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RESNA
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FAX: (408) 264-2435

TRANSMITTAL

TO: Ms. Juliette Shin
Alameda County Health
Care Services Agency
Department of Environmental Health
Hazardous Materials Program
80 Swan Way, Room 200
Oakland, California 94621

DATE: October 7, 1993
PROJECT NUMBER: F1587.33
SUBJECT: Crown Metals - San Lorenzo

FROM: Mr. Richard A. Garlow
TITLE: Senior Project Geologist

WE ARE SENDING YOU:

COPIES	DATED	DESCRIPTION
1	08/11/87	Soil and Groundwater Investigation for Crown Metal Manufacturing Pacific International Steel Facility, 16525 Worthley Drive, San Lorenzo, California.

THESE ARE TRANSMITTED as checked below:

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REMARKS:
cc: 1 to RESNA project file

Richard A. Garlow, Senior Project Manager

SOIL AND GROUNDWATER INVESTIGATION

for

CROWN METAL MANUFACTURING
PACIFIC INTERNATIONAL STEEL FACILITY

16525 WORTHLEY DRIVE
SAN LORENZO, CALIFORNIA

PROJECT NO. 1587G
AUGUST, 1987

EXCELTECH

41674 CHRISTY STREET • FREMONT, CA 94538
PHONE (415) 659-0404 • CONTR. LIC. NO. 464324

Crown Metal Manufacturing
5925 S. Lowe Avenue
Chicago, Illinios 60621-2896

August 11, 1987
Project No. 1587G

Attn: Mr. Richard C. Ernest

Re: Pacific International Steel facility
San Lorenzo, California

Dear Mr. Ernest:

In accordance with your request, we have performed a soil and groundwater investigation at the above referenced site. The report contains the field investigation, laboratory analyses, and conclusions.

If you have any questions please call.

Sincerely,
EXCELTECH, INC.

Christopher M. Palmer, E.G. 1262
Manager, Geotechnical Services

Mark D. Hamilton
Project Geologist

CMP/MH

attached: 4 copies

TABLE OF CONTENTS

CROWN METAL MANUFACTURING
SAN LORENZO , CALIFORNIA
SOIL AND GROUNDWATER INVESTIGATION

SECTION 1.0
INTRODUCTION

This report presents the results of a soil and groundwater investigation conducted by Exceltech, Inc. for Crown Metal Manufacturing. The site investigated is Pacific International Steel's facility, located at 16525 Worthley Drive, in San Lorenzo, California (see Figure1). It is our understanding that the past site history has included industrial use as an aviation engine refit facility, and a subsurface motor fuel (unleaded gasoline) storage tank had leaked near the southern corner of the property. The purpose of the investigation is to:

- o Ascertain whether subsurface contamination has occurred
- o Define the nature and extent of contamination, if found
- o Define the site's geology/hydrogeology

This report will: 1) summarize available information on the area; 2) describe field investigative methods, local site hydrogeologic conditions, and chemical analysis; and; 3) present conclusions and recommendations.

1.1 Regional Geology and Geohydrology Characteristics

The project site occupies a portion of a major structural depression between the Diablo Range and Santa Cruz Mountains. Two large faults lie on either side of the depression; the San Andreas rift to the west and the Hayward fault along the east. Movement along these faults and downwarping of the area between has created the bay depression. The region is underlain by Quaternary Alluvium of Pleistocene to Recent age composed of generally unconsolidated gravel, sand, silt, and clay. The gravel and sand deposits have the highest permeability and are the major aquifers, conversely, the silt and clay layers have low permeability and therefore, form aquicludes.

Geomorphologically, the site is part of the Bay Plain within the San Francisco Bay province. The area is located along the northwestern portion of the South San Francisco Bay Ground Water Basin which is further subdivided into the Fremont Study area . The Fremont Study area is divided into four ground water subareas, each having distinct independence of one another. The Niles subarea, specifically where the site is located, is the largest and most important in the Alameda County region. The subarea is composed of a series flatlying aquifers separated by extensive clay aquicludes. At the site the interbedded clay aquicludes are thicker resulting in low permeability, retarding widespread infiltration of surface water into the important Newark aquifer. The Niles aquifer has been studied extensively for salt water intrusion which has proven it being fairly

continuous throughout the Niles subarea. Regional groundwater flow is toward the west. (Ref. 1-3)

1.2 Well Reconnaissance

A reconnaissance well survey was undertaken by Exceltech to ascertain approximate location and construction details of wells in the project site area. Figure 2 shows site area and radius of well's survey. Basic well survey information was obtained from the Alameda County Flood Control and Water Conservation District. Some domestic water is provided from local ground water supplies. No wells are noted within a one half mile radius of the site. Based on available information obtained from the City of Hayward and Alameda County, location and current use of these wells is primarily water supply. The well located over one half mile north and cross-gradient to the site is a monitoring well for the sewage disposal facility. (Ref. 4 & 8)

1.3 State Recognized Beneficial Uses of Groundwater

A review of literature on the beneficial uses of groundwater in the San Lorenzo area was conducted by Exceltech. Groundwater for domestic use is acceptable based on well data. Present and potential beneficial water uses in the San Lorenzo area are listed below: (Ref. 4)

1. Irrigation Supply
2. Industrial Water Supply
3. Some Domestic Supply

SECTION 2.0
FIELD INVESTIGATIVE METHODS

Exceltech's current field investigation (figure 3) consisted of: 1) drilling six exploratory borings (E-1 through E-6) on site; 2) converting the boreholes to groundwater monitoring wells; 3) surveying the elevations of the wells, and; 4) soil and water sampling. The subsurface exploratory program was conducted under permit number 87150 required by the Alameda County Department of Flood Control and Water Conservation District.

2.1 Exploratory Boreholes

Six exploratory borings were drilled with a truck mounted Mobile B53 drill rig, using 8 inch o.d. x 4-1/4 inch i.d. continuous flight hollow stem auger. Undisturbed soil samples were collected at 5 foot depth intervals with a 140 pound rig operated hammer driving a California modified split spoon sampler (18 inches) into the undisturbed soils ahead of the auger.

The borings were logged by Exceltech's geologist with soil descriptions classified according to the Unified Soil Classification System. Soil samples used for logging were obtained from auger return materials and from samples contained in the brass rings from the sampler. Exploratory boring logs are presented in Appendix A.

2.2 Monitoring Well Construction

Upon completion, the exploratory boreholes were converted to groundwater monitoring wells. The monitoring wells were constructed in the boreholes using 2 inch diameter casing, schedule 40, polyvinyl chloride (PVC), blank and factory slotted (0.020 inch) with flush-threaded couplings. No solvents or cements were used. The interval of the screen placement was determined in the field by the Exceltech geologist. The wells were installed to monitor the uppermost water-bearing stratum. Construction details of each well are presented in Appendix A.

After the casing was installed, the annulus was filled with clean, No. 2/12 sand to two feet above the top of the screened interval. One foot of 1/4 inch bentonite pellets was placed on top of the sand. Water was added to hydrate the bentonite. Cement grout was then added to seal the well up to the ground surface. To protect the PVC wellhead, a steel casing locking cover and lock was installed with a traffic rated F-8 Christy box in the cement surface seal. The box was completed above the existing and planned grade level to restrict surface runoff from draining into the box.

Following well construction, each well was developed to remove fine grained material and turbid drilling water and to improve hydraulic communication with the formation. Development was accomplished by bailing with a stainless steel bailer to remove mud and sand. The well was further developed with a submersible bladder pump until only dissolved or suspended

material occurred in the water solution. At least 4 well volumes of groundwater were removed from each well.

2.3 Surveying

Elevations of the top of the PVC casing, locking cover or box where appropriate were surveyed to the nearest 0.01 foot. A USGS benchmark was utilized being a chiseled "T" in the northwest corner of the northerly retaining wall, field control line "N", zone 2, 14.3' south of the corner of a chain link fence and 75' east of the chain link fence of S.P.R.R. tracks. The elevation taken was 9.007 N.G.S. datum.

2.4 Sampling

Sampling at the site consisted of 3 separate phases: field organic vapor analyzer (OVA) readings, soil samples and water samples. During drilling at the site, to prevent potential cross-contamination between boreholes, all drilling and sampling equipment were steam cleaned prior to use. During drilling, and between sampling intervals, the sampler was scrubbed and washed with trisodium phosphate and rinsed with clean water. Soil samples were collected in three 2 x 6 inch precleaned brass liners. At each sampling interval the liner containing the soil sample having the strongest observable product odor was immediately labeled and preserved by capping the ends of the liners with aluminum foil and plastic end caps, then placed on dry ice and delivered directly to a certified laboratory for analysis. The rest of the

sample from that interval was logged and scanned in the field by the TLV (organic vapor analyzer with a range of 1 to 10,000 ppm calibrated to Hexane) by breaking up the sample, then immediately taking readings.

Prior to groundwater sampling, the monitoring wells were field checked for the presence of free-floating petroleum product with a clear acrylic bailer. No floating product was observed in any of the wells. Groundwater samples were then collected from all of the wells. All samples were collected according to Exceltech protocol using either a precleaned teflon bailer, a stainless steel bailer or a submersible bladder pump. Prior to sampling, the wells were purged of 4 well volumes. Groundwater samples were preserved in 40 ml VOA vials.

2.5 Site Hydrogeologic Conditions

Exceltech drilled six (6) exploratory borings at the site on June 24, 25, and 26, 1987 (see Drawing 1 for locations). Exploratory boring E-1 was drilled approximately 210 feet northeast and up-gradient of the previous underground storage tank area. Exploratory boring E-2 was drilled directly through the tank area. Exploratory boring E-3 was drilled approximately 70 feet southwest and down-gradient of the tank area. Exploratory boring E-4 was drilled approximately 90 feet northeast and up-gradient of the tank area. Exploratory boring E-5 was drilled approximately 200 feet northwest and cross-gradient of the tank area. Exploratory boring E-6 was drilled approximately 270 feet north and cross-gradient of the tank area.

The subsurface conditions at the site were explored to depths of 26.5 feet. The site is underlain by clays, sands, and silts. Cross sections A-A' and B-B' show the general geology of the site. Clays and clayey sands were encountered in all six boreholes at a depth of 5 to 20 feet. Directly underlying this clay unit in boring E1, E-2, E3 and E4 are silts from 20 to 26.5 feet. An approximate 5 foot bed of clayey sand was encountered in boring E-3 from 14 to 19 feet.

Faint product odor was encountered in soil samples from the 15 to 20 feet depth interval in borings E-2 and E-3. All other soil samples contained no noticeable product odor. Groundwater was first encountered during drilling operations between 8 and 13 feet. Static groundwater levels were measured on July 14, 1987 to the nearest 0.01 feet. Negligible variance between the first encountered groundwater level and static groundwater level gives the impression of an unconfined aquifer situation. Groundwater, according to the local agencies, is primarily unconfined in this region. A groundwater elevation contour map on the data is presented in Drawing 4 at the end of the report. The groundwater flow direction is toward the west and may be tidally influenced.

2.6 Chemical Analysis

Soil samples were selected for chemical analysis on the basis of product odor observed in the field, or location in a possible contaminant pathway.

All analyses were conducted by a State-certified analytical laboratory using EPA-approved methods. The analytical reports are attached in Appendix B.

The results of analysis of soil samples from exploratory boring E-3, which is directly beneath the underground tank storage area revealed 140 to 150 ppb benzene in soil from 10 to 15 feet. Soil from E-2 collected at 15 feet revealed a 340 ppb benzene level.

Soil samples collected from exploratory soil borings were analyzed for concentrations of volatile hydrocarbons, benzene, toluene and xylene compounds, volatile organics, metals (arsenic, cadmium, chromium, lead), and pH following modifications of EPA Methods 8010, 8015 and 8020. The results of the laboratory analyses are presented in the tables below in the microgram per liter (ug/l) or parts per billion and milligrams per liter range.

SOIL ANALYSIS RESULTS

Sample		Ar (mg/l)	Cd (mg/l)	Cr (mg/l)	Pb (mg/l)	pH (mg/l)
E-1	10	13.0	1.4	42	7.0	7.7
	15	8.6	1.2	39	5.6	8.1
E-2	10	13.0	.6	44	7.6	9.2
	15	9.9	1.0	44	5.2	8.2
E-3	10	15.0	.9	44	7.6	9.9
	15	16.0	.8	45	7.0	7.6
E-4	10	15	1.2	49	7.5	9.3
	15	13	.8	39	7.6	7.9
E-5	10	14	.6	42	7.0	9.1
	15	11	.8	47	6.1	7.7
E-6	10	16	.7	47	7.3	8.7
	15	10	1.5	44	5.6	9.2

SOIL ANALYSIS RESULTS

Sample	Depth (ft)	TVH* (ppb)	ppm	Benzene (ppb)	ppm	Toluene (ppb)	ppm	Xylene (ppb)	ppm
E-1	10	7500	7.5	ND		ND		1300	1.3
	15	28000	28	ND		ND		3600	3.6
E-2	10	8400	8.4	ND		ND		2200	2.2
	15	10000	10	340	.34	470	.47	1500	1.5
E-3	10	13000	13	140	.14	170	.17	1400	1.4
	15	4100	4.1	150	.15	170	.17	310	.31
E-4	10	6600	6.6	ND		ND		230	.23
	15	ND		ND		ND		ND	
E-5	10	1300	1.3	ND		ND		ND	
	15	2400	2.4	ND		ND		240	.24
E-6	10	4900	4.9	ND		ND		560	.56
	15	ND		ND		ND		ND	

ND - NONE DETECTED
*TVH = TOTAL VOLATILE HYDROCARBONS

Water samples collected from all the monitoring wells were analyzed for dissolved concentrations of volatile hydrocarbons, BTX compounds, following modifications of EPA Methods 8015 and 8020. The results of the laboratory analyses are presented in the table below in the microgram per liter (ug/l) or parts per billion range.

WATER ANALYSIS RESULTS

Sample	TVH* (ppb)	Benzene (ppb)	Toluene (ppb)	Xylene (ppb)
E-1	ND	ND	ND	ND
E-2	110	1.2	1.9	2.0
E-3	260	ND	1.0	2.1
E-4	ND	ND	ND	ND
E-5	ND	ND	ND	ND
E-6	ND	ND	ND	ND

ND = NONE DETECTED
*TVH = TOTAL VOLATILE HYDROCARBONS

Results of the groundwater sample from monitoring well MW-3 revealed 260 ppb TVH. MW-2 groundwater sample indicated 110 ppb TVH. These were the only anomalously high samples collected. Observed surface samples indicated surficial contamination in E-1, E-2, E-3 and E-4 borings.

SECTION 3.0
DISCUSSION

The site history is one of aviation radial engine overhaul facility specifically, DC-3 engines. Underground fuel tanks provided fuel to run these engines for stationary testing. The concrete slab to the south of the main building housed this engine runup area. The underground fuel storage tanks are located directly west of the concrete slab approximately 180 feet. Ground surface surrounding the runup area and west to the rear of the main building indicates minor to medium discoloration. This is due to surficial oil, grease and possibly solvent spillage over a period of time. The distribution of these contaminants in soils indicates that the area most severly affected is within and near the old tank excavation.

Site hydrogeology indicates an unconfined aquifer situation. Subsurface water movement is surmised to occur at a slow rate. Exploratory soil boring logs suggest primarily clay with minor interbedding sand and silt, which are interpreted as discontinuous lenses. Placement of monitoring wells was done to evaluate contaminant presence on the study property. Motor fuel contamination is present in wells MW-2 and MW-3 at fifteen feet apparently moving to the west with groundwater flow. Concentrations of Benzene slightly exceed the current State action level of 0.7 ppb.

Several factors affect this site. First, the location next to the San Francisco Bay places it in a high profile situation, given current public awareness of surface and groundwater contamination. Second, the Bockman Canal parallels the property and is daily affected by tides. As suggested by research this may influence water table fluctuation and enhance water movement. Sampling has established the down-gradient direction to the west towards the bay. Third, the draw down history in the Bay Plain has been substantial, thereby creating salt water intrusion problems, which affect use of water from shallow water bearing strata.

At this time it appears the small contaminant plume is restricted to the property. Lower levels of Benzene at the tank site suggest the area has already been 'washed out' with groundwater flow when compared to the elevated down-gradient levels as evidenced in MW-3. In addition, when the tanks were removed and the pit filled, the import fill may have been contaminated with fuels, or mixed with soil originally taken from the excavation, which may yield some residual fuel to groundwater.

SECTION 4.0

CONCLUSIONS AND RECOMMENDATIONS

The site investigation suggests minimal impact by hydrocarbon discharge. A review of current RWQCB guidelines and practices suggests a program of groundwater monitoring for at least one (1) year. Due to minimal use of surrounding water for domestic use and the site being down-gradient and at least two thirds of a mile from any extraction wells indicate a low potential for affecting useable groundwater.

Benzene degradation is affected by numerous processes, including volatilization, adsorption and biological degradation. The low level of contamination encountered is anticipated to be reduced through the aforementioned processes.

It is recommended to excavate and aerate the excavation fill soil in the tank area to reduce further potential contamination of fuel leaching into groundwater. Soil samples indicate spotty contamination arising from past industrial use and numerous motor vehicles scattered across the site. However, groundwater has apparently been impacted only by motor fuel leakage from subsurface storage tanks which had been located in the vicinity of MW-2 and MW-3.

A copy of this report should be sent to the San Francisco Bay Regional Water Quality Control Board in Oakland, California.

LIMITATIONS

The discussion and recommendations presented in this report are based on the following:

1. The exploratory test borings drilled at the site.
2. The observations of field personnel.
3. The results of laboratory analyses performed by a state-certified laboratory.
4. Referenced documents.
5. Our understanding of the regulations of the State of California and Alameda County.

It is possible that variations in the soil or groundwater conditions could exist beyond the points explored in this investigation. Also, changes in the groundwater conditions could occur at some time in the future due to variations in rainfall, temperature, regional water usage or other factors.

The service performed by Exceltech, Inc. has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the Alameda County area. Please note that contamination of soil and groundwater must be reported to the appropriate agencies in a timely manner. No other warranty, expressed or implied, is made.

REFERENCES

1. State of California, Department of Water Resources Bulletin No. 118-1, Evaluation of Ground Water Resources, South Bay, Volume 1; Fremont Study Area, Aug 1968

2. State of California, Department of Water Resources Bulletin No. 118-1, Evaluation of Ground Water Resources, South San Francisco Bay, Volume II; Additional Fremont Study Area, Aug 1973

3. United States Geological Survey, Professional Paper 943, Flatland Deposits-Their Geology and Engineering Properties and Their Importance to Comprehensive Planning, 1979

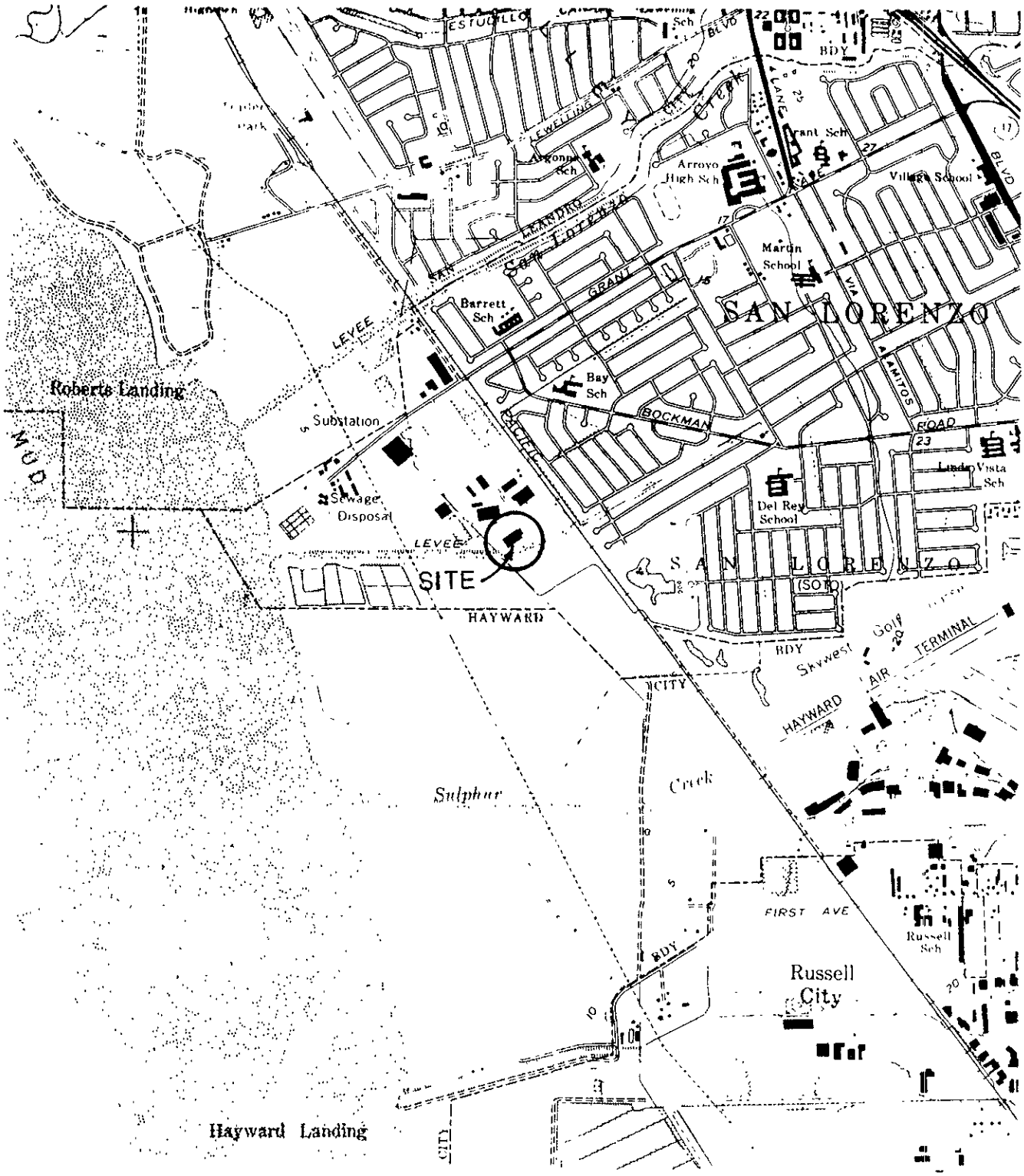
4. Alameda County Flood Control and Water Conservation District, Groundwater in the San Leandro and San Lorenzo Alluvial Cones of the East Bay Plain of Alameda County, 1984

5. Converse Environmental Consultants, Summary of Environmental Engineering Services, May 1987

6. United States Geological Survey , San Leandro, 7.5 minute series, Topographic Quadrangle Map, 1980

7. United States Geological Survey, San Leandro, 7.5 minute series, Orthophoto Quadrangle Map, 1970

8. Alameda County Bay Plain Wells Base Map, MC 276, #10, 1973

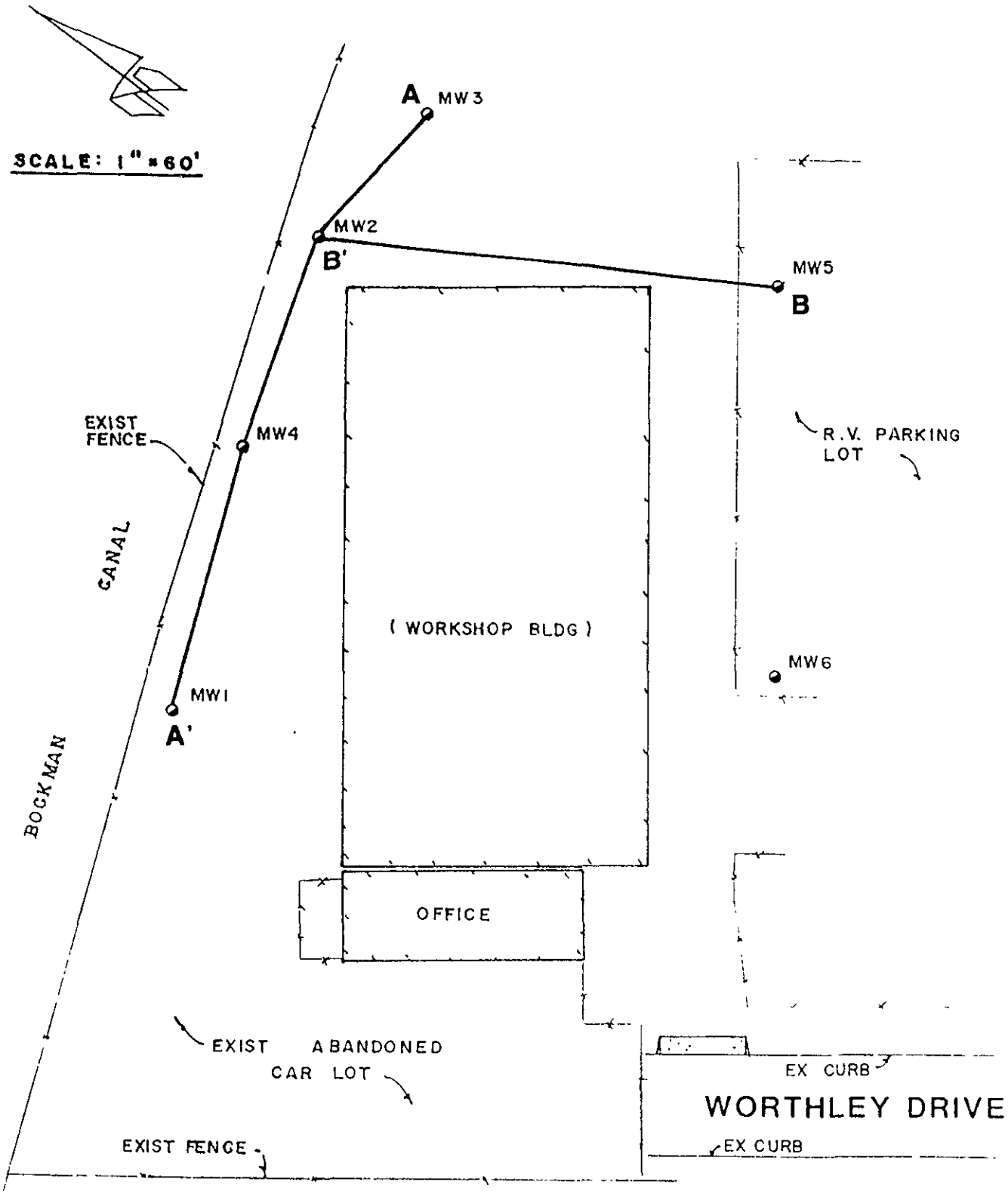


USGS 7.5 MINUTE SAN LEANDRO QUADRANGLE 1980

EXCELTECH

SITE LOCATION MAP

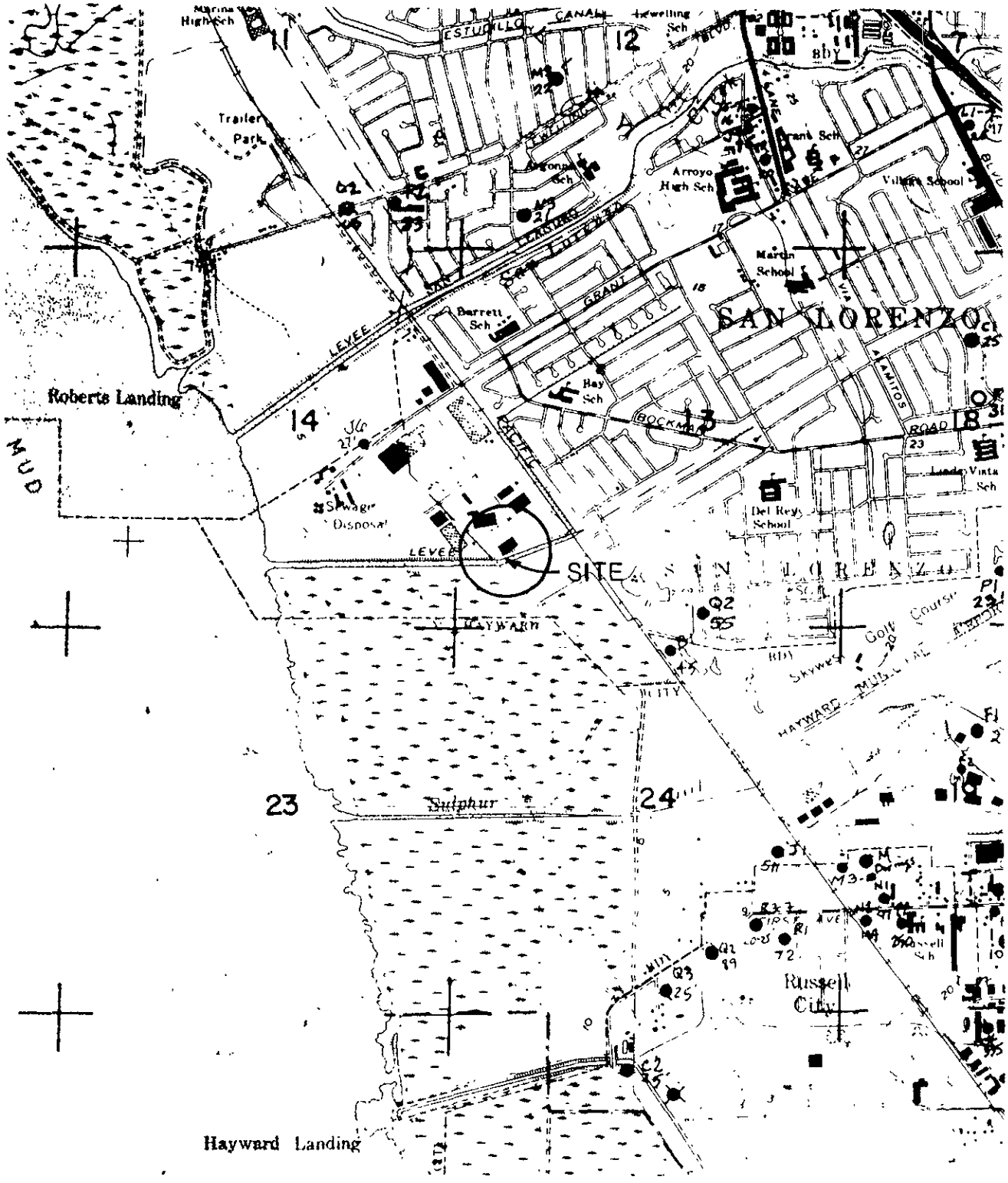
CROWN METAL MFG-PACIFIC INTL' STEEL	JOB # 1587	
16525 WORTHLEY DRIVE	SCALE: 1:24000	DRAWN BY
SAN LORENZO, CALIFORNIA	DATE 6/6/87	DRAWING # FIG. 1



EXCELTECH

CROSS SECTION POSITION MAP

CROWN METAL MFG-PACIFIC INTL' STEEL	JOB #: 1587	
16525 WORTHLEY DRIVE	SCALE 1"=60'	DRAWN BY: RA/MH
SAN LORENZO, CALIFORNIA	DATE 3/3/87	DRAWING # 1



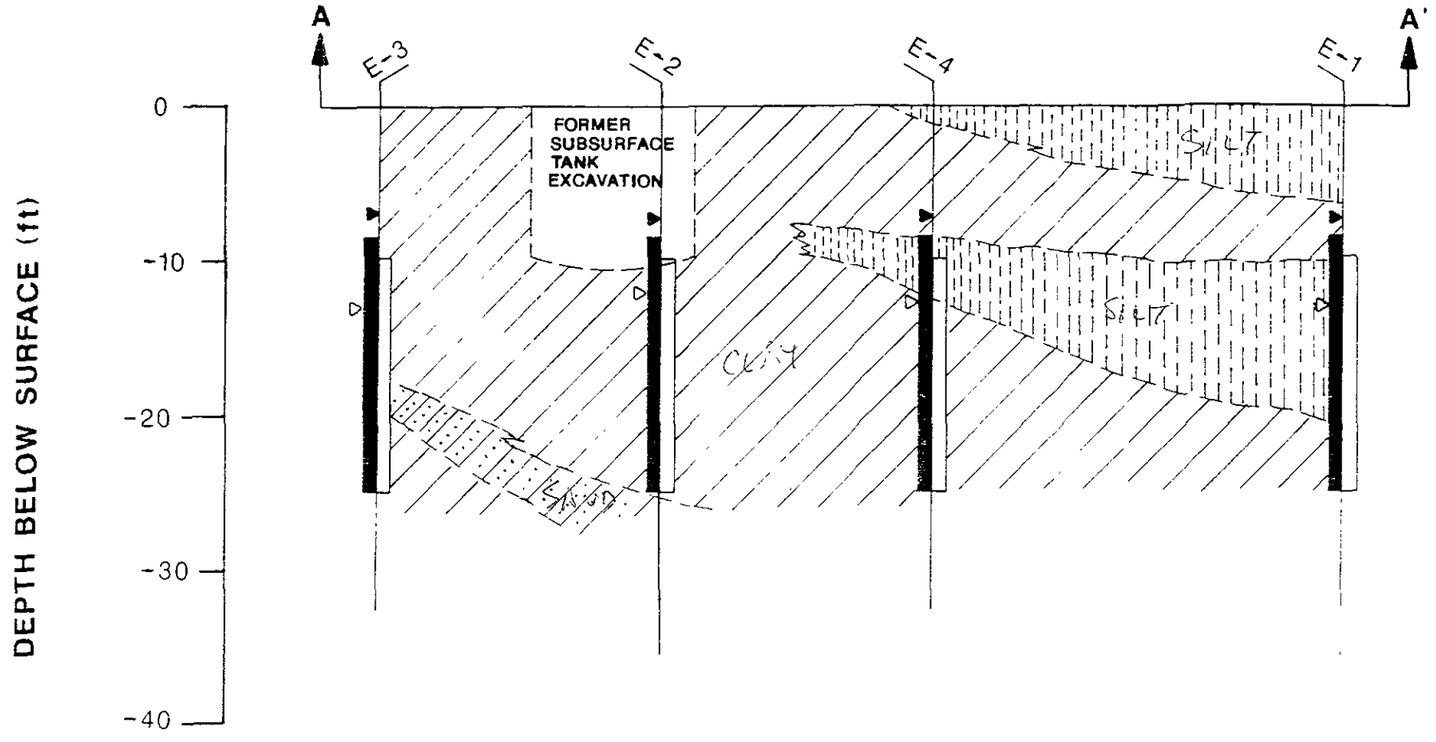
ALAMEDA COUNTY BAY PLAIN WELLS BASE MAP, MC 276, #10

USGS 7.5 MINUTE SAN LEANDRO QUADRANGLE 1973

EXCELTECH

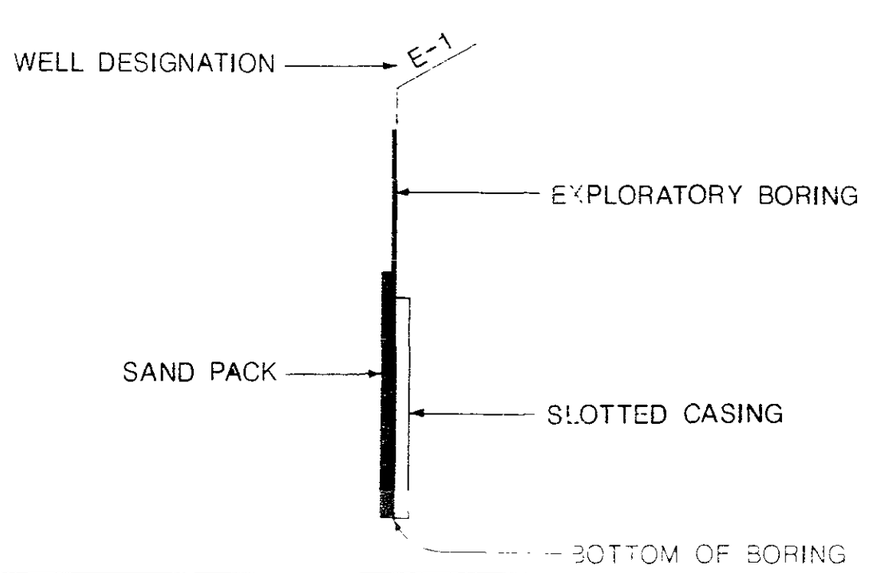
WELL SURVEY MAP

CROWN METAL MFG-PACIFIC INTL' STEEL	JOB # 1587	
16525 WORTHLEY DRIVE	SCALE 1:24000	DRAWN BY
SAN LORENZO, CALIFORNIA	DATE 8/4/87	DRAWING # FIG. 2



KEY

- Clay-CL
- Silt-ML
- Clayed Sand
- Approximate first encountered groundwater level
- Approximate stabilized groundwater level



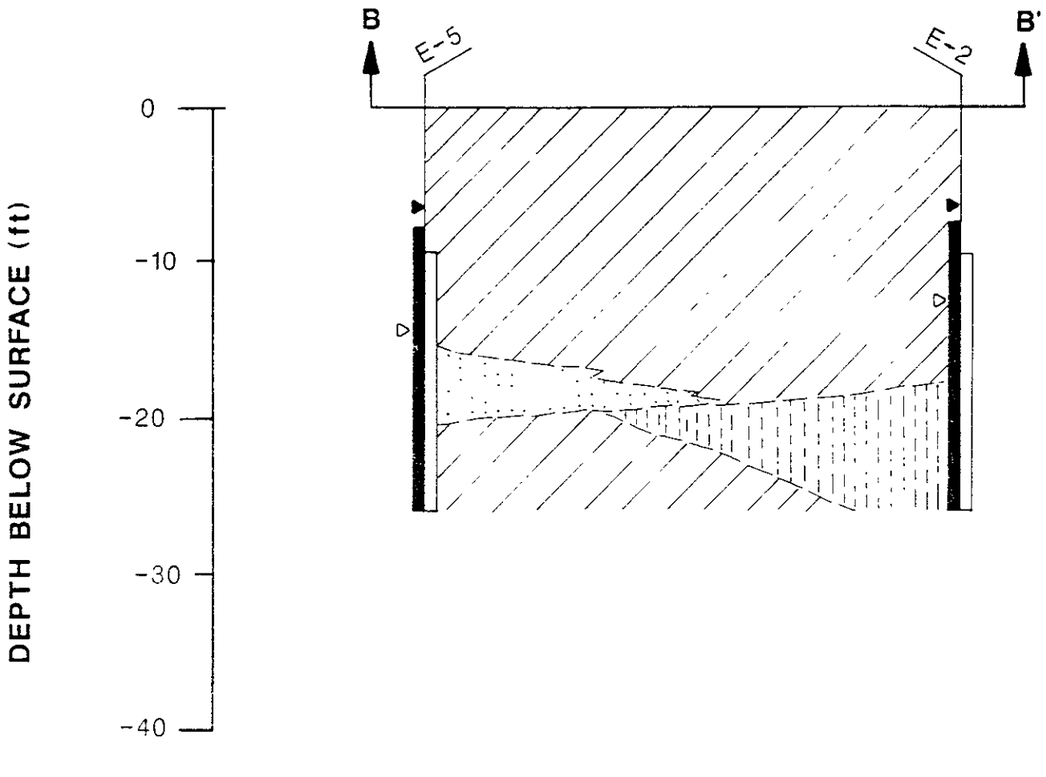
NOTE.

Stratigraphic contact lines represent approximate boundaries between soil types and the transitions may by gradual.

EXCELTECH

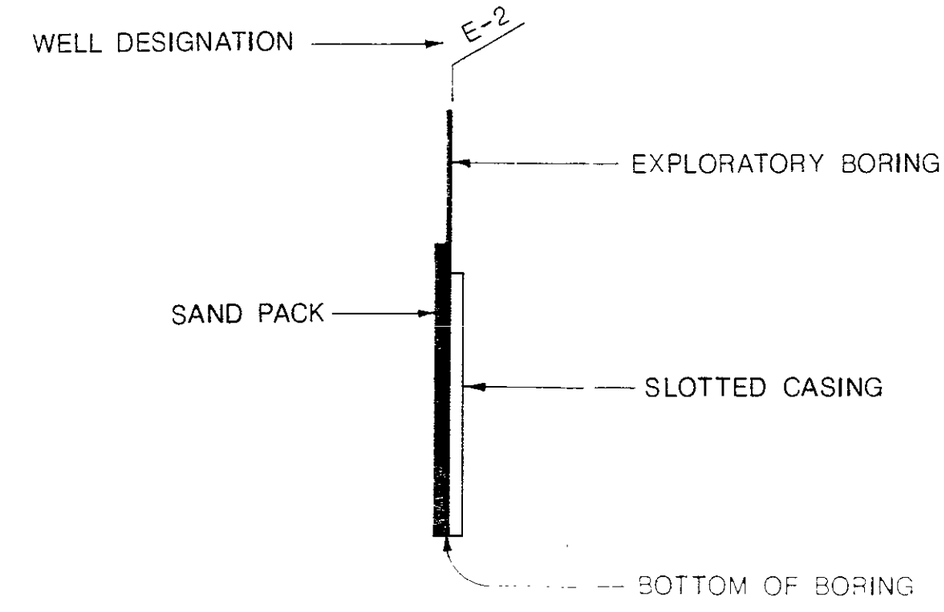
GEOLOGIC CROSS SECTION A-A'

CROWN METAL MFG-PACIFIC INTL' STEEL	1587	
16525 WORTHLEY DRIVE	SCALE 1"=10'	DRAWN BY MH
SAN LORENZO, CALIFORNIA	DATE 7/24/87	DRAWING # 2



KEY

- Clay-CL
- Sand-SP
- Silt-ML
- Approximate first encountered groundwater level
- Approximate stabilized groundwater level



NOTE:

Stratigraphic contact lines represent approximate boundaries between soil types and the transitions may be gradual.

EXCELTECH

GEOLOGIC CROSS SECTION B-B'		
CROWN METAL MFG-PACIFIC INTL' STEEL	JOB # 1587	
16525 WORTHLEY DRIVE	SCALE 1"=10'	DRAWN BY MH
SAN LORENZO, CALIFORNIA	DATE 7/27/87	DRAWING # 3

APPENDIX A

LOGS OF EXPLORATORY BORINGS

WELL DETAILS

EXCELTECH

KEY TO EXPLORATORY BORING LOGS

■	**Soil Sample Location**
▽	**First Encountered Ground Water Level**
▼	**Piezometric Ground Water Level**
□	**Disturbed or Bag Soil Sample**
2.5YR 6/2	**Soil Color according to Munsell Soil Color Charts. (1975 Edition)**
Penetration	**Sample drive hammer weight–140 pounds falling 30 inches. Blows required to drive sampler 1 foot are indicated on the logs.**

Unified Soil Classification System

Compiled by B. W. Pipkin, University of Southern California

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE-GRAINED SOILS More than half of material is larger than no. 200 sieve size	GRAVELS More than half of coarse fraction is larger than no. 4 sieve size	Clean gravels	GW	Well-graded gravels, gravel-sand mixtures little or no fines
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines
		Gravels with fines	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS More than half of coarse fraction is smaller than no. 4 sieve size	Clean sands	SW	Well-graded sands, gravelly sands, little or no fines
			SP	Poorly graded sands, gravelly sands little or no fines
		Sands with fines	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS More than half of material is smaller than no. 200 sieve size.	SILTS AND CLAYS	Low liquid limit	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 silty clays of low plasticity
		High liquid limit	MH	Inorganic silts micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts
Highly organic soils			Pt	Peat and other highly organic silts

NOTES:

1 Boundary Classification. Soils possessing characteristics of two groups are designated by combinations of group symbols. For example, GW-GC, well-graded gravel-sand mixture with clay binder.

2 All sieve sizes on this chart are U.S. Standard.

3 The terms "silt" and "clay" are used respectively to distinguish materials exhibiting lower plasticity from those with higher plasticity. The minus no. 200 sieve material is silt if the liquid limit and plasticity index plot below the "A" line on the plasticity chart (next page) and is clay if the liquid limit and plasticity index plot above the "A" line on the chart.

4 For a complete description of the Unified Soil Classification System, see "Technical Memorandum No. 3-357," prepared for Office, Chief of Engineers, by Waterways Equipment Station, Vicksburg, Mississippi, March 1953. (See also Data Sheet 17.)

EXCELTECH

PROJECT NAME: Crown Metal Mfg.

PROJECT #: 1587G

BORING #: 1

DATE DRILLED: 6/24/87

LOGGED BY: MDH

EXPLORATORY BORING LOG

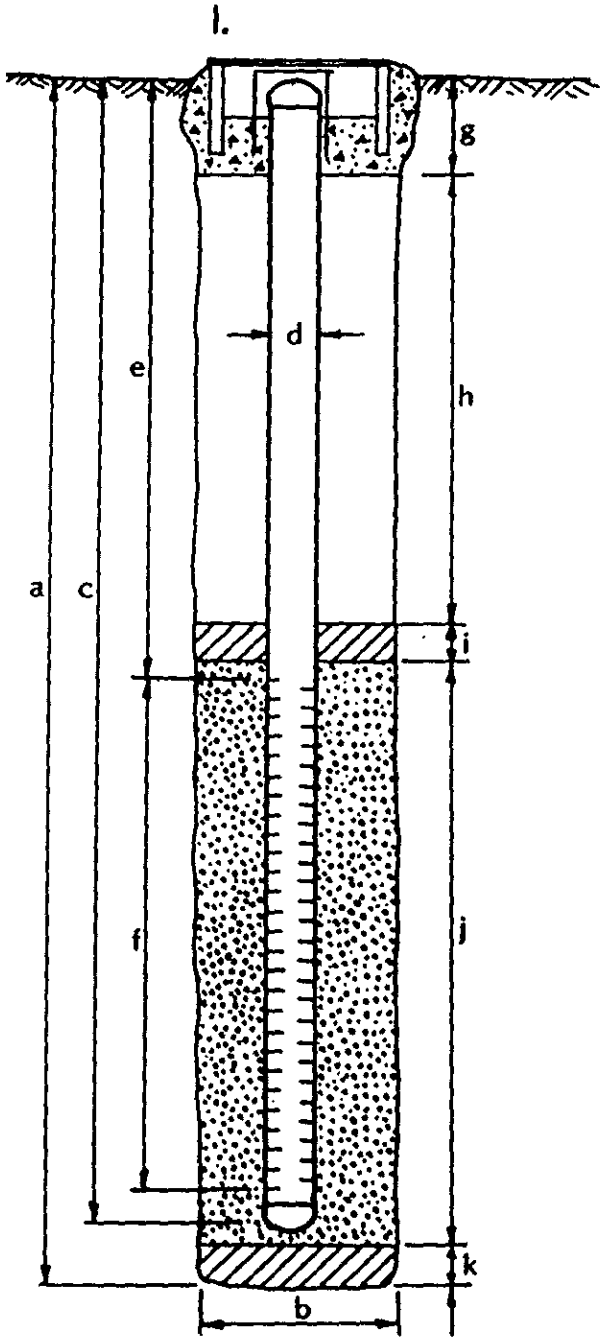
DEPTH (ft.)	SAMPLE No.	BLOWS/FOOT 350 ft-lbs.	WATER LEVEL	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	PRODUCT ODOR	OVA READING ppm	
1-4					Hard packed road surface			
5-9	1-01			ML	SILT, medium plasticity, low dry strength, slow dilatancy, low toughness, dark brown, no product odor, moist			
10-13	1-02			CL	CLAY, medium plasticity, low dry strength, slow dilatancy, medium toughness, tannish grey, no product odor, moist			
14-19	1-03		▼	CL	CLAY, w/15% fine subrounded sand, low plasticity, low dry strength, slow dilatancy, medium toughness, tannish brown, no product odor, wet			
20-24	1-04			CL	CLAY, w/15% fine subangular sand, low plasticity, medium dry strength, slow dilatancy, medium toughness, brown, no product odor, wet			
25-26	1-05			ML	SILT, low plasticity, low dry strength, no dilatancy, low toughness, tannish brown, no product odor, moist			
					TD 26.5'			

Monitoring Well Detail

6/24/87

PROJECT NUMBER 1587
PROJECT NAME Crown Metal Mfg.
COUNTY Alameda
WELL PERMIT NO. 87150

BORING / WELL NO. MW-1
TOP OF CASING ELEV. 8.86
GROUND SURFACE ELEV. 9.40
DATUM N.G.S.



EXPLORATORY BORING

a. Total depth 26.5 ft.
b. Diameter 8 in.
Drilling method Auger

WELL CONSTRUCTION

c. Casing length 25 ft.
Material PVC Sch 40
d. Diameter 2 in.
e. Depth to top perforations 15 ft.
f. Perforated length 10 ft.
Perforated interval from 15 to 25 ft.
Perforation type Slotted
Perforation size .01
g. Surface seal 2 ft.
Seal material Neat Cement
h. Backfill 11 ft.
Backfill material Cement/Bentonite Slurry
i. Seal 1 ft.
Seal material Valclay 1/2"pellets
j. Gravel pack 12 ft.
Pack material #2 Sand
k. Bottom seal ft.
Seal material None
l.

EXCELTECH

PROJECT NAME: Crown Metal Mfg.

PROJECT #: 1587G

BORING #: 2

DATE DRILLED: 6/24/87

LOGGED BY: MDH

EXPLORATORY BORING LOG

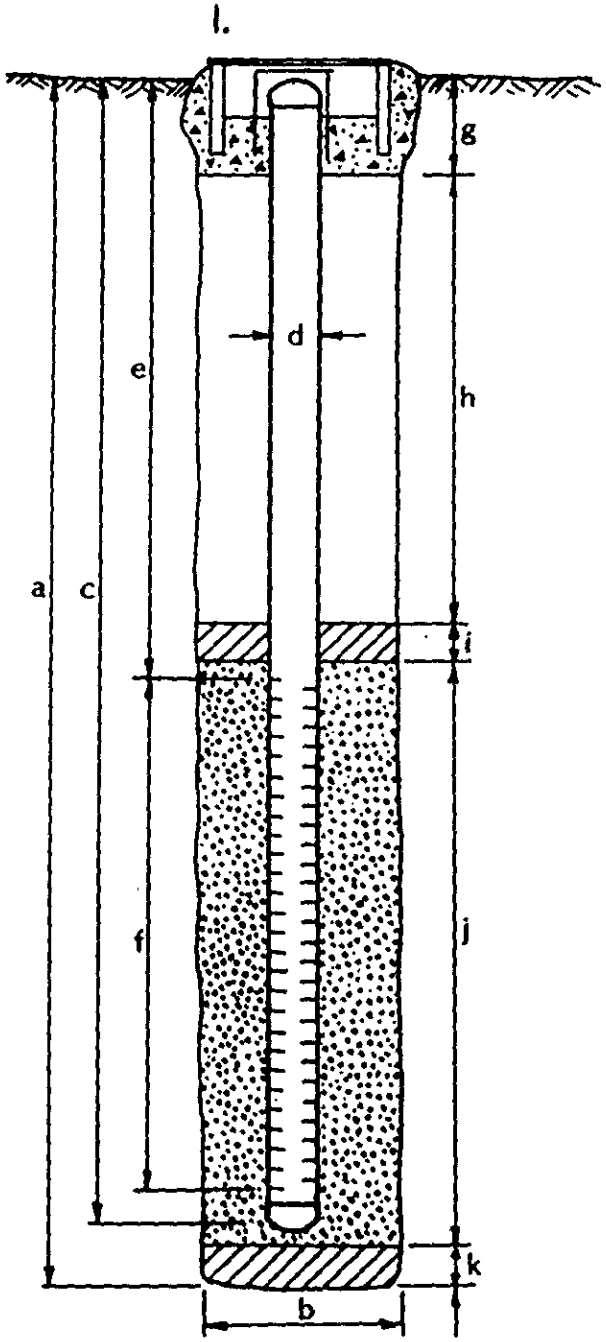
DEPTH (ft.)	SAMPLE No.	BLOWS/FOOT 350 ft-lbs.	WATER LEVEL	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	PRODUCT ODOR	OVA READING ppm	
1-4					Hard-packed road surface, product odor			
5-9	2-01	3		CL	CLAY, medium plasticity, high dry strength, no dilatancy, medium toughness, dark grey, no product odor, moist, fill material			
10-14	2-02	4		CL	CLAY, medium plasticity, high dry strength, no dilatancy, medium toughness, light grey with brown streaks, no product odor, moist			
15-19	2-03	12	▽	CL	CLAY w/10% fine to coarse subrounded sand, medium plasticity, high dry strength, no dilatancy, medium toughness, brownish dark grey, no product odor, wet			
20-24	2-04	4		ML	SILT, medium plasticity, medium dry strength, slow dilatancy, low toughness, brown, no product odor, moist			
25-26	2-05	7						
					TD 26.5'			

Monitoring Well Detail

6/24/87

PROJECT NUMBER 1587
PROJECT NAME Crown Metal Mfg.
COUNTY Alameda
WELL PERMIT NO. 87150

BORING / WELL NO. MW-2
TOP OF CASING ELEV. 9.17
GROUND SURFACE ELEV. 9.59
DATUM N.G.S.



EXPLORATORY BORING

a. Total depth 27 ft.
b. Diameter 8 in.
Drilling method Auger

WELL CONSTRUCTION

c. Casing length 25.5 ft.
Material PVC Sch 40
d. Diameter 2 in.
e. Depth to top perforations 9.5 ft.
f. Perforated length 16 ft.
Perforated interval from 9.5 to 25.5 ft.
Perforation type Slotted
Perforation size .01
g. Surface seal 2 ft.
Seal material Neat Cement
h. Backfill 4 ft.
Backfill material Bentonite Slurry
i. Seal 2 ft.
Seal material Volclay Pellets 1/2"
j. Gravel pack 17.5 ft.
Pack material #2 Sand
k. Bottom seal ft.
Seal material
l.

EXCELTECH

PROJECT NAME: Crown Metal Mfg.

PROJECT #: 1587G

BORING #: 3

DATE DRILLED: 6/25/87

LOGGED BY: MDH

EXPLORATORY BORING LOG

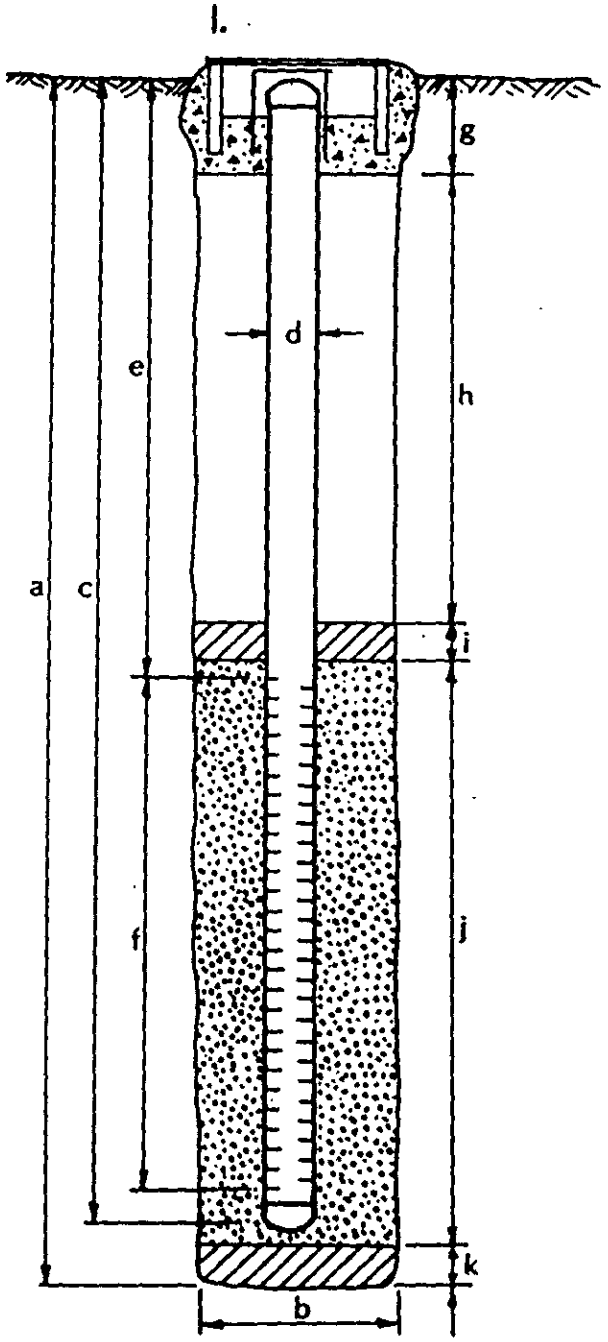
DEPTH (ft.)	SAMPLE No.	BLOWS/FOOT 350 ft-lbs.	WATER LEVEL	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	PRODUCT ODOR	OVA READING ppm	
1-4					Surfaced discolored, steam cleaning area			
5-9	3-01	3		CL	CLAY w/15% fine to coarse subrounded sand, medium plasticity, medium dry strength, no dilatancy, medium toughness, tannish grey, no product odor, moist			
10-14	3-02	8		CL	CLAY, medium plasticity, medium dry strength, no dilatancy, medium toughness, tannish grey, no product odor, moist			
15-19	3-03	15		SC	CLAYEY SAND, 50% fine to coarse, subrounded sand, 30%, fine subrounded sand, medium plasticity, medium dry strength, slow dilatancy, low toughness, brownish grey, no product odor, wet			
20-24	3-04	4		ML	SILT, medium plasticity, medium dry strength, no dilatancy, medium toughness, brown, no product odor, moist			
25-26	3-05	11						
					TD 26.5'			

Monitoring Well Detail

6/25/87

PROJECT NUMBER 1587
PROJECT NAME Crown Metal Mfg.
COUNTY Alameda
WELL PERMIT NO. 87150

BORING / WELL NO. MW-3
TOP OF CASING ELEV. 8.54
GROUND SURFACE ELEV. 9.05
DATUM N.G.S.



EXPLORATORY BORING

a. Total depth 26.5 ft.
b. Diameter 8 in.
Drilling method Auger

WELL CONSTRUCTION

c. Casing length 25 ft.
Material PVC Sch 40
d. Diameter 2 in.
e. Depth to top perforations 15 ft.
f. Perforated length 10 ft.
Perforated interval from 10 to 25 ft.
Perforation type Slotted
Perforation size .01
g. Surface seal 2 ft.
Seal material Neat Cement
h. Backfill 4 ft.
Backfill material Bentonite Slurry
i. Seal 2 ft.
Seal material Volclay pellet 1/2"
j. Gravel pack 17 ft.
Pack material #2 Sand
k. Bottom seal ____ ft.
Seal material ____
l. ____

EXCELTECH

PROJECT NAME: Crown Metal Mfg.

PROJECT #: 1587G

BORING #: 4

DATE DRILLED: 6/25/87

LOGGED BY: MDH

EXPLORATORY BORING LOG

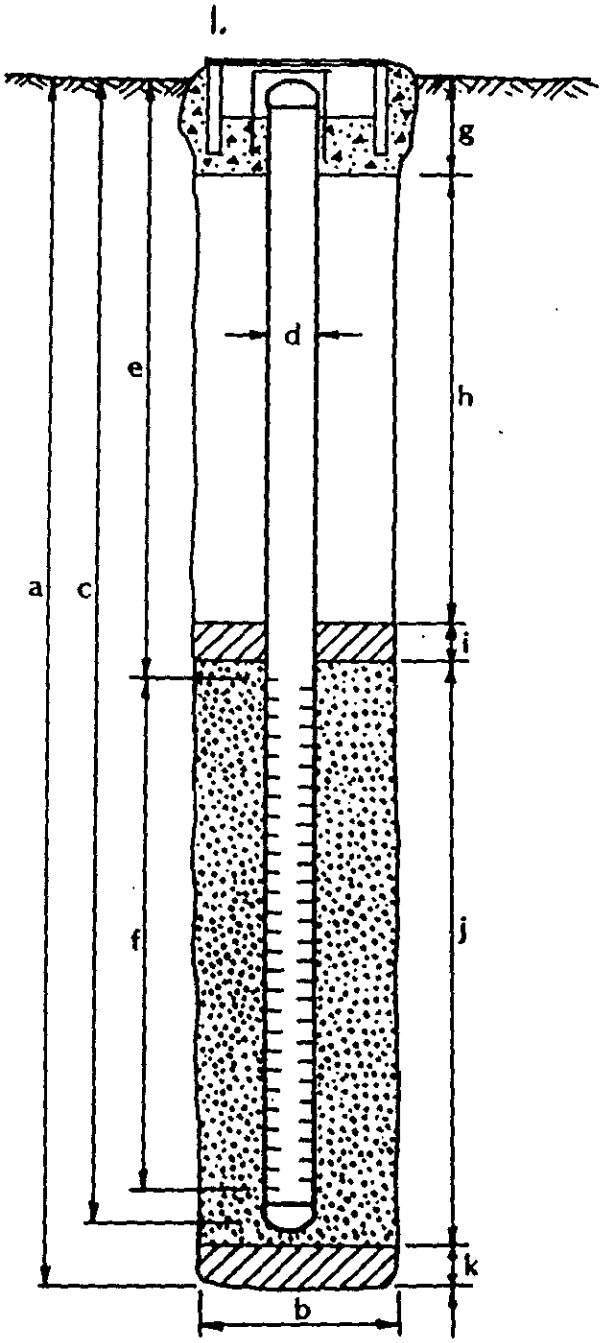
DEPTH (ft.)	SAMPLE No.	BLOWS/FOOT 350 ft-lbs.	WATER LEVEL	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	PRODUCT ODOR	OVA READING ppm	
1-4					Hard packed road surface			
5	4-01	3		CL	CLAY, medium plasticity, high dry strength, no dilatancy, medium toughness, dark grey, no product odor, moist			
10	4-02	5		CL	CLAY, medium plasticity, high dry strength, no dilatancy, medium toughness, medium grey, no product odor, moist			
15	4-03	10	▽	CL	CLAY w/10% fine to coarse subrounded sand, medium plasticity, high dry strength, no dilatancy, medium toughness, tannish brown, no product odor, wet			
20	4-04	9		CL	CLAY w/5% medium subrounded sand, medium plasticity, high dry strength, no dilatancy, medium toughness, medium grey, no product odor, moist			
25	4-05	9		ML	SILT, medium plasticity, medium dry strength, slow dilatancy, low toughness, grey no product odor, moist			
26					TD 26.5'			

Monitoring Well Detail

6/25/87

PROJECT NUMBER 1587
PROJECT NAME Crown Metal Mfg.
COUNTY Alameda
WELL PERMIT NO. 87150

BORING / WELL NO. MW-4
TOP OF CASING ELEV. 8.48
GROUND SURFACE ELEV. 8.92
DATUM N.G.S.



EXPLORATORY BORING

a. Total depth 26.5 ft.
b. Diameter 8 in.
Drilling method Auger

WELL CONSTRUCTION

c. Casing length 25 ft.
Material PVC Sch 40
d. Diameter 2 in.
e. Depth to top perforations 15 ft.
f. Perforated length 10 ft.
Perforated interval from 15 to 25 ft.
Perforation type Slotted
Perforation size .01
g. Surface seal 2 ft.
Seal material Neat Cement
h. Backfill 6.5 ft.
Backfill material Bentonite slurry
i. Seal 4 ft.
Seal material Volclay pellets 1/2"
j. Gravel pack 12.5 ft.
Pack material #2 Sand
k. Bottom seal ____ ft.
Seal material ____
l. ____

EXCELTECH

PROJECT NAME: Crown Metal Mfg.

PROJECT #: 1587

BORING #: 5

DATE DRILLED: 6/24/87

LOGGED BY: MDH

EXPLORATORY BORING LOG

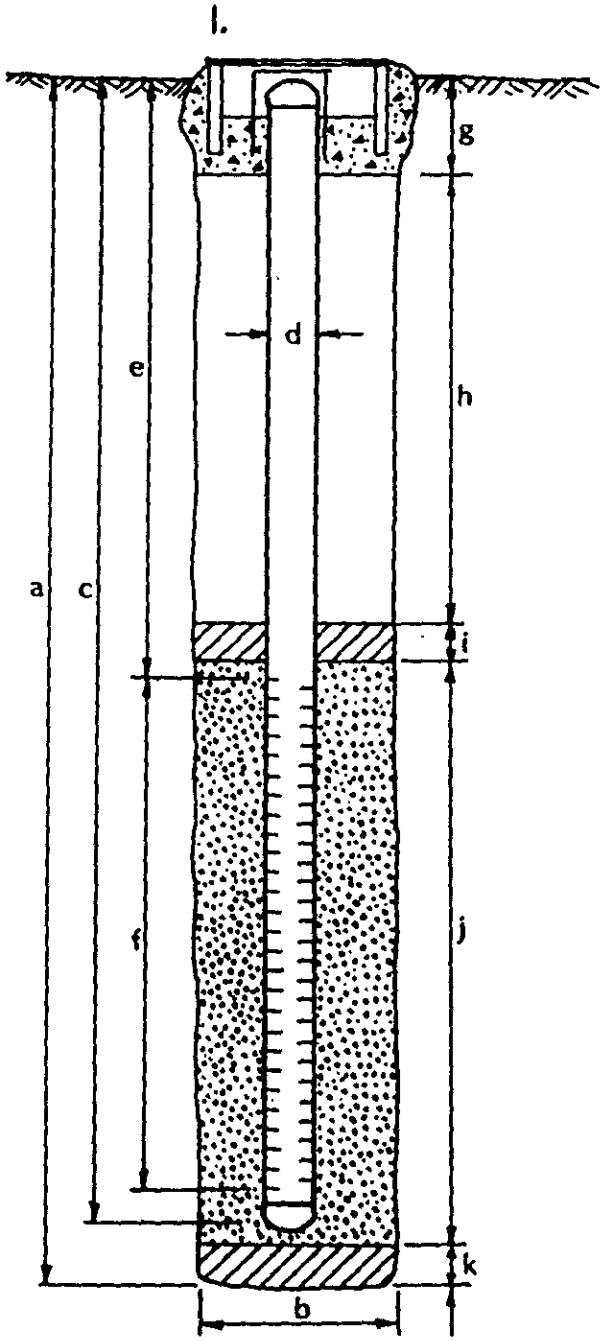
DEPTH (ft.)	SAMPLE No.	BLOWS/FOOT 350 ft-lbs.	WATER LEVEL	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	PRODUCT ODOR	OVA READING ppm	
1-4					Hard packed road surface			
5	S-01	3		CL	CLAY, medium plasticity, low dry strength, no dilatancy, low toughness, brown, no product odor, dry			
10	S-02	8	▽	CL	CLAY w/10% fine to coarse subrounded sand, medium plasticity, low dry strength, low dilatancy, medium toughness, tannish brown, no product odor, moist			
15	S-03	12		CL	CLAY w/20% medium to coarse subrounded sand, medium plasticity, low dry strength, low dilatancy, medium toughness, tan brown, no product odor, moist			
20	S-04	6		SP	POOR GRADED SAND, medium subangular sand, low plasticity, low dry strength, high dilatancy, low toughness, light brown, no product odor, wet			
25	S-05	15		CL	LEAN CLAY w/5% medium subrounded sand, medium plasticity, high dry strength, no dilatancy, medium toughness, grey, no product odor, moist			
26					TD 26.5'			

Monitoring Well Detail

6/24/87

PROJECT NUMBER 1587
PROJECT NAME Crown Metal Mfg.
COUNTY Alameda
WELL PERMIT NO. 87150

BORING / WELL NO. MW-5
TOP OF CASING ELEV. 9.11
GROUND SURFACE ELEV. 9.6
DATUM N.G.S.



EXPLORATORY BORING

a. Total depth 26.5 ft.
b. Diameter 8 in.
Drilling method Auger

WELL CONSTRUCTION

c. Casing length 25 ft.
Material PVC Sch 40
d. Diameter 2 in.
e. Depth to top perforations 10 ft.
f. Perforated length 15 ft.
Perforated interval from 10 to 25 ft.
Perforation type Slotted
Perforation size .01
g. Surface seal 2 ft.
Seal material Neat Cement
h. Backfill 5 ft.
Backfill material Bentonite slurry
i. Seal 1 ft.
Seal material Volclay pellets 1/2"
j. Gravel pack 17.5 ft.
Pack material #2 Sand
k. Bottom seal ____ ft.
Seal material ____
l. ____

EXCELTECH

EXCELTECH

PROJECT NAME: Crown Metal Mfg.

PROJECT #: 1587

BORING #: 6

DATE DRILLED: 6/26/87

LOGGED BY: MDH

EXPLORATORY BORING LOG

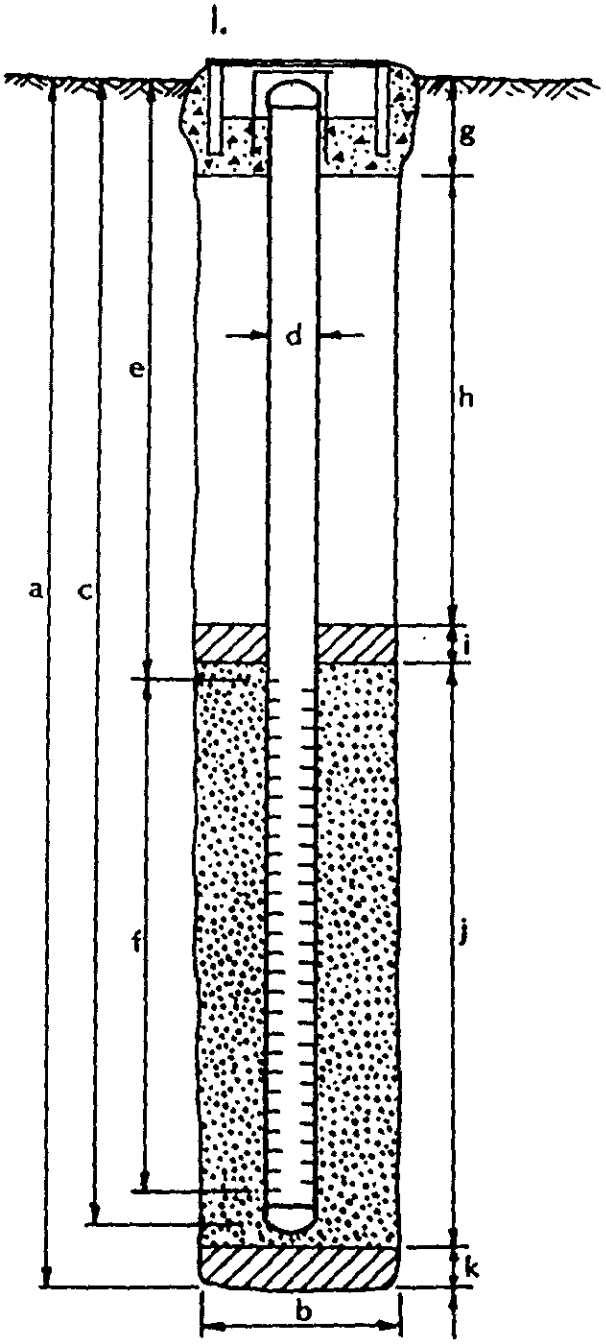
DEPTH (ft.)	SAMPLE No.	BLOWS/FOOT 350 ft-lbs.	WATER LEVEL	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	PRODUCT ODOR	OVA READING ppm	
1-4					Hard packed road surface			
5-9	6-01	3		CL	CLAY w/15% fine to coarse sand, medium plasticity, medium dry strength, no dilatancy, medium toughness tannish grey, no product odor, moist			
10-14	6-02	4	▽					
15-19	6-03	14		CL	LEAN CLAY, medium plasticity, medium dry strength, no dilatancy, medium toughness, tannish grey, no product odor, moist			
20-24	6-04	9		SC	CLAYEY SAND, 40% fine to coarse subrounded sand, 40% fine subrounded sand, medium plasticity, medium dry strength, slow dilatancy, low toughness, brownish grey, no product odor, wet			
25-26	6-05	17		CL	LEAN CLAY w/5% medium subrounded sand, medium plasticity, high dry strength, no dilatancy, medium toughness, grey, no product odor, moist			
					TD 26.5'			

Monitoring Well Detail

6/26/87

PROJECT NUMBER 1587
PROJECT NAME Crown Metal Mfg.
COUNTY Alameda
WELL PERMIT NO. 87150

BORING / WELL NO. MW-6
TOP OF CASING ELEV. 9.19
GROUND SURFACE ELEV. 9.70
DATUM N.G.S.



EXPLORATORY BORING

a. Total depth 26.5 ft.
b. Diameter 8 in.
Drilling method Auger

WELL CONSTRUCTION

c. Casing length 25 ft.
Material PVC Sch 40
d. Diameter 2 in.
e. Depth to top perforations 10 ft.
f. Perforated length ____ ft.
Perforated interval from 15 to 25 ft.
Perforation type Slotted
Perforation size .01
g. Surface seal 2 ft.
Seal material Neat Cement
h. Backfill 10.5 ft.
Backfill material Bentonite slurry
i. Seal 2 ft.
Seal material Volclay pellets 1/2"
j. Gravel pack 12 ft.
Pack material #2 Sand
k. Bottom seal ____ ft.
Seal material ____
l. ____

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Redwood City, CA 94063 • (415) 364-9222

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41638 Christy Street
Fremont, CA 94538
Attn: David Blunt/Mark Hamilton

Date Sampled: 06-24-87
Date Received: 06-26-87
Date Extracted: 07-10-87
Date Reported: 07-16-87

Project #1587

Sample Number

7062272

Sample Description

Crown Metal Manufacturing
MW-1, 1-02

PRIORITY POLLUTANTS

VOLATILE ORGANIC COMPOUNDS

results in ppb

Acrolein	< 10,000	trans-1,2-Dichloroethene	< 50
Acrylonitrile	< 10,000	1,2-Dichloropropane	< 50
Benzene	< 50	1,3-Dichloropropene	< 50
Bromomethane	< 50	Ethylbenzene	< 50
Bromodichloromethane	< 50	Methylene chloride	< 50
Bromoform	< 50	1,1,2,2-Tetrachloroethane	< 50
Carbon tetrachloride	< 50	Tetrachloroethene	< 50
Chlorobenzene	< 50	1,1,1-Trichloroethane	< 50
Chloroethane	< 50	1,1,2-Trichloroethane	< 50
2-Chloroethylvinyl ether	< 50	Trichloroethene	< 50
Chloroform	< 50	Toluene	< 50
Chloromethane	< 50	Vinyl chloride	< 50
Dibromochloromethane	< 50	1,2-Dichlorobenzene	< 50
1,1-Dichloroethane	< 50	1,3-Dichlorobenzene	< 50
1,2-Dichloroethane	< 50	1,4-Dichlorobenzene	< 50
1,1-Dichloroethene	< 50		

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

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NOTE: Methods 8010 & 8020 of the EPA were used for this analysis.

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Date Sampled: 06-24-87
Date Received: 06-26-87
Date Reported: 07-16-87

Project #1587

Sample Number	Sample Description
7062272	MW- 1, 1-02 Crown Metal Manufacturing

ANALYSIS

	Detection Limit ppm	Sample Results ppm
Total Hydrocarbons as Gasoline	1	7.5
Benzene	0.1	< 0.1
Toluene	0.1	< 0.1
Xylenes	0.1	1.3

NOTE: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

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Date Sampled: 06-24-87
Date Recieved: 06-26-87
Date Reported: 07-16-87

Project #1587

Sample Number	Sample Description
7062272	MW-1, 1-02 Crown Metal Manufacturing

ANALYSIS

Arsenic, mg/kg	13
Cadmium, mg/kg	1.4
Chromium, mg/kg	42
Lead, mg/kg	7.0
pH	7.7

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Date Sampled: 06-24-87
Date Received: 06-26-87
Date Extracted: 07-10-87
Date Reported: 07-16-87

Project #1587

Sample Number

7062273

Sample Description

Crown Metal Manufacturing
MW-1, 1-03

PRIORITY POLLUTANTS

VOLATILE ORGANIC COMPOUNDS
results in ppb

Acrolein	< 10,000	trans-1,2-Dichloroethene	< 50
Acrylonitrile	< 10,000	1,2-Dichloropropane	< 50
Benzene	< 50	1,3-Dichloropropene	< 50
Bromomethane	< 50	Ethylbenzene	< 50
Bromodichloromethane	< 50	Methylene chloride	< 50
Bromoform	< 50	1,1,2,2-Tetrachloroethane	< 50
Carbon tetrachloride	< 50	Tetrachloroethene	< 50
Chlorobenzene	< 50	1,1,1-Trichloroethane	< 50
Chloroethane	< 50	1,1,2-Trichloroethane	< 50
2-Chloroethylvinyl ether	< 50	Trichloroethene	< 50
Chloroform	< 50	Toluene	< 50
Chloromethane	< 50	Vinyl chloride	< 50
Dibromochloromethane	< 50	1,2-Dichlorobenzene	< 50
1,1-Dichloroethane	< 50	1,3-Dichlorobenzene	< 50
1,2-Dichloroethane	< 50	1,4-Dichlorobenzene	< 50
1,1-Dichloroethene	< 50		

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NOTE: Methods 8010 & 8020 of the EPA were used for this analysis.

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Date Sampled: 06-24-87
Date Received: 06-26-87
Date Reported: 07-16-87

Project #1587

Sample Number	Sample Description
7062273	MW- 1, 1-03 Crown Metal Manufacturing

ANALYSIS

	Detection Limit ppm	Sample Results ppm
Total Hydrocarbons as Gasoline	1	28
Benzene	0.1	< 0.1
Toluene	0.1	< 0.1
Xylenes	0.1	3.6

NOTE: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

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Date Sampled: 06-24-87
Date Recieved: 06-26-87
Date Reported: 07-16-87

Project #1587

Sample Number	Sample Description
7062273	MW-1, 1-03 Crown Metal Manufacturing

ANALYSIS

Arsenic, mg/kg	8.6
Cadmium, mg/kg	1.2
Chromium, mg/kg	39
Lead, mg/kg	5.6
pH	8.1

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Date Sampled: 06-24-87
Date Received: 06-26-87
Date Extracted: 07-10-87
Date Reported: 07-16-87

Project #1587

Sample Number

7062274

Sample Description

Crown Metal Manufacturing
MW-2, 2-02

PRIORITY POLLUTANTS

VOLATILE ORGANIC COMPOUNDS
results in ppb

Acrolein	< 10,000	trans-1,2-Dichloroethene	< 50
Acrylonitrile	< 10,000	1,2-Dichloropropane	< 50
Benzene	< 50	1,3-Dichloropropene	< 50
Bromomethane	< 50	Ethylbenzene	< 50
Bromodichloromethane	< 50	Methylene chloride	< 50
Bromoform	< 50	1,1,2,2-Tetrachloroethane	< 50
Carbon tetrachloride	< 50	Tetrachloroethene	< 50
Chlorobenzene	< 50	1,1,1-Trichloroethane	< 50
Chloroethane	< 50	1,1,2-Trichloroethane	< 50
2-Chloroethylvinyl ether	< 50	Trichloroethene	< 50
Chloroform	< 50	Toluene	< 50
Chloromethane	< 50	Vinyl chloride	< 50
Dibromochloromethane	< 50	1,2-Dichlorobenzene	< 50
1,1-Dichloroethane	< 50	1,3-Dichlorobenzene	< 50
1,2-Dichloroethane	< 50	1,4-Dichlorobenzene	< 50
1,1-Dichloroethene	< 50		

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NOTE: Methods 8010 & 8020 of the EPA were used for this analysis.

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Date Sampled: 06-24-87
Date Received: 06-26-87
Date Reported: 07-16-87

Project #1587

Sample Number	Sample Description
7062274	MW-2, 2-02 Crown Metal Manufacturing

ANALYSIS

	Detection Limit ppm	Sample Results ppm
Total Hydrocarbons as Gasoline	1	8.4
Benzene	0.1	< 0.1
Toluene	0.1	< 0.1
Xylenes	0.1	2.2

NOTE: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

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Attn: David Blunt/Mark Hamilton

Date Sampled: 06-24-87
Date Recieved: 06-26-87
Date Reported: 07-16-87

Project #1587

Sample Number	Sample Description
7062274	MW- 2, 2-02 Crown Metal Manufacturing

ANALYSIS

Arsenic, mg/kg	13
Cadmium, mg/kg	0.60
Chromium, mg/kg	44
Lead, mg/kg	7.6
pH	9.2

SEQUOIA ANALYTICAL LABORATORY

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Attn: David Blunt/Mark Hamilton

Date Sampled: 06-24-87
Date Received: 06-26-87
Date Extracted: 07-10-87
Date Reported: 07-16-87

Project #1587

Sample Number

7062275

Sample Description

Crown Metal Manufacturing
MW-2, 2-03

PRIORITY POLLUTANTS

VOLATILE ORGANIC COMPOUNDS
results in ppb

Acrolein	< 10,000	trans-1,2-Dichloroethene	< 50
Acrylonitrile	< 10,000	1,2-Dichloropropane	< 50
Benzene	340	1,3-Dichloropropene	< 50
Bromomethane	< 50	Ethylbenzene	< 50
Bromodichloromethane	< 50	Methylene chloride	< 50
Bromoform	< 50	1,1,2,2-Tetrachloroethane	< 50
Carbon tetrachloride	< 50	Tetrachloroethene	< 50
Chlorobenzene	< 50	1,1,1-Trichloroethane	< 50
Chloroethane	< 50	1,1,2-Trichloroethane	< 50
2-Chloroethylvinyl ether	< 50	Trichloroethene	< 50
Chloroform	< 50	Toluene	470
Chloromethane	< 50	Vinyl chloride	< 50
Dibromochloromethane	< 50	1,2-Dichlorobenzene	< 50
1,1-Dichloroethane	< 50	1,3-Dichlorobenzene	< 50
1,2-Dichloroethane	< 50	1,4-Dichlorobenzene	< 50
1,1-Dichloroethene	< 50		

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NOTE: Methods 8010 & 8020 of the EPA were used for this analysis.

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Date Sampled: 06-24-87
Date Received: 06-26-87
Date Reported: 07-16-87

Project #1587

Sample Number	Sample Description
7062275	MW- 2, 2-03 Crown Metal Manufacturing

ANALYSIS

	Detection Limit ppm	Sample Results ppm
Total Hydrocarbons as Gasoline	1	10
Benzene	0.1	0.34
Toluene	0.1	0.47
Xylenes	0.1	1.5

NOTE: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

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Date Sampled: 06-24-87
Date Recieved: 06-26-87
Date Reported: 07-16-87

Project #1587

Sample Number	Sample Description
7062275	MW-2, 2-03 Crown Metal Manufacturing

ANALYSIS

Arsenic, mg/kg	9.9
Cadmium, mg/kg	1.0
Chromium, mg/kg	44
Lead, mg/kg	5.2
pH	8.2

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Date Sampled: 06-25-87
Date Received: 06-26-87
Date Extracted: 07-10-87
Date Reported: 07-16-87

Project #1587

Sample Number: 7062276

Sample Description: Crown Metal Manufacturing
MW-3, 3-02

PRIORITY POLLUTANTS

VOLATILE ORGANIC COMPOUNDS

results in ppb

Acrolein	< 10,000	trans-1,2-Dichloroethene	< 50
Acrylonitrile	< 10,000	1,2-Dichloropropane	< 50
Benzene	140	1,3-Dichloropropene	< 50
Bromomethane	< 50	Ethylbenzene	< 50
Bromodichloromethane	< 50	Methylene chloride	< 50
Bromoform	< 50	1,1,2,2-Tetrachloroethane	< 50
Carbon tetrachloride	< 50	Tetrachloroethene	< 50
Chlorobenzene	< 50	1,1,1-Trichloroethane	< 50
Chloroethane	< 50	1,1,2-Trichloroethane	< 50
2-Chloroethylvinyl ether	< 50	Trichloroethene	< 50
Chloroform	< 50	Toluene	170
Chloromethane	< 50	Vinyl chloride	< 50
Dibromochloromethane	< 50	1,2-Dichlorobenzene	< 50
1,1-Dichloroethane	< 50	1,3-Dichlorobenzene	< 50
1,2-Dichloroethane	< 50	1,4-Dichlorobenzene	< 50
1,1-Dichloroethene	< 50		

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NOTE: Methods 8010 & 8020 of the EPA were used for this analysis.

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Date Reported: 07-16-87

Project #1587

Sample Number	Sample Description
7062276	MW-3, 3-02 Crown Metal Manufacturing

ANALYSIS

	Detection Limit ppm	Sample Results ppm
Total Hydrocarbons as Gasoline	1	13
Benzene	0.1	0.14
Toluene	0.1	0.17
Xylenes	0.1	1.4

NOTE: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

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Date Recieved: 06-26-87
Date Reported: 07-16-87

Project #1587

Sample Number	Sample Description
7062276	MW-3, 3-02 Crown Metal Manufacturing

ANALYSIS

Arsenic, mg/kg	15
Cadmium, mg/kg	0.90
Chromium, mg/kg	44
Lead, mg/kg	7.6
pH	9.9

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Date Reported: 07-16-87

Project #1587

Sample Number

7062277

Sample Description

Crown Metal Manufacturing
MW-3, 3-03

PRIORITY POLLUTANTS

VOLATILE ORGANIC COMPOUNDS
results in ppb

Acrolein	< 10,000	trans-1,2-Dichloroethene	< 50
Acrylonitrile	< 10,000	1,2-Dichloropropane	< 50
Benzene	150	1,3-Dichloropropene	< 50
Bromomethane	< 50	Ethylbenzene	< 50
Bromodichloromethane	< 50	Methylene chloride	< 50
Bromoform	< 50	1,1,2,2-Tetrachloroethane	< 50
Carbon tetrachloride	< 50	Tetrachloroethene	< 50
Chlorobenzene	< 50	1,1,1-Trichloroethane	< 50
Chloroethane	< 50	1,1,2-Trichloroethane	< 50
2-Chloroethylvinyl ether	< 50	Trichloroethene	< 50
Chloroform	< 50	Toluene	170
Chloromethane	< 50	Vinyl chloride	< 50
Dibromochloromethane	< 50	1,2-Dichlorobenzene	< 50
1,1-Dichloroethane	< 50	1,3-Dichlorobenzene	< 50
1,2-Dichloroethane	< 50	1,4-Dichlorobenzene	< 50
1,1-Dichloroethene	< 50		

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NOTE: Methods 8010 & 8020 of the EPA were used for this analysis.

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Date Sampled: 06-25-87
Date Received: 06-26-87
Date Reported: 07-16-87

Project #1587

Sample Number	Sample Description
7062277	MW-3, 3-03 Crown Metal Manufacturing

ANALYSIS

	Detection Limit ppm	Sample Results ppm
Total Hydrocarbons as Gasoline	1	4.1
Benzene	0.1	0.15
Toluene	0.1	0.17
Xylenes	0.1	0.31

NOTE: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

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Date Recieved: 06-26-87
Date Reported: 07-16-87

Project #1587

Sample Number	Sample Description
7062277	MW- 3, 3-03 Crown Metal Manufacturing

ANALYSIS

Arsenic, mg/kg	16
Cadmium, mg/kg	0.80
Chromium, mg/kg	45
Lead, mg/kg	7.0
pH	7.6

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Date Received: 06-26-87
Date Extracted: 07-10-87
Date Reported: 07-16-87

Project #1587

Sample Number

7062278

Sample Description

Crown Metal Manufacturing
MW-4, 4-02

PRIORITY POLLUTANTS

VOLATILE ORGANIC COMPOUNDS
results in ppb

Acrolein	< 10,000	trans-1,2-Dichloroethene	< 50
Acrylonitrile	< 10,000	1,2-Dichloropropane	< 50
Benzene	< 50	1,3-Dichloropropene	< 50
Bromomethane	< 50	Ethylbenzene	< 50
Bromodichloromethane	< 50	Methylene chloride	< 50
Bromoform	< 50	1,1,2,2-Tetrachloroethane	< 50
Carbon tetrachloride	< 50	Tetrachloroethene	< 50
Chlorobenzene	< 50	1,1,1-Trichloroethane	< 50
Chloroethane	< 50	1,1,2-Trichloroethane	< 50
2-Chloroethylvinyl ether	< 50	Trichloroethene	< 50
Chloroform	< 50	Toluene	< 50
Chloromethane	< 50	Vinyl chloride	< 50
Dibromochloromethane	< 50	1,2-Dichlorobenzene	< 50
1,1-Dichloroethane	< 50	1,3-Dichlorobenzene	< 50
1,2-Dichloroethane	< 50	1,4-Dichlorobenzene	< 50
1,1-Dichloroethene	< 50		

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NOTE: Methods 8010 & 8020 of the EPA were used for this analysis.

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Date Received: 06-26-87
Date Reported: 07-16-87

Project #1587

Sample Number	Sample Description
7062278	MW-4, 4-02 Crown Metal Manufacturing

ANALYSIS

	Detection Limit ppm	Sample Results ppm
Total Hydrocarbons as Gasoline	1	6.6
Benzene	0.1	< 0.1
Toluene	0.1	< 0.1
Xylenes	0.1	0.23

NOTE: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

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Date Reported: 07-16-87

Project #1587

Sample Number	Sample Description
7062278	MW- 4, 4-02 Crown Metal Manufacturing

ANALYSIS

Arsenic, mg/kg	15
Cadmium, mg/kg	1.2
Chromium, mg/kg	49
Lead, mg/kg	7.5
pH	9.3

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Date Received: 06-26-87
Date Extracted: 07-10-87
Date Reported: 07-16-87

Project #1587

Sample Number

7062279

Sample Description

Crown Metal Manufacturing
MW- 4, 4-03

PRIORITY POLLUTANTS

VOLATILE ORGANIC COMPOUNDS
results in ppb

Acrolein	< 10,000	trans-1,2-Dichloroethene	< 50
Acrylonitrile	< 10,000	1,2-Dichloropropane	< 50
Benzene	< 50	1,3-Dichloropropene	< 50
Bromomethane	< 50	Ethylbenzene	< 50
Bromodichloromethane	< 50	Methylene chloride	< 50
Bromoform	< 50	1,1,2,2-Tetrachloroethane	< 50
Carbon tetrachloride	< 50	Tetrachloroethene	< 50
Chlorobenzene	< 50	1,1,1-Trichloroethane	< 50
Chloroethane	< 50	1,1,2-Trichloroethane	< 50
2-Chloroethylvinyl ether	< 50	Trichloroethene	< 50
Chloroform	< 50	Toluene	< 50
Chloromethane	< 50	Vinyl chloride	< 50
Dibromochloromethane	< 50	1,2-Dichlorobenzene	< 50
1,1-Dichloroethane	< 50	1,3-Dichlorobenzene	< 50
1,2-Dichloroethane	< 50	1,4-Dichlorobenzene	< 50
1,1-Dichloroethene	< 50		

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NOTE: Methods 8010 & 8020 of the EPA were used for this analysis.

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Date Received: 06-26-87
Date Reported: 07-16-87

Project #1587

Sample Number	Sample Description
7062279	MW- 4, 4-03 Crown Metal Manufacturing

ANALYSIS

	Detection Limit ppm	Sample Results ppm
Total Hydrocarbons as Gasoline	1	< 1.0
Benzene	0.1	< 0.1
Toluene	0.1	< 0.1
Xylenes	0.1	< 0.1

NOTE: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

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Date Sampled: 06-25-87
Date Recieved: 06-26-87
Date Reported: 07-16-87

Project #1587

Sample Number	Sample Description
7062279	MW-4, 4-03 Crown Metal Manufacturing

ANALYSIS

Arsenic, mg/kg	13
Cadmium, mg/kg	0.80
Chromium, mg/kg	39
Lead, mg/kg	7.6
pH	7.9

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Date Sampled: 06-26-87
Date Received: 06-26-87
Date Extracted: 07-10-87
Date Reported: 07-16-87

Project #1587

Sample Number

7062280

Sample Description

Crown Metal Manufacturing
MW- 5, 5-02

PRIORITY POLLUTANTS

VOLATILE ORGANIC COMPOUNDS
results in ppb

Acrolein	< 10,000	trans-1,2-Dichloroethene	< 50
Acrylonitrile	< 10,000	1,2-Dichloropropane	< 50
Benzene	< 50	1,3-Dichloropropene	< 50
Bromomethane	< 50	Ethylbenzene	< 50
Bromodichloromethane	< 50	Methylene chloride	< 50
Bromoform	< 50	1,1,2,2-Tetrachloroethane	< 50
Carbon tetrachloride	< 50	Tetrachloroethene	< 50
Chlorobenzene	< 50	1,1,1-Trichloroethane	< 50
Chloroethane	< 50	1,1,2-Trichloroethane	< 50
2-Chloroethylvinyl ether	< 50	Trichloroethene	< 50
Chloroform	< 50	Toluene	< 50
Chloromethane	< 50	Vinyl chloride	< 50
Dibromochloromethane	< 50	1,2-Dichlorobenzene	< 50
1,1-Dichloroethane	< 50	1,3-Dichlorobenzene	< 50
1,2-Dichloroethane	< 50	1,4-Dichlorobenzene	< 50
1,1-Dichloroethene	< 50		

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NOTE: Methods 8010 & 8020 of the EPA were used for this analysis.

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Date Sampled: 06-26-87
Date Received: 06-26-87
Date Reported: 07-16-87

Project #1587

Sample Number	Sample Description
7062280	MW- 5, 5-02 Crown Metal Manufacturing

ANALYSIS

	Detection Limit ppm	Sample Results ppm
Total Hydrocarbons as Gasoline	1	1.3
Benzene	0.1	< 0.1
Toluene	0.1	< 0.1
Xylenes	0.1	< 0.1

NOTE: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

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Date Sampled: 06-26-87
Date Recieved: 06-26-87
Date Reported: 07-16-87

Project #1587

Sample Number	Sample Description
7062280	MW-5, 5-02 Crown Metal Manufacturing

ANALYSIS

Arsenic, mg/kg	14
Cadmium, mg/kg	0.60
Chromium, mg/kg	42
Lead, mg/kg	7.0
pH	9.1

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Date Sampled: 06-26-87
Date Received: 06-26-87
Date Extracted: 07-10-87
Date Reported: 07-16-87

Project #1587

Sample Number

7062281

Sample Description

Crown Metal Manufacturing
MW-5, 5-03

PRIORITY POLLUTANTS

VOLATILE ORGANIC COMPOUNDS
results in ppb

Acrolein	< 10,000	trans-1,2-Dichloroethene	< 50
Acrylonitrile	< 10,000	1,2-Dichloropropane	< 50
Benzene	< 50	1,3-Dichloropropene	< 50
Bromomethane	< 50	Ethylbenzene	< 50
Bromodichloromethane	< 50	Methylene chloride	< 50
Bromoform	< 50	1,1,2,2-Tetrachloroethane	< 50
Carbon tetrachloride	< 50	Tetrachloroethene	< 50
Chlorobenzene	< 50	1,1,1-Trichloroethane	< 50
Chloroethane	< 50	1,1,2-Trichloroethane	< 50
2-Chloroethylvinyl ether	< 50	Trichloroethene	< 50
Chloroform	< 50	Toluene	< 50
Chloromethane	< 50	Vinyl chloride	< 50
Dibromochloromethane	< 50	1,2-Dichlorobenzene	< 50
1,1-Dichloroethane	< 50	1,3-Dichlorobenzene	< 50
1,2-Dichloroethane	< 50	1,4-Dichlorobenzene	< 50
1,1-Dichloroethene	< 50		

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NOTE: Methods 8010 & 8020 of the EPA were used for this analysis.

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Date Reported: 07-16-87

Project #1587

Sample Number	Sample Description
7062281	MW-5, 5-03 Crown Metal Manufacturing

ANALYSIS

	Detection Limit ppm	Sample Results ppm
Total Hydrocarbons as Gasoline	1	2.4
Benzene	0.1	< 0.1
Toluene	0.1	< 0.1
Xylenes	0.1	0.24

NOTE: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

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Date Sampled: 06-26-87
Date Recieved: 06-26-87
Date Reported: 07-16-87

Project #1587

Sample Number	Sample Description
7062281	MW-5, 5-03 Crown Metal Manufacturing

ANALYSIS

Arsenic, mg/kg	11
Cadmium, mg/kg	0.80
Chromium, mg/kg	47
Lead, mg/kg	6.1
pH	7.7

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Date Sampled: 06-26-87
Date Received: 06-26-87
Date Extracted: 07-10-87
Date Reported: 07-16-87

Project #1587

Sample Number

7062282

Sample Description

Crown Metal Manufacturing
MW-6, 6-02

PRIORITY POLLUTANTS

VOLATILE ORGANIC COMPOUNDS
results in ppb

Acrolein	< 10,000	trans-1,2-Dichloroethene	< 50
Acrylonitrile	< 10,000	1,2-Dichloropropane	< 50
Benzene	< 50	1,3-Dichloropropene	< 50
Bromomethane	< 50	Ethylbenzene	< 50
Bromodichloromethane	< 50	Methylene chloride	< 50
Bromoform	< 50	1,1,2,2-Tetrachloroethane	< 50
Carbon tetrachloride	< 50	Tetrachloroethene	< 50
Chlorobenzene	< 50	1,1,1-Trichloroethane	< 50
Chloroethane	< 50	1,1,2-Trichloroethane	< 50
2-Chloroethylvinyl ether	< 50	Trichloroethene	< 50
Chloroform	< 50	Toluene	< 50
Chloromethane	< 50	Vinyl chloride	< 50
Dibromochloromethane	< 50	1,2-Dichlorobenzene	< 50
1,1-Dichloroethane	< 50	1,3-Dichlorobenzene	< 50
1,2-Dichloroethane	< 50	1,4-Dichlorobenzene	< 50
1,1-Dichloroethene	< 50		

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NOTE: Methods 8010 & 8020 of the EPA were used for this analysis.

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Date Sampled: 06-26-87
Date Received: 06-26-87
Date Reported: 07-16-87

Project #1587

Sample Number: 7062282

Sample Description: MW- 6, 6-02
Crown Metal Manufacturing

ANALYSIS

	Detection Limit ppm	Sample Results ppm
Total Hydrocarbons as Gasoline	1	4.9
Benzene	0.1	< 0.1
Toluene	0.1	< 0.1
Xylenes	0.1	0.56

NOTE: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

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Date Sampled: 06-26-87
Date Recieved: 06-26-87
Date Reported: 07-16-87

Project #1587

Sample Number	Sample Description
7062282	MW-6, 6-02 Crown Metal Manufacturing

ANALYSIS

Arsenic, mg/kg	16
Cadmium, mg/kg	0.70
Chromium, mg/kg	47
Lead, mg/kg	7.3
pH	8.7

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Date Sampled: 06-26-87
Date Received: 06-26-87
Date Extracted: 07-10-87
Date Reported: 07-16-87

Project #1587

Sample Number: 7062283

Sample Description: Crown Metal Manufacturing
MW- 6, 6-03

PRIORITY POLLUTANTS

VOLATILE ORGANIC COMPOUNDS

results in ppb

Acrolein	< 10,000	trans-1,2-Dichloroethene	< 5
Acrylonitrile	< 10,000	1,2-Dichloropropane	< 5
Benzene	< 50	1,3-Dichloropropene	< 5
Bromomethane	< 50	Ethylbenzene	< 5
Bromodichloromethane	< 50	Methylene chloride	< 5
Bromoform	< 50	1,1,2,2-Tetrachloroethane	< 5
Carbon tetrachloride	< 50	Tetrachloroethene	< 5
Chlorobenzene	< 50	1,1,1-Trichloroethane	< 5
Chloroethane	< 50	1,1,2-Trichloroethane	< 5
2-Chloroethylvinyl ether	< 50	Trichloroethene	< 5
Chloroform	< 50	Toluene	< 5
Chloromethane	< 50	Vinyl chloride	< 5
Dibromochloromethane	< 50	1,2-Dichlorobenzene	< 5
1,1-Dichloroethane	< 50	1,3-Dichlorobenzene	< 5
1,2-Dichloroethane	< 50	1,4-Dichlorobenzene	< 5
1,1-Dichloroethene	< 50		

SEQUOIA ANALYTICAL LABORATORY

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Laboratory Director

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NOTE: Methods 8010 & 8020 of the EPA were used for this analysis.

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Attn: David Blunt/Mark Hamilton

Date Sampled: 06-26-87
Date Received: 06-26-87
Date Reported: 07-16-87

Project #1587

Sample Number

7062283

Sample Description

MW- 6, 6-03
Crown Metal Manufacturing

ANALYSIS

	Detection Limit ppm	Sample Results ppm
Total Hydrocarbons as Gasoline	1	< 1.0
Benzene	0.1	< 0.1
Toluene	0.1	< 0.1
Xylenes	0.1	< 0.1

NOTE: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

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Date Sampled: 06-26-87
Date Recieved: 06-26-87
Date Reported: 07-16-87

Project #1587

Sample Number	Sample Description
7062283	MW-6, 6-03 Crown Metal Manufacturing

ANALYSIS

Arsenic, mg/kg	10
Cadmium, mg/kg	1.5
Chromium, mg/kg	44
Lead, mg/kg	5.6
pH	9.2

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Date Sampled: 07-14-87
Date Received: 07-15-87
Date Reported: 07-29-87

Project # 15876

Sample Number	Sample Description
7070995	Water MW-1 Crown Metal

ANALYSIS

	Detection Limit ppb	Sample Results ppb
Total Hydrocarbons as Gasoline	50	< 50
Benzene	0.5	< 0.5
Toluene	0.5	< 0.5
Xylenes	0.5	< 0.5

NOTE: The analysis for total hydrocarbons was performed using EPA method 5030 and EPA method 8015. The analysis for Benzene, Toluene and Xylenes was performed using EPA method 5030 and EPA method 602.

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Date Sampled: 07-14-87
Date Received: 07-15-87
Date Extracted: 07-28-87
Date Reported: 07-29-87

Project #15876

Sample Number

7070995

Sample Description

Water MW- 1
Crown Metal

PRIORITY POLLUTANTS

VOLATILE ORGANIC COMPOUNDS

results in ppb

Acrolein	<100	trans-1,2-Dichloroethene	< 0.5
Acrylonitrile	<100	1,2-Dichloropropane	< 0.5
Benzene	< 0.5	1,3-Dichloropropene	< 0.5
Bromomethane	< 0.5	Ethylbenzene	< 0.5
Bromodichloromethane	< 0.5	Methylene chloride	< 0.5
Bromoform	< 0.5	1,1,2,2-Tetrachloroethane	< 0.5
Carbon tetrachloride	< 0.5	Tetrachloroethene	< 0.5
Chlorobenzene	< 0.5	1,1,1-Trichloroethane	< 0.5
Chloroethane	< 0.5	1,1,2-Trichloroethane	< 0.5
2-Chloroethylvinyl ether	< 0.5	Trichloroethene	< 0.5
Chloroform	< 0.5	Toluene	< 0.5
Chloromethane	< 0.5	Vinyl chloride	< 0.5
Dibromochloromethane	< 0.5	1,2-Dichlorobenzene	< 0.5
1,1-Dichloroethane	< 0.5	1,3-Dichlorobenzene	< 0.5
1,2-Dichloroethane	< 0.5	1,4-Dichlorobenzene	< 0.5
1,1-Dichloroethene	< 0.2		

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NOTE: Method 624 of the EPA was used for this analysis.

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Date Sampled: 07-14-87
Date Recieved: 07-15-87
Date Reported: 07-29-87

Project #15876

Sample Number	Sample Description
7070995	Water MW-1 Crown Metal

ANALYSIS

Arsenic, mg/L	< 0.1
Cadmium, mg/L	0.12
Total Chromium, mg/L	< 0.05
Total Lead, mg/L	< 0.05
pH	6.9

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Date Sampled: 07-14-87
Date Received: 07-15-87
Date Reported: 07-29-87

Project # 15876

Sample Number	Sample Description
7070996	Water MW-2 Crown Metal

ANALYSIS

	Detection Limit ppb	Sample Results ppb
Total Hydrocarbons as Gasoline	50	110
Benzene	0.5	1.2
Toluene	0.5	1.9
Xylenes	0.5	2.0

NOTE: The analysis for total hydrocarbons was performed using EPA method 5030 and EPA method 8015. The analysis for Benzene, Toluene and Xylenes was performed using EPA method 5030 and EPA method 602.

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Date Sampled: 07-14-87
Date Received: 07-15-87
Date Extracted: 07-28-87
Date Reported: 07-29-87

Project #15876

Sample Number	Sample Description
7070996	Water MW-2 Crown Metal

PRIORITY POLLUTANTS

VOLATILE ORGANIC COMPOUNDS

results in ppb

Acrolein	<100	trans-1,2-Dichloroethene	< 0.5
Acrylonitrile	<100	1,2-Dichloropropane	< 0.5
Benzene	1.2	1,3-Dichloropropene	< 0.5
Bromomethane	< 0.5	Ethylbenzene	< 0.5
Bromodichloromethane	< 0.5	Methylene chloride	< 0.5
Bromoform	< 0.5	1,1,2,2-Tetrachloroethane	< 0.5
Carbon tetrachloride	< 0.5	Tetrachloroethene	< 0.5
Chlorobenzene	< 0.5	1,1,1-Trichloroethane	< 0.5
Chloroethane	< 0.5	1,1,2-Trichloroethane	< 0.5
2-Chloroethylvinyl ether	< 0.5	Trichloroethene	< 0.5
Chloroform	< 0.5	Toluene	1.9
Chloromethane	< 0.5	Vinyl chloride	< 0.5
Dibromochloromethane	< 0.5	1,2-Dichlorobenzene	< 0.5
1,1-Dichloroethane	< 0.5	1,3-Dichlorobenzene	< 0.5
1,2-Dichloroethane	< 0.5	1,4-Dichlorobenzene	< 0.5
1,1-Dichloroethene	< 0.2		

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NOTE: Method 624 of the EPA was used for this analysis.

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Date Sampled: 07-14-87
Date Recieved: 07-15-87
Date Reported: 07-29-87

Project #15876

Sample Number	Sample Description
7070996	Water MW-2 Crown Metal

ANALYSIS

Arsenic, mg/L	< 0.1
Cadmium, mg/L	0.14
Total Chromium, mg/L	< 0.05
Total Lead, mg/L	< 0.05
pH	7.0

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Date Sampled: 07-14-87
Date Received: 07-15-87
Date Reported: 07-29-87

Project # 15876

Sample Number	Sample Description
7070997	Water MW- 3 Crown Metal

ANALYSIS

	Detection Limit ppb	Sample Results ppb
Total Hydrocarbons as Gasoline	50	260
Benzene	0.5	< 0.5
Toluene	0.5	1.0
Xylenes	0.5	2.1

NOTE: The analysis for total hydrocarbons was performed using EPA method 5030 and EPA method 8015. The analysis for Benzene, Toluene and Xylenes was performed using EPA method 5030 and EPA method 602.

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Date Sampled: 07-14-87
Date Received: 07-15-87
Date Extracted: 07-28-87
Date Reported: 07-29-87

Project #15876

Sample Number	Sample Description
7070997	Water MW-3 Crown Metal

PRIORITY POLLUTANTS

VOLATILE ORGANIC COMPOUNDS

results in ppb

Acrolein	<100	trans-1,2-Dichloroethene	< 0.5
Acrylonitrile	<100	1,2-Dichloropropane	< 0.5
Benzene	< 0.5	1,3-Dichloropropene	< 0.5
Bromomethane	< 0.5	Ethylbenzene	< 0.5
Bromodichloromethane	< 0.5	Methylene chloride	< 0.5
Bromoform	< 0.5	1,1,2,2-Tetrachloroethane	< 0.5
Carbon tetrachloride	< 0.5	Tetrachloroethene	< 0.5
Chlorobenzene	< 0.5	1,1,1-Trichloroethane	< 0.5
Chloroethane	< 0.5	1,1,2-Trichloroethane	< 0.5
2-Chloroethylvinyl ether	< 0.5	Trichloroethene	< 0.5
Chloroform	< 0.5	Toluene	1.0
Chloromethane	< 0.5	Vinyl chloride	< 0.5
Dibromochloromethane	< 0.5	1,2-Dichlorobenzene	< 0.5
1,1-Dichloroethane	< 0.5	1,3-Dichlorobenzene	< 0.5
1,2-Dichloroethane	36	1,4-Dichlorobenzene	< 0.5
1,1-Dichloroethene	< 0.2		

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NOTE: Method 624 of the EPA was used for this analysis.

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Date Sampled: 07-14-87
Date Recieved: 07-15-87
Date Reported: 07-29-87

Project #15876

Sample Number	Sample Description
7070997	Water MW-3 Crown Metal

ANALYSIS

Arsenic, mg/L	< 0.1
Cadmium, mg/L	0.14
Total Chromium, mg/L	< 0.05
Total Lead, mg/L	< 0.05
pH	6.8

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Attn: Mark Hamilton

Date Sampled: 07-14-87
Date Received: 07-15-87
Date Reported: 07-29-87

Project # 15876

Sample Number	Sample Description
7070998	Water MW- 4 Crown Metal

ANALYSIS

	Detection Limit ppb	Sample Results ppb
Total Hydrocarbons as Gasoline	50	< 50
Benzene	0.5	< 0.5
Toluene	0.5	< 0.5
Xylenes	0.5	< 0.5

NOTE: The analysis for total hydrocarbons was performed using EPA method 5030 and EPA method 8015. The analysis for Benzene, Toluene and Xylenes was performed using EPA method 5030 and EPA method 602.

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Date Sampled: 07-14-87
Date Received: 07-15-87
Date Extracted: 07-28-87
Date Reported: 07-29-87

Project #15876

Sample Number	Sample Description
7070998	Water MW-4 Crown Metal

PRIORITY POLLUTANTS

VOLATILE ORGANIC COMPOUNDS

results in ppb

Acrolein	<100	trans-1,2-Dichloroethene	< 0.5
Acrylonitrile	<100	1,2-Dichloropropane	< 0.5
Benzene	< 0.5	1,3-Dichloropropene	< 0.5
Bromomethane	< 0.5	Ethylbenzene	< 0.5
Bromodichloromethane	< 0.5	Methylene chloride	< 0.5
Bromoform	< 0.5	1,1,2,2-Tetrachloroethane	< 0.5
Carbon tetrachloride	< 0.5	Tetrachloroethene	< 0.5
Chlorobenzene	< 0.5	1,1,1-Trichloroethane	< 0.5
Chloroethane	< 0.5	1,1,2-Trichloroethane	< 0.5
2-Chloroethylvinyl ether	< 0.5	Trichloroethene	< 0.5
Chloroform	< 0.5	Toluene	< 0.5
Chloromethane	< 0.5	Vinyl chloride	< 0.5
Dibromochloromethane	< 0.5	1,2-Dichlorobenzene	< 0.5
1,1-Dichloroethane	< 0.5	1,3-Dichlorobenzene	< 0.5
1,2-Dichloroethane	< 0.5	1,4-Dichlorobenzene	< 0.5
1,1-Dichloroethene	< 0.2		

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NOTE: Method 624 of the EPA was used for this analysis.

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Date Sampled: 07-14-87
Date Recieved: 07-15-87
Date Reported: 07-29-87

Project #15876

Sample Number	Sample Description
7070998	Water MW- 4 Crown Metal

ANALYSIS

Arsenic, mg/L	< 0.1
Cadmium, mg/L	0.13
Total Chromium, mg/L	< 0.05
Total Lead, mg/L	< 0.05
pH	7.0

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Attn: Mark Hamilton

Date Sampled: 07-14-87
Date Received: 07-15-87
Date Reported: 07-29-87

Project # 15876

Sample Number	Sample Description
7070999	Water MW-5 Crown Metal

ANALYSIS

	Detection Limit ppb	Sample Results ppb
Total Hydrocarbons as Gasoline	50	< 50
Benzene	0.5	< 0.5
Toluene	0.5	< 0.5
Xylenes	0.5	< 0.5

NOTE: The analysis for total hydrocarbons was performed using EPA method 5030 and EPA method 8015. The analysis for Benzene, Toluene and Xylenes was performed using EPA method 5030 and EPA method 602.

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Date Sampled: 07-14-87
Date Received: 07-15-87
Date Extracted: 07-28-87
Date Reported: 07-29-87

Project #15876

Sample Number	Sample Description
7070999	Water MW-5 Crown Metal

PRIORITY POLLUTANTS

VOLATILE ORGANIC COMPOUNDS
results in ppb

Acrolein	<100	trans-1,2-Dichloroethene	< 0.5
Acrylonitrile	<100	1,2-Dichloropropane	< 0.5
Benzene	< 0.5	1,3-Dichloropropene	< 0.5
Bromomethane	< 0.5	Ethylbenzene	< 0.5
Bromodichloromethane	< 0.5	Methylene chloride	< 0.5
Bromoform	< 0.5	1,1,2,2-Tetrachloroethane	< 0.5
Carbon tetrachloride	< 0.5	Tetrachloroethene	< 0.5
Chlorobenzene	< 0.5	1,1,1-Trichloroethane	< 0.5
Chloroethane	< 0.5	1,1,2-Trichloroethane	< 0.5
2-Chloroethylvinyl ether	< 0.5	Trichloroethene	< 0.5
Chloroform	< 0.5	Toluene	< 0.5
Chloromethane	< 0.5	Vinyl chloride	< 0.5
Dibromochloromethane	< 0.5	1,2-Dichlorobenzene	< 0.5
1,1-Dichloroethane	< 0.5	1,3-Dichlorobenzene	< 0.5
1,2-Dichloroethane	< 0.5	1,4-Dichlorobenzene	< 0.5
1,1-Dichloroethene	< 0.2		

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NOTE: Method 624 of the EPA was used for this analysis.

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Date Sampled: 07-14-87
Date Recieved: 07-15-87
Date Reported: 07-29-87

Project #15876

Sample Number	Sample Description
7070999	Water MW-5 Crown Metal

ANALYSIS

Arsenic, mg/L	< 0.1
Cadmium, mg/L	0.13
Total Chromium, mg/L	< 0.05
Total Lead, mg/L	< 0.05
pH	6.8

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Attn: Mark Fraiser

Date Sampled: 08-07-87
Date Received: 08-07-87
Date Reported: 08-11-87

Project #1587G
P.O. #6053

Sample Number

7080403

Sample Description

Water MW-6 - Crown Metals

ANALYSIS

	Detection Limit ppb	Sample Results ppb
Total Hydrocarbons as Gasoline	50	< 50
Benzene	0.5	< 0.5
Toluene	0.5	< 0.5
Xylenes	0.5	< 0.5

NOTE: Analysis was performed using EPA method 602.

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Date Sampled: 08-07-87
Date Received: 08-07-87
Date Extracted: 08-07-87
Date Reported: 08-11-87

Project #1587G
P.O. #6053

Sample Number: 7080403

Sample Description: Water MW-6 - Crown Metals

PRIORITY POLLUTANTS

VOLATILE ORGANIC COMPOUNDS
results in ppb

Acrolein	<100	trans-1,2-Dichloroethene	< 0.5
Acrylonitrile	<100	1,2-Dichloropropane	< 0.5
Benzene	< 0.5	1,3-Dichloropropene	< 0.5
Bromomethane	< 0.5	Ethylbenzene	< 0.5
Bromodichloromethane	< 0.5	Methylene chloride	< 0.5
Bromoform	< 0.5	1,1,2,2-Tetrachloroethane	< 0.5
Carbon tetrachloride	< 0.5	Tetrachloroethene	< 0.5
Chlorobenzene	< 0.5	1,1,1-Trichloroethane	< 0.5
Chloroethane	< 0.5	1,1,2-Trichloroethane	< 0.5
2-Chloroethylvinyl ether	< 0.5	Trichloroethene	< 0.5
Chloroform	< 0.5	Toluene	< 0.5
Chloromethane	< 0.5	Vinyl chloride	< 0.5
Dibromochloromethane	< 0.5	1,2-Dichlorobenzene	< 0.5
1,1-Dichloroethane	< 0.5	1,3-Dichlorobenzene	< 0.5
1,2-Dichloroethane	< 0.5	1,4-Dichlorobenzene	< 0.5
1,1-Dichloroethene	< 0.2		

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NOTE: Methods 601 & 602 of the EPA were used for this analysis.

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Date Sampled: 08-07-87
Date Recieved: 08-07-87
Date Reported: 08-11-87

Project #1587G
P.O. #6053

Sample Number	Sample Description
7080403	Water MW-6 - Crown Metals

ANALYSIS

pH	7.8
Arsenic, mg/L	< 0.10
Cadmium, mg/L	0.15
Lead, mg/L	< 0.20
Chromium, mg/L	0.036

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