California

PROJECT NO.	DATE	Figure 5
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APPENDIX A

BORING LOGS AND WELL CONSTRUCTION DETAILS

UNIFIED SOIL CLASSIFICATION SYSTEM

Major Divisions		grf	ltr	Description
Coarse Grained Soils	Gravel And Gravely Soils		gw	Well-graded gravels or gravel sand mixtures, little or no fines
			gp	Poorly-graded gravels or gravel sand mixture, little or no fines
			gm	Silty gravels, gravel-sand-silt mixtures
			gc	Clayey gravels, gravel-sand-clay mixtures
	Sand And Sandy Soils		sw	Well-graded sands or gravelly sands, little or no fines
			sp	Poorly-graded sands or gravelly sands, little or no fines
			sm	Silty sands, sand-silt mixtures
			sc	Clayey sands, and-clay mixtures

Major Divisions		grf	ltr	Description
Fine Grained Soils	Silts And Clays LL < 50		ml	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			cl	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			ol	Organic silts and organic silt-clays of low plasticity
			mh	Inorganic silts, micaceous or diatomaceous fine or silty soils, elastic silts
	Silts And Clays LL > 50		ch	Inorganic clays of high plasticity, fat clays
			oh	Organic clays of medium to high plasticity
			pt	Peat and other highly organic soils
Highly Organic Soils				

SYMBOLS

- Standard penetration split spoon sample
- Modified California (Porter) sample
- Shelby tube sample
- Water level observed in boring
- Stable Water level in monitoring well
- Blank casing
- Screened Casing
- Cement grout
- Bentonite
- Filter Pack

Visual Relative Moisture Content
Increasing Moisture Content

Dry
Damp
Moist
Wet
Saturated

Note(1): Penetration resistance values are recorded as the number of blows of a 140-pound hammer falling 30-inches required to drive a sampler through the last 12 inches of an 18-inch drive. Blow count for samples obtained using a Modified California sampler (indicated by an asterisk) should be multiplied by a factor of 0.8 to obtain equivalent standard penetration resistance values.

Note(2): The lines separating strata on the logs represent approximate boundaries only. No warranty is provided as to the continuity of soil strata between borings. Logs represent the soil section observed at the boring location on the date of drilling only.

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BORING LOG LEGEND

1829 CLEMENT AVENUE
Alameda, California

PROJECT NO.	DATE	FIGURE NO
KE1179-1A-272	November 1990	A-1

DRILL RIG	CME 45	SURFACE ELEVATION	N.S.	LOGGED BY	G. Fiedler
DEPTH TO GROUNDWATER	3.8 feet	BORING DIAMETER	8-inch	DATE DRILLED	9/11/90

DESCRIPTION AND CLASSIFICATION		DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	PID READING	REMARKS	WELL CONSTRUCTION
DESCRIPTION AND REMARKS	SOIL TYPE						
Asphalt and base rock, some tar-like material **SAND (SP)**, dusky brown, damp, loose, poorly graded (fill)							
SAND (SW), pale to moderate yellowish brown, damp, firm, well graded, with moderately plastic clay		5		9			
grading pale yellowish brown, wet, loose, trace clay		10		7			
grading moist		15		15			
Bottom of boring 15.5 feet Notes: Well Construction Details - 2-inch PVC, Schedule 40, solid and slotted (0.010-inch) casing - 2/12 washed sand filter pack - bentonite pellets seal - cement grout surface seal with steel stovepipe locking cover N.S.- Not surveyed							

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EXPLORATORY BORING LOG

1829 CLEMENT AVENUE
Alameda, California

PROJECT NO.	DATE	BORING NO
KE1179-1A-272	November 1990	MW-1

DRILL RIG	CME 45	SURFACE ELEVATION	N.S.	LOGGED BY	G. Fiedler
DEPTH TO GROUNDWATER	3.7 feet	BORING DIAMETER	8-inch	DATE DRILLED	9/11/90

DESCRIPTION AND CLASSIFICATION		DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	PID READING	REMARKS	WELL CONSTRUCTION
DESCRIPTION AND REMARKS	SOIL TYPE						
Asphalt and fill							
SAND (SP), yellowish brown, dry, loose, fine to medium grading dusky brown, moist, moderate plasticity							
SAND (SW), light brown, moist, very loose, fine to medium							
CLAYEY SAND (SC), pale to moderate yellowish brown, moist, firm, moderate to low plasticity, moderately weathered, moderate dusky brown oxidation mottling		5		9			
SILTY SAND (SM), medium bluish gray, moist, loose, minor yellowish brown oxidation staining, trace carbonized rootlets				6			
		10		9			
grading yellowish brown, wet, loose, well graded							
		15		19			
Total Depth = 16 Feet Notes: Well Construction Details - 2-inch PVC, Schedule 40, solid and slotted (0.010-inch) casing - 2/12 washed sand filter pack - bentonite pellets seal - cement grout surface seal with steel stovepipe locking cover N.S.- Not surveyed							

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EXPLORATORY BORING LOG

1829 CLEMENT AVENUE
Alameda, California

PROJECT NO.	DATE	BORING NO
KE1179-1A-272	November 1990	MW-2

DRILL RIG	CME 45	SURFACE ELEVATION	N.S.	LOGGED BY	G. Fiedler
DEPTH TO GROUNDWATER	3.2 feet	BORING DIAMETER	8-inch	DATE DRILLED	9/11/90

DESCRIPTION AND CLASSIFICATION		DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	PID READING	REMARKS	WELL CONSTRUCTION
DESCRIPTION AND REMARKS	SOIL TYPE						
Asphalt **SILTY SAND (SM)**, dusky yellowish brown, moist, soft, fine to medium, poorly graded, (FILL)							
SAND (SW), light brown, moist, loose, medium grained, well graded				5			
CLAYEY SAND (SC), pale to moderate yellowish brown, moist, firm, moderate plasticity, minor dusky brown oxidation mottling		5		6			
SILTY SAND (SM), light brown, moist, firm, well graded, rootlets, some clay, moderate oxidation mottling							
SAND (SW), light brown, wet, loose, trace clay		10		10			
				16			
		15					
Total Depth = 16.5 Feet Notes: Well Construction Details - 2-inch PVC, Schedule 40, solid and slotted (0.010-inch) casing - 2/12 washed sand filter pack - bentonite pellets plug - cement grout surface seal with steel stovepipe locking cover N.S.- Not surveyed							

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EXPLORATORY BORING LOG

1829 CLEMENT AVENUE
Alameda, California

PROJECT NO.	DATE	BORING NO
KE1179-1A-272	November 1990	MW-3

APPENDIX B

MONITORING WELL SAMPLING LOGS

WATER SAMPLE LOG

Project Name: 1829 Clement Ave. Date: 9-13-90
Project Number: KE-1179-1A-272 Sampler: GAF
Well Number: MW-1 Weather: Clear, warm, calm
Well Location: East side 1829 Clement

Well Construction:

Date Completed: 9-11-90
Total Depth of Well: 15 feet
Diameter: 2-inch
Well Elevation & Reference: Not surveyed

Groundwater Levels

Initial: 3.82
Final: 7.35 @ 1202
Reference Point: Top of PVC
Well Volume of Water: approx. 1.9 gallons

Sampling Equipment & Cleaning

Sampler Type: Bailer
Method of Cleaning: TSP/rinse/dist.
Pump or Bailer Type: Teflon®
Method of Cleaning:
PH Meter: HYDAC
Conductivity Meter: HYDAC
Comments: log reflects development data

SAMPLING MEASUREMENTS

Time	Discharge (gal.) Per Time Period	Discharge (gal.) Cumulative	pH	Temp (°C)	Spec. Conductance (umhos/cm) Field	Spec. Conductance (umhos/cm) @25°C	Color/ Turbidity	Odor
1054								
1058		2.5	7.68	72.0	1560		yellowish brn./s Light	none
1104		5.0	7.57	70.6	1470		"	"
1112		7.5	7.49	69.5	1320		"	"
1202								
1212		12.0	7.66	70.5	1380		lt. yellow brn./slight	"

Total Discharge: 12 gallons
Casing Volumes Removed: 6
Method of Disposal: To 55 gal. drum

Comments:

Kaldveer Associates
Geoscience Consultants
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GROUND WATER SAMPLING LOG

1829 CLEMENT AVENUE
Alameda, California

PROJECT NO.	DATE	
KE-1179-1A-272	November 1990	Figure B-1

WATER SAMPLE LOG

Project Name: 1829 Clement Ave. Date: 9-13-90
Project Number: KE-1179-1A-272 Sampler: GAF
Well Number: MW-2 Weather: Clear, warm, calm
Well Location: NE side 1829 Clement

Well Construction:

Date Completed: 9-11-90
Total Depth of Well: 15 feet
Diameter: 2-inch
Well Elevation & Reference: Not surveyed

Groundwater Levels

Initial: 3.67
Final: 1320 @ 1040
Reference Point: Top of PVC
Well Volume of Water: approx. 1.9 gallons

Sampling Equipment & Cleaning

Sampler Type: Bailer
Method of Cleaning: TSP/rinse/dist.
Pump or Bailer Type: Teflon®
Method of Cleaning:
PH Meter: HYDAC
Conductivity Meter: HYDAC
Comments: log reflects well development data

SAMPLING MEASUREMENTS

Time	Discharge (gal.) Per Time Period	Discharge (gal.) Cumulative	pH	Temp (°C)	Spec. Conductance (umhos/cm) Field	Spec. Conductance (umhos/cm) @25°C	Color/ Turbidity	Odor
1013								
1017		2.5	7.47	70.2	1150		tan/slight	none
1027		5.0	7.56	68.4	1200		"	"
1037		7.5(dry)	7.56	68.0	1150		yellow brn/ trace sand	"
1142								
1148		10.0	7.51	68.5	1320		lt yellow brn /slight	"

Total Discharge: 10 gallons
Casing Volumes Removed: 5
Method of Disposal: To 55 gal. drum
Comments:

Kaldveer Associates
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A California Corporation

GROUND WATER SAMPLING LOG

1829 CLEMENT AVENUE
Alameda, California

PROJECT NO.	DATE	
KE-1179-1A-272	November 1990	Figure B-2

WATER SAMPLE LOG

Project Name: 1829 Clement Ave. Date: 9-13-90
Project Number: KE-1179-1A-272 Sampler: GAF
Well Number: MW-3 Weather: Clear, warm, calm
Well Location: NW side 1829 Clement

Well Construction:

Date Completed: 9-11-90
Total Depth of Well: 15 feet
Diameter: 2-inch
Well Elevation & Reference: Not surveyed

Groundwater Levels

Initial: 3.17
Final: 12.90
Reference Point: Top of PVC
Well Volume of Water: approx. 1.9 gallons

Sampling Equipment & Cleaning

Sampler Type: Bailer
Method of Cleaning: TSP/rinse/dist.
Pump or Bailer Type: Teflon®
Method of Cleaning:
PH Meter: HYDAC
Conductivity Meter: HYDAC
Comments: log reflects well development data

SAMPLING MEASUREMENTS

Time	Discharge (gal.) Per Time Period	Discharge (gal.) Cumulative	pH	Temp (°C)	Spec. Conductance (umhos/cm) Field	Spec. Conductance (umhos/cm) @25°C	Color/ Turbidity	Odor
0853								
0857		2.5	7.25	68.4	1340		tan/slight	none
0904		5.0	7.16	67.9	1190		"	"
0914		7.5	7.23	67.3	1130		"	"
0922		10.0(dry)	7.33	67.0	1130		"	"
1119								
1132		13.0	7.27	68.4	1280		"	"

Total Discharge: 13 gallons
Casing Volumes Removed: 6.5
Method of Disposal: To 55 gal. drum

Comments:

Kaldveer Associates
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A California Corporation

GROUND WATER SAMPLING LOG

1829 CLEMENT AVENUE
Alameda, California

PROJECT NO.	DATE	
KE-1179-1A-272	November 1990	Figure B-3

WATER SAMPLE LOG

Project Name: 1829 Clement Ave. Date: 9-26-90
Project Number: KE-1179-1A-272 Sampler: GAF
Well Number: MW-1 Weather: Clear, warm, calm
Well Location: East side 1829 Clement

Well Construction:

Date Completed: 9-11-90
Total Depth of Well: 15 feet
Diameter: 2-inch
Well Elevation & Reference: Not surveyed

Groundwater Levels

Initial: 1121 3.83
Final: 1435 11.00
Reference Point: Top of PVC
Well Volume of Water: 1.9

Sampling Equipment & Cleaning

Sampler Type: Bailer
Method of Cleaning: TSP/rinse/dist.
Pump or Bailer Type: Teflon®
Method of Cleaning:
PH Meter: HYDAC
Conductivity Meter: HYDAC
Comments:

SAMPLING MEASUREMENTS

Time	Discharge (gal.) Per Time Period	Discharge (gal.) Cumulative	pH	Temp (°C)	Spec. Conductance (umhos/cm) Field	Spec. Conductance (umhos/cm) @25°C	Color/ Turbidity	Odor
13:59								
14:05		2	7.69	73.4	1500		V. Lt. Tan/ Yellow None	None
14:15		5	7.87	71.9	1160		"	"
14:20		7.5	7.79	71.0	1010		Lt. Tan-Yel. /Slight	"
14:30	SAMPLED							

Total Discharge:
Casing Volumes Removed:
Method of Disposal: To 55 gal. drum

Comments:

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Geoscience Consultants
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GROUND WATER SAMPLING LOG

1829 CLEMENT AVENUE
Alameda, California

PROJECT NO.	DATE	Figure
KE-1179-1A-272	November 1990	B-4

WATER SAMPLE LOG

Project Name: 1829 Clement Ave. Date: 9-26-90
Project Number: KE-1179-1A-272 Sampler: GAF
Well Number: MW-2 Weather: Clear, warm, calm
Well Location: NE side 1829 Clement

Well Construction:

Date Completed: 9-11-90
Total Depth of Well: 15 feet
Diameter: 2-inch
Well Elevation & Reference: Not surveyed

Groundwater Levels

Initial: 1119 3.73
Final: 1350 12.45
Reference Point: Top of PVC
Well Volume of Water: 1.9 Gallons

Sampling Equipment & Cleaning

Sampler Type: Bailer
Method of Cleaning: TSP/rinse/dist.
Pump or Bailer Type: Teflon®
Method of Cleaning:
PH Meter: HYDAC
Conductivity Meter: HYDAC
Comments:

SAMPLING MEASUREMENTS

Time	Discharge (gal.) Per Time Period	Discharge (gal.) Cumulative	pH	Temp (°C)	Spec. Conductance (umhos/cm) Field	Spec. Conductance (umhos/cm) @25°C	Color/ Turbidity	Odor
13:10								
13:14		2	6.82	69.5	1040		Clear/None	None
13:26		5	7.24	68.6	1060		"	"
13:38		7.5	7.32	68.0	930		Lt. Yellow/ Tan Slight	"
13:45	SAMPLED							

Total Discharge: 7.5
Casing Volumes Removed: 4
Method of Disposal: To 55 gal. drum

Comments:

Kaldveer Associates
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GROUND WATER SAMPLING LOG

1829 CLEMENT AVENUE
Alameda, California

PROJECT NO.	DATE	Figure
KE-1179-1A-272	November 1990	B-5

WATER SAMPLE LOG

Project Name: 1829 Clement Ave. Date: 9-26-90
Project Number: KE-1179-1A-272 Sampler: GAF
Well Number: MW-3 Weather: Clear, warm, calm
Well Location: NW side 1829 Clement

Well Construction:

Date Completed: 9-11-90
Total Depth of Well: 15 feet
Diameter: 2-inch
Well Elevation & Reference: Not surveyed

Groundwater Levels

Initial: 1112 3.21
Final:
Reference Point: Top of PVC
Well Volume of Water:

Sampling Equipment & Cleaning

Sampler Type: Bailer
Method of Cleaning: TSP/rinse/dist.
Pump or Bailer Type: Teflon®
Method of Cleaning:
PH Meter: HYDAC
Conductivity Meter: HYDAC
Comments:

SAMPLING MEASUREMENTS

Time	Discharge (gal.) Per Time Period	Discharge (gal.) Cumulative	pH	Temp (°C)	Spec. Conductance (umhos/cm) Field	Spec. Conductance (umhos/cm) @25°C	Color/ Turbidity	Odor
12:10								
12:19		4	6.71	68.7	1020		Lt. Yellow-Tan/Slight	None
12:32		7	7.07	68.0	1030		"	"
12:43		8.5	7.23	67.7	960		"	"
12:50	SAMPLED							

Total Discharge: 8.4 Gallons
Casing Volumes Removed: 4
Method of Disposal: To 55 gal. drum

Comments: Survey data on reverse

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GROUND WATER SAMPLING LOG

1829 CLEMENT AVENUE
Alameda, California

PROJECT NO.	DATE	
KE-1179-1A-272	November 1990	Figure B-6

WATER SAMPLE LOG

Project Name: 1829 Clement Ave. Date: 10-9-90
Project Number: KE-1179-1A-272 Sampler: LAG
Well Number: MW-1 Weather: Clear, warm, calm
Well Location: East side 1829 Clement

Well Construction:

Date Completed: 9-11-90
Total Depth of Well: 15 feet
Diameter: 2-inch
Well Elevation & Reference: Not surveyed

Groundwater Levels

Initial: 3.90 12:08
Final: 8.71
Reference Point: Top of PVC
Well Volume of Water: 1.9 Gallons

Sampling Equipment & Cleaning

Sampler Type: Bailer
Method of Cleaning: TSP/rinse/dist.
Pump or Bailer Type: Teflon®
Method of Cleaning:
PH Meter: HYDAC
Conductivity Meter: HYDAC
Comments:

SAMPLING MEASUREMENTS

Time	Discharge (gal.) Per Time Period	Discharge (gal.) Cumulative	pH	Temp (°C)	Spec. Conductance (umhos/cm) Field	Spec. Conductance (umhos/cm) @25°C	Color/ Turbidity	Odor
14:01	0	0	8.68	21.9	1003		Clear/None	None
14:09	3	3	8.54	22.2	995		Lt. Brown/ Slight	"
14:16	2	5	8.38	22.3	1012		" "	"
14:32	3	8	8.41	22.0	1019		" "	"

Total Discharge: 8 Gallons
Casing Volumes Removed: 4.2
Method of Disposal: To 55 gal. drum

Comments:

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GROUND WATER SAMPLING LOG

1829 CLEMENT AVENUE
Alameda, California

PROJECT NO.	DATE	Figure
KE-1179-1A-272	November 1990	B-7

WATER SAMPLE LOG

Project Name: 1829 Clement Ave. Date: 10-9-90
Project Number: KE-1179-1A-272 Sampler: LAG
Well Number: MW-3 Weather: Clear, warm, calm
Well Location: NW side 1829 Clement

Well Construction:

Date Completed: 9-11-90
Total Depth of Well: 15 feet
Diameter: 2-inch
Well Elevation & Reference: Not surveyed

Groundwater Levels

Initial: 3.38 12:00
Final: 7.85 13:01
Reference Point: Top of PVC
Well Volume of Water: 2.0 Gallons

Sampling Equipment & Cleaning

Sampler Type: Bailer
Method of Cleaning: TSP/rinse/dist.
Pump or Bailer Type: Teflon®
Method of Cleaning:
PH Meter: HYDAC
Conductivity Meter: HYDAC
Comments:

SAMPLING MEASUREMENTS

Time	Discharge (gal.)		pH	Temp (°C)	Spec. Conductance (umhos/cm)		Color/ Turbidity	Odor
	Per Time Period	Cumulative			Field	@25°C		
12:15	0	0	7.89	20.1	920		Clear/None	None
12:25	3	3	8.71	20.0	856		" "	"
12:31	2	5	8.61	20.0	873		Clear/Slight	"
12:47	2.5	7.5	8.53	19.9	864		Lt. Brown/ Slight	"

Total Discharge: 7.5 Gallons
Casing Volumes Removed: 3.8
Method of Disposal: To 55 gal. drum

Comments:

Kaldveer Associates
Geoscience Consultants
A California Corporation

GROUND WATER SAMPLING LOG

1829 CLEMENT AVENUE
Alameda, California

PROJECT NO.	DATE	
KE-1179-1A-272	November 1990	Figure B-8

WATER SAMPLE LOG

Project Name: 1829 Clement Ave. Date: 10-9-90
Project Number: KE-1179-1A-272 Sampler: LAG
Well Number: MW-2 Weather: Clear, warm, calm
Well Location: NE side 1829 Clement

Well Construction:

Date Completed: 9-11-90
Total Depth of Well: 15 feet
Diameter: 2-inch
Well Elevation & Reference: Not surveyed

Groundwater Levels

Initial: 3.83 12:05
Final: 13.93 13:45
Reference Point: Top of PVC
Well Volume of Water: 1.9 Gallons

Sampling Equipment & Cleaning

Sampler Type: Bailer
Method of Cleaning: TSP/rinse/dist.
Pump or Bailer Type: Teflon®
Method of Cleaning:
PH Meter: HYDAC
Conductivity Meter: HYDAC
Comments:

SAMPLING MEASUREMENTS

Time	Discharge (gal.) Per Time Period	Discharge (gal.) Cumulative	pH	Temp (°C)	Spec. Conductance (umhos/cm) Field	Spec. Conductance (umhos/cm) @25°C	Color/ Turbidity	Odor
13:15	0	0	8.61	20.3	976		Clear/None	None
13:22	3	3	8.54	20.5	856		" "	"
13:31	3	6	8.89	20.5	964		" "	"
13:47	2.5	8.5	8.76	20.4	936		Lt. Brown/ Slight	"

Total Discharge: 8.5 Gallons
Casing Volumes Removed: 4.5
Method of Disposal: To 55 gal. drum
Comments:

Kaldveer Associates
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GROUND WATER SAMPLING LOG
1829 CLEMENT AVENUE
Alameda, California

PROJECT NO.	DATE
KE-1179-1A-272	November 1990

Figure B-9

MED-TOX ASSOCIATES, INC.

SEP 25

ENVIRONMENTAL & OCCUPATIONAL HEALTH SERVICES

3440 Vincent Road Pleasant Hill, CA 94523 • (415) 930-9090 • FAX# (415) 930-0256

LABORATORY ANALYSIS REPORT

KALDVEER ASSOCIATES, INC.
425 ROLAND WAY
OAKLAND, CA 94621

ATTN: GEOFFERY A. FIELDER

CLIENT PROJECT NO: KE1179-1A

REPORT DATE: 09/24/90

DATE SAMPLED: 09/13/90

DATE RECEIVED: 09/13/90

MED-TOX JOB NO: 9009067

ANALYSIS OF: WATER SAMPLES

Sample Identification Client Id.	Lab No.	Arsenic (mg/L)	Hexavalent Chromium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Lead (mg/L)	Molybdenum (mg/L)	Cyanide (mg/L)
MW-1	01A	0.005	ND	0.007	0.02	ND	ND	2.4
MW-2	02A	0.004	ND	0.083	0.01	ND	ND	ND
MW-3	03A	0.005	ND	ND	ND	ND	ND	ND
Detection Limit		0.001	0.01	0.005	0.01	0.03	0.01	0.05
Method		7060	7196	6010	6010	6010	6010	9010
Instrument		V22	NS	ICP	ICP	ICP	ICP	---

ND = Not Detected

Dave Sandusky, Manager
Inorganic Laboratory

Results FAXed to Geoffery Fielder 09/17/90 & verbals to Dennis Laduzinsky 09/18/90

C-1, S-1

9009067

Page _____ of _____

Lab Job # _____

CHAIN-OF-CUSTODY RECORD

Project Number	Project Name / Location
KE1179-1A	1829 CLEMENT

Sampler's Name (printed): GEOFFREY A. FIEDLER

KA Sample I.D. Number	Lab Sample I.D. Number	Date	Soil	Water	Number/Type of Container	Analytical Tests: Method 8015 - TPH as Gasoline	Method 8015 - TPH as Diesel	Method 8240 - Volatile Organics	Method 8270 - Semi-Volatile Organics	Method 8010 - Halogenated Volatile Organics	Method 8080 - Organochlorine Pesticides & PCB's	Waste Oil	Metals - Motor Oil, Lead, Cyanide, Arsenic, Cr (VI), Cr (TOTAL), Copper	Remarks
MW-1	01A	9/13		✓	500ml PLASTIC							X		• UNFILTERED/UNPRESERVED
MW-2	02A	9/13		✓	↓							X		• RUSH TAT - 48 HR
MW-3	03A	9/13		✓	↓							X		

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
G. Fiedler	9/13/90 1450	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)
		Kalvon M. Johnson

Requested Turnaround Time: RUSH - BY MONDAY 9/17

Kaldveer Assoc. Contact: G. FIEDLER

Remarks:

Ship To: _____

Attention: _____

Phone No: _____

Please address correspondence and return cooler # _____ to:

Kaldveer Associates, Inc.
425 Roland Way
Oakland, California 94621
(415) 568-4001

Kaldveer Associates
Geoscience Consultants
A California Corporation

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaldveer Associates, Inc.	Client Project ID:	Project #KE1179-1A-272 1829 Clement/Alam	Sampled:	Sep 27, 1990
425 Roland Way	Sample Descript:	Soil, DS-1 0.5'	Received:	Sep 27, 1990
Oakland, CA 94621			Extracted:	Sep 27-28, 1990
Attention: Dennis Laduzinsky	Lab Number:	009-3593	Analyzed:	Oct 1, 1990
			Reported:	Oct 2, 1990

LABORATORY ANALYSIS

Analyte	Detection Limit mg/kg	Sample Results mg/kg
Arsenic	0.5	12
Chromium	0.25	31
Copper	0.50	13
Lead	0.25	5.3
Molybdenum	2.5	N.D.
Hexavalent Chromium*	0.05	N.D.
Cyanide	0.5	N.D.

OCT 4 [illegible]

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Diane Elich Lawver
Project Manager

Please Note:
* Hexavalent Chromium samples were analyzed September 27, 1990.

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaldveer Associates, Inc.	Client Project ID:	Project #KE1179-1A-272 1829 Clement/Alam	Sampled:	Sep 27, 1990
425 Roland Way	Sample Descript:	Soil, DS-1 2.0'	Received:	Sep 27, 1990
Oakland, CA 94621			Extracted:	Sep 28, 1990
Attention: Dennis Laduzinsky	Lab Number:	009-3594	Analyzed:	Oct 1, 1990
			Reported:	Oct 2, 1990

LABORATORY ANALYSIS

Analyte	Detection Limit mg/kg	Sample Results mg/kg
Arsenic	0.5	9.5
Chromium	0.25	25
Copper	0.50	15
Lead	0.25	11
Molybdenum	2.5	N.D.
Hexavalent Chromium	0.05	N.D.
Cyanide	0.5	1.1

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Diane Ellch Lawver
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaldveer Associates, Inc.	Client Project ID:	Project #KE1179-1A-272 1829 Clement/Alam	Sampled:	Sep 27, 1990
425 Roland Way	Sample Descript:	Soil, DS-2 0.5'	Received:	Sep 27, 1990
Oakland, CA 94621			Extracted:	Sep 27-28, 1990
Attention: Dennis Laduzinsky	Lab Number:	009-3595	Analyzed:	Oct 1, 1990
			Reported:	Oct 2, 1990

LABORATORY ANALYSIS

Analyte	Detection Limit mg/kg	Sample Results mg/kg
Arsenic	0.5	9.3
Chromium	0.25	25
Copper	0.50	15
Lead	0.25	7.2
Molybdenum	2.5	N.D.
Hexavalent Chromium	0.05	N.D.
Cyanide	0.5	5.1

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Diane Elich Lawver
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaldveer Associates, Inc.	Client Project ID:	Project #KE1179-1A-272 1829 Clement/Alam	Sampled:	Sep 27, 1990
425 Roland Way	Sample Descript:	Soil, DS-2 2.0'	Received:	Sep 27, 1990
Oakland, CA 94621			Extracted:	Sep 27-28, 1990
Attention: Dennis Laduzinsky	Lab Number:	009-3596	Analyzed:	Oct 1, 1990
			Reported:	Oct 2, 1990

LABORATORY ANALYSIS

Analyte	Detection Limit mg/kg	Sample Results mg/kg
Arsenic	0.5	6.9
Chromium	0.25	43
Copper	0.50	8.4
Lead	0.25	3.6
Molybdenum	2.5	N.D.
Hexavalent Chromium	0.05	N.D.
Cyanide	0.5	1.3

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Diane Lawver

Diane Elich Lawver
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaldveer Associates, Inc.	Client Project ID:	Project #KE1179-1A-272 1829 Clement/Alam	Sampled:	Sep 27, 1990
425 Roland Way	Sample Descript:	Soil, DS-3 0.5'	Received:	Sep 27, 1990
Oakland, CA 94621			Extracted:	Sep 28, 1990
Attention: Dennis Laduzinsky	Lab Number:	009-3597	Analyzed:	Oct 1, 1990
			Reported:	Oct 2, 1990

LABORATORY ANALYSIS

Analyte	Detection Limit mg/kg	Sample Results mg/kg
Arsenic	0.5	14
Chromium	0.25	38
Copper	0.50	13
Lead	0.25	5.8
Molybdenum	2.5	N.D.
Hexavalent Chromium	0.05	N.D.
Cyanide	0.5	2.3

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Diane Elich Lawver
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaldveer Associates, Inc.	Client Project ID:	Project #KE1179-1A-272 1829 Clement/Alam	Sampled:	Sep 27, 1990
425 Roland Way	Sample Descript:	Soil, DS-3 2.0'	Received:	Sep 27, 1990
Oakland, CA 94621			Extracted:	Sep 27-28, 1990
Attention: Dennis Laduzinsky	Lab Number:	009-3598	Analyzed:	Oct 1, 1990
			Reported:	Oct 2, 1990

LABORATORY ANALYSIS

Analyte	Detection Limit mg/kg	Sample Results mg/kg
Arsenic	0.5	10
Chromium	0.25	29
Copper	0.50	9.9
Lead	0.25	14
Molybdenum	2.5	N.D.
Hexavalent Chromium	0.05	N.D.
Cyanide	0.5	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Diane Elich Lawver
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaldveer Associates, Inc.	Client Project ID:	Project #KE1179-1A-272 1829 Clement/Alam	Sampled:	Sep 26, 1990
425 Roland Way	Sample Descript:	Soil, MW-1	Received:	Sep 27, 1990
Oakland, CA 94621			Extracted:	Sep 28, 1990
Attention: Dennis Laduzinsky	Lab Number:	009-3599	Analyzed:	Oct 2, 1990
			Reported:	Oct 2, 1990

LABORATORY ANALYSIS

Analyte	Detection Limit mg/L	Sample Results mg/L
Arsenic	0.005	0.021
Copper	0.010	0.053
Lead	0.005	0.046
Molybdenum	0.050	N.D.
Cyanide	0.01	0.35

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Diane Elich Lawver
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaldveer Associates, Inc.
425 Roland Way
Oakland, CA 94621
Attention: Dennis Laduzinsky

Client Project ID: Project #KE1179-1A-272 1829 Clement/Alameda

QC Sample Group: 0093593-3598

Reported: Oct 2, 1990

QUALITY CONTROL DATA REPORT

ANALYTE	Hexavalent Chromium	Lead	Molybdenum	Copper	Chromium	Arsenic	Cyanide
Method:	EPA 7196	EPA 7421	EPA 6010	EPA 6010	EPA 6010	EPA 7060	EPA 335.2
Analyst:	R. Eastman	R. Sharma	B. Oliver	B. Oliver	B. Oliver	R. Britton	A. Maralit
Reporting Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L
Date Analyzed:	Sep 27, 1990	Oct 1, 1990	Oct 1, 1990	Oct 1, 1990	Oct 1, 1990	Oct 1, 1990	Oct 1, 1990
QC Sample #:	009-3593	009-3598	009-3366	009-3366	009-3366	009-3598	Deionized Water
Sample Conc.:	N.D.	14	N.D.	N.D.	N.D.	10	N.D.
Spike Conc. Added:	0.49	50	500	500	500	50	0.10
Conc. Matrix Spike:	0.32	65	490	460	550	69	0.10
Matrix Spike % Recovery:	65	100	98	93	110	120	100
Conc. Matrix Spike Dup.:	0.32	65	530	560	610	67	0.10
Matrix Spike Duplicate % Recovery:	65	100	110	110	120	110	100
Relative % Difference:	0	0	7.8	20	10	2.9	9.0

SEQUOIA ANALYTICAL

Diane Elich Lawver
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S. - Conc. of Sample}}{\text{Spike Conc. Added}}$	x 100
Relative % Difference:	$\frac{\text{Conc. of M.S. - Conc. of M.S.D.}}{\text{(Conc. of M.S. + Conc. of M.S.D.) / 2}}$	x 100

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaldveer Associates, Inc.
425 Roland Way
Oakland, CA 94621
Attention: Dennis Laduzinsky

Client Project ID: Project #KE1179-1A-272 1829 Clement/Alameda
QC Sample Group: 0093593-3598
Reported: Oct 2, 1990

QUALITY CONTROL DATA REPORT

ANALYTE	Copper	Molybdenum	Lead	Arsenic
Method:	EPA 6010	EPA 6010	EPA 7421	EPA 7060
Analyst:	B. Oliver	B. Oliver	R. Sharma	R. Sharma
Reporting Units:	mg/L	mg/L	µg/L	µg/L
Date Analyzed:	Oct 1, 1990	Oct 1, 1990	Oct 2, 1990	Oct 2, 1990
QC Sample #:	009-3884	009-3884	009-3886	009-3886
Sample Conc.:	0.035	N.D.	0.44	0.016
Spike Conc. Added:	1.0	1.0	1.0	1.0
Conc. Matrix Spike:	0.94	0.95	1.4	0.99
Matrix Spike % Recovery:	91	95	96	97
Conc. Matrix Spike Dup.:	1.0	0.91	1.4	0.97
Matrix Spike Duplicate % Recovery:	100	91	96	97
Relative % Difference:	10	4.3	0	0

SEQUOIA ANALYTICAL

Diane Elich Lawver
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S. - Conc. of Sample}}{\text{Spike Conc. Added}}$	x 100
Relative % Difference:	$\frac{\text{Conc. of M.S. - Conc. of M.S.D.}}{\text{(Conc. of M.S. + Conc. of M.S.D.) / 2}}$	x 100

C-7, S-7

Lab Job # 9009145

CHAIN-OF-CUSTODY RECORD

Project Number: KE1179-1A-272	Project Name: 1029 CLEMENT
	Location:
Sampler's Name (printed): GEOFFERY FIEDLER	

KA Sample I.D. Number	Lab Sample I.D. Number	Date	Soil	Water	Number/Type of Container	Method 8015 - TPH as Gasoline	Method 8015 - TPH as Diesel	Method 8240 - Volatile Organics	Method 8270 - Semi-Volatile Organics	Method 8010 - Halogenated Volatile Organics	Method 8080 - Organochlorine Pesticides & PCB's	Waste Oil -	Metals - CYANIDE, ARSENIC, LEAD	MOLYBDENUM, COPPER	CHROMIUM (TOTAL), CHROMIUM VI			Remarks
MW-1	0117	9/26		✓	1x ~~250~~ 500 ml PLASTIC								X	X	X			- UNFILTERED
MW-2	0217	9/26		✓	↓								X	X	X			- UNPRESERVED
MW-3	0314	9/26		✓									X	X	X			- ~~24~~ 48 HR T.A.T.
																		Results due 10/2/90

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
G. Fiedler	9/26/90 1550	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)
		Lalon St John

Ship To:

Attention:

Phone No:

Requested Turnaround Time: 48 HR

Kaldveer Assoc. Contact: D. LADUZINSKY

Remarks:

Please address correspondence and return cooler # ________ to:

Kaldveer Associates, Inc.
425 Roland Way
Oakland, California 94621
(415) 568-4001

Kaldveer Associates
Geoscience Consultants
A California Corporation

MED-TOX ASSOCIATES, INC.

ENVIRONMENTAL & OCCUPATIONAL HEALTH SERVICES

3440 Vincent Road Pleasant Hill, CA 94523 • (415) 930-9090 • FAX# (415) 930-0256

OCT 10 1990

LABORATORY ANALYSIS REPORT

KALDVEER ASSOCIATES, INC.
425 ROLAND WAY
OAKLAND, CA 94621

ATTN: DENNIS LADUZINSKY

CLIENT PROJ. NO: KE1179-1A-272

REPORT DATE: 10/09/90

DATE SAMPLED: 09/26/90

DATE RECEIVED: 09/26/90

MED-TOX JOB NO: 9009145

ANALYSIS OF: WATER SAMPLES

Sample Identification Client Id.	Lab No.	Arsenic (mg/L)	Hexavalent Chromium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Lead (mg/L)	Molybdenum (mg/L)	Cyanide (mg/L)
MW-1	01A	ND(0.01)	ND	ND	0.04	ND	ND	ND
MW-2	02A	ND	ND	0.17	0.03	ND	ND	ND
MW-3	03A	ND	ND	ND	0.02	ND	ND	ND
Detection Limit (unless otherwise noted in parentheses)		0.005	0.01	0.005	0.01	0.03	0.01	0.02
Method		7060	7196	6010	6010	6010	6010	9010
Instrument		V22	NS	ICP	ICP	ICP	ICP	---

ND = Not Detected

Samples were filtered through a 0.45um filter and preserved with HNO_3 on 09/26/90.

Dave Sandusky, Manager
Inorganic Laboratory

Results FAXed to Geoffery Fielder 10/02/90

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Date: 10/15/90
OCT 18 1990

Kaldveer Associates
425 Roland Way
Oakland, CA. 94621
Dennis Ladnzinsky

Work Order: TO-10-133 P.O. Number: NEW CLIENT

This is the Certificate of Analysis for the following samples:

Client Work ID: KE1179-1A, 1829 Clement Ala.
Date Received: 10/10/90
Number of Samples: 3
Sample Type: aqueous

TABLE OF CONTENTS FOR ANALYTICAL RESULTS

Reviewed and Approved:

Suzanne Veaudry
Project Manager

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Kaldveer Associates
Date: 10/15/90
Client Work ID: KE1179-1A, 1829 Clement Ala.

Work Order: TO-10-133

TEST NAME: **General Chemistry**

SAMPLE ID: **MW-1**
SAMPLE DATE: **10/09/90**
LAB SAMPLE ID: **T010133-01**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool**

RESULTS in Milligrams per Liter:

PARAMETER	METHOD	DETECTION LIMIT	DETECTED
Cyanide (total)	335.2	0.02	0.95

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Kaldveer Associates
Date: 10/15/90
Client Work ID: KE1179-1A, 1829 Clement Ala.

Work Order: TO-10-133

TEST NAME: **General Chemistry**

SAMPLE ID: **MW-2**
SAMPLE DATE: **10/09/90**
LAB SAMPLE ID: **TO10133-02**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool**

RESULTS in Milligrams per Liter:

PARAMETER	METHOD	DETECTION LIMIT	DETECTED
Cyanide (total)	335.2	0.02	**None**

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Kaldveer Associates
Date: 10/15/90
Client Work ID: KE1179-1A, 1829 Clement Ala.

Work Order: TO-10-133

TEST NAME: **General Chemistry**

SAMPLE ID: **MW-3**
SAMPLE DATE: **10/09/90**
LAB SAMPLE ID: **TO10133-03**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool**

RESULTS in Milligrams per Liter:

PARAMETER	METHOD	DETECTION LIMIT	DETECTED
Cyanide (total)	335.2	0.02	None

Company: Kaldveer Associates
Date: 10/15/90
Client Work ID: KE1179-1A, 1829 Clement Ala.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: TO-10-133

TEST CODE **GEN** TEST NAME **General Chemistry**

The methods of analysis for general chemistry are taken from E.P.A. protocol, using methods from SW-846, 3rd Edition or Methods for Chemical Analysis of Water and Wastes, 600/4-79-020. The method used is listed adjacent to the parameter in the table.

Analytical Report

LOG NO: E90-10-225

Received: 09 OCT 90
Reported: 12 OCT 90
OCT 18 [illegible]

Mr. Dennis Laduzinsky
Kaldveer Associates
425 Roland Way
Oakland, CA 94621

Project: KE1179-1A

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, AQUEOUS SAMPLES	DATE SAMPLED
10-225-1	MW-1	09 OCT 90
10-225-2	MW-2	09 OCT 90
10-225-3	MW-3	09 OCT 90

PARAMETER	10-225-1	10-225-2	10-225-3
Cyanide, mg/L	1.3	<0.02	<0.02

Results were transmitted by facsimile to Art Gust on 10.12.90. T. Blake

Sim D. Lessley, Ph.D., Laboratory Director

1255 Powell Street
Emeryville, CA 94608

415/428-2300
Fax: 415/547-3643

B C Analytical

Page ______ of _

Log # 9010285

Lab Job # ________

CHAIN-OF-CUSTODY RECORD

Project Number	Project Name	Location
KE1179-1A	1829 Clement	Alameda, Ca

Sampler's Name (printed): L. Art Gust

Analytical Tests

KA Sample I.D. Number	Lab Sample I.D. Number	Date	Soil	Water	Number/Type of Container	Method 8015 - TPH as Gasoline	Method 8015 - TPH as Diesel	Method 8240 - Volatile Organics	Method 8270 - Semi-Volatile Organics	Method 8010 - Halogenated Volatile Organics	Method 8080 - Organochlorine Pesticides & PCB's	Waste Oil -	Metals -	Cyanide			Remarks
MW-1		10/9/90		X	1/1(L) plastic									X			Samples are preserved but not
MW-2		↓		↓	↓									X			filtered
MW-3		↓		↓	↓									X			

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
[signature]	10/9/90 4:40	[signature]
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)

Ship To: BC Analytical
1255 Powell St
Emeryville, Ca. 94608

Attention: Tony Blake

Phone No: 415-428-2300

Requested Turnaround Time: 48 hours / 10/12/90

Kaldveer Assoc. Contact: Dennis Laduzinsky

Remarks:

Please address correspondence and return cooler # ________ to:

Kaldveer Associates, Inc.
425 Roland Way
Oakland, California 94621
(415) 568-4001

Kaldveer Associates
Geoscience Consultants
A California Corporation