Woodward-Clyde

Engineering & sciences applied to the earth & its environment

September 24, 1996
92CB040

Ms. Susan Hugo
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502

Subject: Interstate Brands Company, 1010 46th Street, Oakland, CA
Quarterly Groundwater Monitoring Report

Dear Ms. Hugo:

Woodward-Clyde Consultants (WCC) has prepared this letter report discussing the July 1996 quarterly groundwater monitoring results for the Interstate Brands Company (IBC) Site at 1010 46th Street, Oakland, California shown on Figure 1. This site is a former Continental Baking Company (CBC) facility. WCC is providing environmental consulting services to IBC and is submitting this report on their behalf.

FIELD ACTIVITIES

Groundwater samples were collected from monitoring wells MW-1, MW-2, and MW-3, shown on Figure 2, on July 6, 1996 by WCC personnel. The sampling procedures involved the following:

- calculation of the wetted casing volume;
- purging by the removal of greater than four casing volumes;
- periodic measurement of various water quality parameters;
- water levels were measured with an electronic water level sounder and recorded to the nearest 0.01 foot; and
- groundwater samples were collected with a clean disposable bailer and poured into appropriate sample containers provided by the analytical laboratory. Sample containers were sealed, labeled, and placed in a chilled cooler containing ice for transportation to the analytical laboratory under chain-of-custody control.

In addition to the groundwater samples collected from the four monitoring wells, one duplicate sample was collected from well MW-1 and labeled MW-4. Copies of the laboratory data sheets, the chain-of-custody form, and the field water sample logs are attached.

Woodward-Clyde Consultants • A subsidiary of Woodward-Clyde Group, Inc.
500 12th Street, Suite 100 • Oakland, California 94607-4014
(510) 893-3600 • Fax (510) 874-3268

RESULTS

Groundwater Elevation

Table 1 summarizes the current and previous groundwater elevation measurements in the monitoring wells. Groundwater elevations vary in the four monitoring wells from 49.12 feet above mean sea level (MSL) to 52.74 feet above MSL.

Analytical Results

Samples from the monitoring wells were submitted for analysis to Inchcape Testing Services Anametrix Laboratories, San Jose, California for Total Petroleum Hydrocarbons (TPH) quantified as diesel (TPHd, modified EPA Method 8015) and gasoline (TPHg); and benzene, toluene, ethylbenzene and total xylenes (BTEX, EPA Method 8020).

A quality assurance/quality control review of the analytical data was performed by a WCC chemist. The results of the review indicated that the data are of acceptable quality.

The reported results from the July 1996 sampling, summarized in Table 2, are as follows:

- TPHg was detected in MW-1 only at a concentration of 3,000 µg/L;
- TPHd was detected in MW-1 only at a concentration of 670 µg/L; and
- BTEX was detected in MW-1 only at concentrations ranging from 89 ug/L benzene to 350 ug/L xylenes.

Groundwater samples from monitoring wells MW-1 and MW-3 were analyzed for Total Dissolved Solids (TDS) by EPA Method 160.1. TDS concentrations were reported to be 271 mg/L and 596 mg/L in MW-1 and MW-3, respectively, as shown on Table 3. These results compare with California Secondary Drinking Water Standards of 500, 1000, and 1500 mg/L (recommended, upper, and short-term limits, respectively).

Nutrient Results

The following nutrients were analyzed to preliminarily evaluate potential nutrient limitations in the contaminated area: Nitrate and Nitrite, both as Nitrogen (EPA Method 300.0); Ammonia

(EPA Method 350.3); total Phosphorus (EPA Method 365.3); and Total Kjeldahl Nitrogen (TKN, EPA Method 351.3). Nitrogen and phosphorus are two major elements that are required by microorganisms to perform enzymatic reactions. If these essential elements are present in limiting concentrations, then the indigenous microbial population may not be able to effectively degrade organic contaminants.

Table 3 presents the nutrient results for monitoring wells MW-1 and MW-3. Groundwater samples from monitoring wells MW-1 and MW-3 contained TKN at <0.24 mg/L and 1.2 mg/L; ammonia at <0.10 mg/L and 0.98 mg/L; nitrate at 2.5 mg/L and <0.02 mg/L; and phosphorus at 13.2 mg/L and 17.5 mg/L, respectively.

Biological Results

Heterotrophic (organisms that utilize organic carbon for biosynthesis) and petroleum hydrocarbon-degrading indigenous microorganisms were analyzed to evaluate whether a potential exists for the biodegradation of petroleum compounds by insitu microorganisms. Groundwater samples from monitoring wells MW-1 and MW-3 were submitted to BBC Laboratories, Inc., Tempe, Arizona for analysis for Heterotrophic Plate Count (SM 9215C) and Petroleum Hydrocarbon Degrading Bacteria.

A common microbiological procedure used to enumerate microbial populations is the spread plate technique. With this procedure, microorganisms utilizing a specific substrate are aseptically spread onto a solid agar plate containing the substrate of choice. Based on the volumes used in the extraction and spreading steps, the original density of microorganisms selectively utilizing the chosen substrate can be calculated. This technique is based on the concept that organisms can be uniformly diluted and spread onto agar plates resulting in the development of distinct microbial colonies. The numbers of organisms are expressed in terms of colony forming units (CFU) per milliliter of water.

Groundwater samples were diluted 1:10 (weight/volume) in sterile phosphate buffered saline. This dilution was mixed by vigorous shaking. The sample was further diluted in a 10-fold dilution series and plated on the appropriate medium using a spread plating technique. The heterotrophs were enumerated on Tryptic Soy Agar (Difco) while the petroleum hydrocarbon degraders were enumerated on freshly prepared non-carbon containing minimal medium amended with gasoline and diesel fuel (equal volumes) at a final concentration of 2,500 mg/L. Each sample was plated at

dilutions 10^{-4}, 10^{-5}, and 10^{-6} on each medium. The plates were incubated at 28°C for a minimum of seven days prior to counting colonies.

Table 4 shows microbial enumeration results for indigenous heterotrophic and petroleum hydrocarbon degrading microorganisms. All results are reported in colony forming units per milliliter (CFU/ml) of groundwater. These results indicate that the groundwater from MW-1 contains a typical level of aerobic heterotrophs in groundwater, which on the average ranges from 10,000 CFU/ml to 100,000 CFU/ml (Hazen et al. 1991; Balkwill and Ghiorse, 1985; Ghiorse and Balkwill, 1983). However, the aerobic heterotrophic microbial population in MW-3 was an order of magnitude lower than MW-1. This may be due to a greater nutrient limitation near MW-3 or lower dissolved oxygen or other appropriate electron acceptor concentration in the groundwater and/or soil in this area.

CONCLUSIONS

The reported chemical analytical results and groundwater elevations are generally consistent with historical results prior to the last round of sampling in March 1996. The March results were higher possibly due to elevated groundwater levels not observed during this round of sampling. The groundwater flow direction is approximately southeast.

The TDS results, which are similar to the Secondary Drinking Water Standards, suggest that groundwater beneath the site could be utilized for drinking based on this parameter.

The nutrient results indicate that, if TKN and ammonia are the major sources of nitrogen for the indigenous microbial populations, then nitrogen may be present in concentrations which would limit microbial enzymatic reactions. This may significantly reduce the microbial population's ability to degrade organic contaminants. Because TOC data are not available for this site, the nutrient requirements are based on the petroleum hydrocarbon concentrations. If the TOC is several orders of magnitude higher than the petroleum hydrocarbon contamination and this organic carbon is biodegradable, nitrogen may be limiting at the site. Phosphorus does not appear to be present in a concentration that would limit microbial enzymatic reactions.

One interpretation of the microbial enumeration results involves examining the ratio of petroleum hydrocarbon degrading microorganisms to the aerobic heterotrophic population, as shown in Table

4. A high ratio of petroleum hydrocarbon degrading microorganisms to heterotrophs is a positive indicator of potential biodegradation of petroleum compounds. A ratio of 0.10 or higher indicates that a representative fraction of microorganisms are adapted to contaminants. The ratio cannot be calculated for MW-3 because the petroleum hydrocarbon degrading bacteria enumeration was less than 1,000 CFU/ml. The ratio calculated for MW-1 was approximately 0.06. This low ratio does not exclude the possibility of successful bioremediation; however, it may indicate that a longer time period is required for contaminant bioremediation. The longer time period could be indicative of a low rate of microbial contaminant conversion.

The following discussion briefly summarizes the results of this round of monitoring:

- Contamination concentrations and groundwater elevations have returned to historical levels following the high levels recorded last Spring;
- The groundwater could be considered a drinking water resource based on TDS concentrations; and
- There may be insufficient nitrogen, dissolved oxygen, and/or ratio of degrading organisms to heterotrophs for successful biodegradation of petroleum compounds. However, with augmentation of nutrient concentrations, bioremediation may be successful over a longer time period.

REFERENCES

Balkwell, D.L. and W.C. Ghiorse. 1985. "Characterization of subsurface bacteria associated with two shallow aquifers in Oklahoma." Appl. and Environm. Microbiol. 50:580-588.

Ghiorse, W.C. and D.L. Balkwill. 1983. Enumeration and morphological characterization of bacteria indigenous to subsurface environments, pp. 213-224. In *Developments in Industrial Microbiology*, Vol. 24: *Proceedings of the Thirty-Ninth General Meeting of the Society for Industrial Microbiology*. Society for Industrial Microbiology, Arlington, VA.

Hazen, T.C., L. Jimenez, G. Lopez de Victoria and C.B. Fliermans. 1991. "Comparison of bacteria from deep subsurface sediment and adjacent ground water." Microbial Ecology 22:293-304.

WCC proposes that the monitoring wells at this site be sampled on a semi-annual basis because of the relative consistency of results recorded for the last 14 quarters (3 1/2 years). We will plan to sample these wells again in January 1997 unless required and informed by Alameda County Health Care Services Agency, Department of Environmental Health to continue quarterly sampling. If you have any questions, please feel free to call.

Sincerely,

Bill Copeland
Assistant Project Geologist
(510) 874-3192

for

Jay Kamine
Senior Project Engineer
(916) 368-0988

Attachments

cc: Larry Brown, IBC-Sacramento, CA
Travis Bryant, IBC-Kansas City, MO
Jim Hummert, WCC-SL

TABLE 1
SUMMARY OF GROUNDWATER ELEVATIONS
INTERSTATE BRANDS CORPORATION, OAKLAND, CA

Well Identification	Date	Top of Casing Elevation (feet above MSL)	Depth to Water (feet below top of casing)	Water Surface Elevation (feet above MSL)
MW1	5/26/94	61.84	9.27	52.57
	7/29/94	61.84	9.81	52.03
	8/26/94	61.84	9.87	51.97
	10/4/94	61.84	9.89	51.95
	10/27/94	61.84	9.94	51.90
	11/30/94	61.84	8.92	52.92
	1/3/95	61.84	8.79	53.05
	1/31/95	61.84	8.33	53.51
	3/16/95	61.84	8.07	53.77
	6/25/95	61.84	9.02	52.82
	8/30/95	61.84	9.44	52.40
	11/29/95	61.84	9.93	51.91
	3/6/96	61.84	8.37	53.47
	7/8/96	61.84	9.10	52.74
MW-2	5/26/94	63.10	9.30	53.80
	7/29/94	63.10	9.70	53.40
	8/26/94	63.10	9.89	53.21
	10/4/94	63.10	9.86	53.24
	10/27/94	63.10	9.96	53.14
	11/30/94	63.10	8.95	54.15
	1/3/95	63.10	8.15	54.95
	1/31/95	63.10	6.96*	56.14
	3/16/95	63.10	6.37*	56.73
	6/12/95	63.10	9.07	54.03
	8/30/95	63.10	9.53	53.57
	11/29/95	63.10	9.74	53.36
	3/6/96	63.10	7.23	55.87
	7/8/96	63.10	8.84	54.26
MW-3	5/26/94	62.51	12.88	49.63
	7/29/94	62.51	13.61	48.90
	8/26/94	62.51	13.71	48.80
	10/4/94	62.51	13.74	48.77
	10/27/94	62.51	13.77	48.74
	11/30/94	62.51	11.85	50.66
	1/3/95	62.51	12.09	50.42
	1/31/95	62.51	10.64	51.87
	3/16/95	62.51	10.79	51.72
	6/12/95	62.51	12.05	50.46
	8/30/95	62.51	13.54	48.97
	11/29/95	62.51	13.72	48.79
	3/6/96	62.51	10.78	51.73
	7/8/96	62.51	13.39	49.12

* Noted to be under pressure when opened.

TABLE 2

SUMMARY OF ANALYTICAL RESULTS
INTERSTATE BRANDS CORPORATION, OAKLAND, CALIFORNIA

Parameters		TPH diesel	TPH gasoline	TPH BTEX				
				benzene	toluene	ethylbenzene	total xylenes	total oil & grease
EPA Method		8015	8015	8020				5520 BF
Units		(µg/L)	(µg/L)	(µg/L)				(mg/L)
Well Number	Date							
MW-1	5/26/94	1300	12000	57	340	370	3100	<5.0
	8/26/94	510[1]/650[1]	6700/8400	22/35	71/97	310/410	1000/1400	<5.0/<5.0
	11/30/94	1300	29000	480	1100	1200	5300	<5.0
	3/16/95	1900	29000	140	1400	1800	9700	<5.0
	6/12/95	810[1]/540[1]	3900/11000	23/280	57/610	200/400	680/2000	<5.0/<5.0
	8/30/95	350[1]	3300	26	36	250	490	<5.0
	11/29/95	270	1700	20	21	110	210	<5.0
	3/6/96	2500/2400[1]	39000/38000	690/1000	1800/2000	2300/2300	14000/15000	5.9
	7/8/95	670/580[1]	3000/2600	89/9.5	79/85	140/120	350/270	NA
MW-2	5/26/94	<50/<50	<50/<50	0.50/<0.50	0.50/<0.50	0.50/<0.50	0.50/<0.50	<5.0
	8/26/94	<50	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	11/30/94	<50	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	3/16/95	<50/<50	<50/<50	<0.50/<0.50	<0.50/<0.50	<0.50/<0.50	<0.50/<0.50	<5.0
	6/12/95	<50	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	8/30/95	52[3]	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	11/29/95	<50	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	3/6/96	68[4]	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	7/8/96	<50	<50	<0.50	<0.50	<0.50	<0.50	NA
MW-3	5/26/94	99	<50	<0.50	<0.50	<0.50	1.7	<5.0
	8/26/94	66[2]	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	11/30/94	78/85	100/100	<0.50/1.9	<0.50/0.50	<0.50/1.0	2.1/4.3	<5.0
	3/16/95	<50	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	6/12/95	120[2]	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	8/30/95	88[3]/57[3]	<50/<50	<0.50/<0.50	<0.50/<0.50	<0.50/<0.50	<0.50/<0.50	<5.0/<5.0
	11/29/95	<50	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	3/6/96	140[3]	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	7/8/96	<50	<50	<0.50	<0.50	<0.50	<0.50	NA

Results of duplicate sample analyses are shown by a dash ("/")

(1) Primarily due to lighter petroleum product of hydrocarbon range C6-C12, possibly gasoline.

(2) Primarily due to heavier petroleum product of hydrocarbon range C18-C36.

(3) Due to a combination of diesel and a discrete peak not indicative of diesel fuel.

(4) Due to the presence of discrete peaks not indicative of diesel fuel.

TABLE 3

SUMMARY OF ADDITIONAL ANALYTICAL RESULTS
INTERSTATE BRANDS CORPORATION, OAKLAND, CALIFORNIA

Parameters		Total Dissolved Solids	Nitrite	Nitrate	Ammonia	Phosphorus	Total Kjeldahl Nitrogen (TKN)
EPA Method		160.1	300.0	300.0	350.3	365.3	351.3
Units		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Well Number	Date						
MW-1	7/6/95	271	< 0.03	2.5	< 0.10	13.2	< 0.24
MW-3	7/6/96	596	< 0.03	< 0.02	0.98	17.5	1.2

* Petroleum Hydrocarbon Degrading Bacteria - Journal of Industrial Microbiology, 1992, *10*:13-23 *(modified)*, determined using gasoline and diesel as the sole carbon sources.

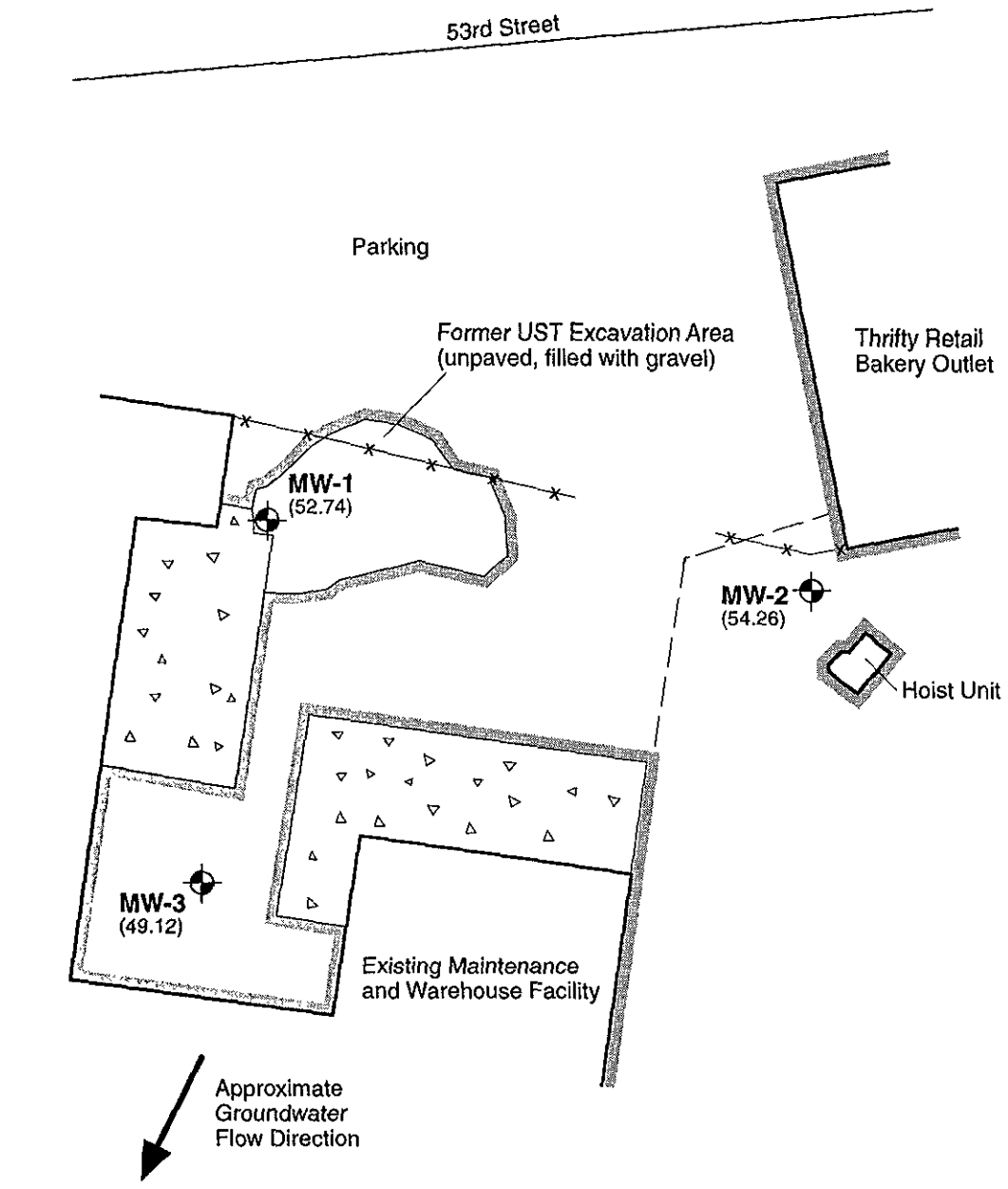
TABLE 4

MICROBIAL ENUMERATIONS AND RATIO OF PETROLEUM HYDROCARBON DEGRADING BACTERIA TO AEROBIC HETEROTROPHS INTERSTATE BRANDS CORPORATION, OAKLAND, CALIFORNIA

Well Number	Date	Aerobic Heterotrophic (Colony Forming Units per milliliter (CFU/ml))	Petroleum Hydrocarbon Degrading Bacteria (PHDB)	Ratio of PHDB to Aerobic Heterotrophs
MW-1	7/6/96	18,000	1,000	0.06
MW-3	7/6/96	1,200	< 1,000	--

Project No. 92CB040	Interstate Brands Corporation 1010 46th St., Oakland, CA	SITE LOCATION	Figure 1
Woodward-Clyde Consultants			

92CB040-0000/061893



LEGEND

MW-1 (52.74) — Approximate Well Location and Groubdwater Elevation (ft)

Asphalt

Concrete

N

0 20 40

feet

Project No. 92CB040	Interstate Brands Corporation 1010 46th Street, Oakland, CA	MONITORING WELL LOCATIONS AND GROUNDWATER ELEVATIONS JULY 8, 1996	Figure 2
Woodward-Clyde Consultants			

92CB040-0010/091196/gos,mcl

Sample No.

7/8/96

MW-1	9.10
MW-2	8.84
MW-3	13.39

* Full sweep includes:

3- 40 ml VOA's (TPHg/BTEX)
2- 1L amber (TPHd)
(w/H_2SO_4) 1-500 ml. poly (TKN(351.2))
(unacidified) 1-500 ml. poly (300.0)
(w/H_2SO_4) 1-500 ml. poly (365.2)
(w/H_2SO_4) 1-500 ml. poly (350.3)
(unacidified) 1-500 ml. poly (T.D.S. 160.1)

WATER SAMPLE LOG

Sample No. MW-1

Project No.: 92CB040 Date: 7/8/96
Project Name: TBC-Oakland
Sample Location: MW-1
Well Description: 4" PVC w/locking orange cap
Weather Conditions: clear
Observations / Comments: Duplicate labeled MW-4 @ 20:00

Quality Assurance

Sampling Method: Disposable bailer
Method to Measure Water Level: 200' Solinst
Pump Lines: New / Cleaned Bailer Lines: (New) / Cleaned
Method of cleaning Pump / Bailer: N/A
pH Meter No.: 0230977 Calibrated 4.00/7.00
Specific Conductance Meter No.: 13749 Calibrated red-lined
Comments: 20.2 - 9.10 = 11.1 x .653 = 7.25 x 4 = 29 gallons

Sampling Measurements

Water Level (below MP) at Start: 9.10 End: 9.11
Measuring Point (MP): Top of Casing

Time	Discharge (gallons)	pH	Temp. (°C)	Specific Conductance (µmhos / cm)	Turbidity	Color	Odor	Comments
17:23	8	7.47	20.0	400	Low	CLR	HC	very slight
17:26	15	7.03	20.0	390	"	"	"	dry @ 18.5
17:40	22	7.22	20.0	400	"	"	MD	
17:43	29	7.11	20.0	400	"	"	"	

Total Discharge: 32 gallons Casing Volumes Removed: 4+
Method of disposal of discharged water: 55 gallon drum
Number and size of sample containers filled: @1810; 1-45 ml. VOA (BBC)
@ 20:40 Full sweep plus duplicate

Collected by: J. HAUS

Woodward-Clyde Consultants
500 12th Street, Suite 100, Oakland, CA 94607-4014
(415) 893-3600

Sample No.

WATER SAMPLE LOG

Sample No. MW-2

Project No.: 92CB040 Date: 7/8/96

Project Name: IBC - Oakland

Sample Location: MW-2

Well Description: 4" PVC w/locking cap

Weather Conditions: clear

Observations / Comments:

Quality Assurance

Sampling Method: Disposable bailer

Method to Measure Water Level: 200 series sounder

Pump Lines: (New) / Cleaned Bailer Lines: (New) / Cleaned

Method of cleaning Pump / Bailer: N/A

pH Meter No.: 0230977 Calibrated 4.00/7.00

Specific Conductance Meter No.: 13749 Calibrated red-jack

Comments: 19.55 - 8.84 = 10.71 x .653 = 7 x 4 = 28 gallons

Sampling Measurements

Water Level (below MP) at Start: 8.84 End: 8.89

Measuring Point (MP): Top of Casing

Time	Discharge (gallons)	pH	Temp. (°C)	Specific Conductance (µmhos/cm)	Turbidity	Color	Odor	Comments
17:09	7	7.27	20.8	520	LOW	CLR	ND	dry @ 10.5
17:13	14	6.94	20.8	500	"	"	"	dry @ 17
17:29	21	6.97	20.6	500	"	"	"	dry @ 23.5
17:48	29	6.92	20.7	500	"	"	"	@

Total Discharge: 32 gallons Casing Volumes Removed: 4+

Method of disposal of discharged water: 55 gallon drum

Number and size of sample containers filled: @ 21:10; 3 VOAs (TPH-g/BTEX) and 2 - 1 liter ambers (TPH-d)

Collected by: J. HAAS

Woodward-Clyde Consultants
500 12th Street, Suite 100, Oakland, CA 94607-4014
(415) 893-3600

Sample No.

WATER SAMPLE LOG

Sample No. MW-3

Project No.: 92CB040 Date: 7/8/96

Project Name: IBC-Oakland

Sample Location: MW-3

Well Description: 4" PVC w/ locking orange cap

Weather Conditions: clear

Observations / Comments:

Quality Assurance

Sampling Method: Disposable bailer

Method to Measure Water Level: 200' sounder

Pump Lines: (New) / Cleaned Bailer Lines: (New) / Cleaned

Method of cleaning Pump / Bailer: N/A

pH Meter No.: 0230977 Calibrated 4.00/7.00

Specific Conductance Meter No.: 13749 Calibrated red-line

Comments: 19.44 - 13.39 = 6.05 x .653 = 4 x 4 = 16 gallons

Sampling Measurements

Water Level (below MP) at Start: 13.39 End: 13.39

Measuring Point (MP): Top of Casing

Time	Discharge (gallons)	pH	Temp. (°C)	Specific Conductance (µmhos / cm)	Turbidity	Color	Odor	Comments
17:02	4	7.03	20	1000	MOD.	GRY GRN	MOD	
17:05	7	6.93	19.8	900	"	"	"	dry @ 7.0
17:16	11	6.72	19.9	910	"	"	"	dry @ 11
17:19	12.5	6.91	19.8	900	"	"	"	dry @ 12.5
17:35	16	6.79	19.6	900	"	"	"	

Total Discharge: 16.5 gallons Casing Volumes Removed: 4+

Method of disposal of discharged water: 1-45 gal. VOA (BBC)

Number and size of sample containers filled: @1820 full S.H. sweep

@20:20; full sweep

Collected by: J. HAWS

Woodward-Clyde Consultants
500 12th Street, Suite 100, Oakland, CA 94607-4014
(415) 893-3600

Inchcape Testing Services
Environmental Laboratories

1961 Concourse Drive
Suite E
San Jose, CA 95131
Tel: 408-432-8192
Fax: 408-432-8198

August 1, 1996

Mr. Bill Copeland
Woodward-Clyde Consultants
500 12th St. #100
Oakland, CA 94607

Dear Mr. Copeland,

Enclosed are the analytical results for your Project ID: 92CB040 we received on July 09, 1996. The enclosed work was performed by a laboratory subcontracted by I.T.S - Environmental Laboratories.

I.T.S. Env. ID:	Client ID:
9607066-03	MW-3
9607066-04	MW-1

If you have any questions regarding this workorder, please give me a call at (408) 432-8192.

Sincerely,

I.T.S. - ENVIRONMENTAL LABORATORIES

8/1/96

Rich Phaler
Project Manager

Inchcape Testing Services
Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

ANALYTICAL REPORT

DATE RECEIVED : 10-JUL-1996
REPORT NUMBER : D96-7468
REPORT DATE : 26-JUL-1996

SAMPLE SUBMITTED BY : ITS/San Jose
ADDRESS : 1961 Concourse Drive, Ste. E
: San Jose, CA 95131
ATTENTION : Mr. Richard Phaler
PROJECT : 9607066 92CB040

Included in this data package are the analytical results for the sample group which you have submitted to Inchcape Testing Services for analysis. These results are representative of the samples as received by the laboratory.

The information contained herein has undergone extensive review and is deemed accurate and complete. Sample analysis and quality control were performed in accordance with all applicable protocols. Any deviations from these protocols or observations of interest are detailed in an accompanying Case Narrative. Please refrain from reproducing this report except in its entirety.

If you have any questions regarding this report and its associated materials please call your Project Manager at (214) 238-5591.

We appreciate the opportunity to serve you and look forward to providing continued service in the future.

Martin Jeffus
General Manager

Inchcape Testing Services
Environmental Laboratories

DATE RECEIVED : 10-JUL-1996

REPORT NUMBER : D96-7468-1
REPORT DATE : 26-JUL-1996

SAMPLE SUBMITTED BY : ITS/San Jose
ADDRESS : 1961 Concourse Drive, Ste. E
: San Jose, CA 95131
ATTENTION : Mr. Richard Phaler

SAMPLE MATRIX : Liquid
ID MARKS : Sample #3
PROJECT : 9607066 92CB040
DATE SAMPLED : 8-JUL-1996

MISCELLANEOUS ANALYSES			
TEST REQUESTED		DETECTION LIMIT	RESULTS
Total Phosphorus	/1	0.25 mg/L	17.5 mg/L

Dilution Factor : 25
Analyzed using EPA 365.3 on 15-JUL-1996 by BAF
QC Batch No : 669045

Inchcape Testing Services
Environmental Laboratories

DATE RECEIVED : 10-JUL-1996

REPORT NUMBER : D96-7468-2
REPORT DATE : 26-JUL-1996

SAMPLE SUBMITTED BY : ITS/San Jose
ADDRESS : 1961 Concourse Drive, Ste. E
: San Jose, CA 95131
ATTENTION : Mr. Richard Phaler

SAMPLE MATRIX : Liquid
ID MARKS : Sample #4
PROJECT : 9607066 92CB040
DATE SAMPLED : 8-JUL-1996

MISCELLANEOUS ANALYSES			
TEST REQUESTED		DETECTION LIMIT	RESULTS
Total Phosphorus	/1	0.25 mg/L	13.2 mg/L
Dilution Factor : 25 Analyzed using EPA 365.3 on 15-JUL-1996 by BAF QC Batch No : 669045			

Inchcape Testing Services
Environmental Laboratories

REPORT DATE : 26-JUL-1996 REPORT NUMBER : D96-7468

SAMPLE SUBMITTED BY : ITS/San Jose
ATTENTION : Mr. Richard Phaler
PROJECT : 9607066 92CB040

LABORATORY QUALITY CONTROL REPORT

ANALYTE	Total Phosphorus
BATCH NO.	669045
LCS LOT NO.	9962
PREP METHOD	---
PREPARED BY	---
ANALYSIS METHOD	EPA 365.3
ANALYZED BY	BAF
UNITS	mg/L
METHOD BLANK	< 0.01
SPIKE LEVEL	4.00
MS RESULT	B
MS RECOVERY %	B
MSD RESULT	B
MSD RECOVERY %	B
MS/MSD RPD %	B
BS RESULT	NA
BS RECOVERY %	NA
BSD RESULT	NA
BSD RECOVERY %	NA
BS/BSD RPD %	NA
DUPLICATE RPD %	8.16
LCS LEVEL	6.26
LCS RESULT	6.93
LCS RECOVERY %	111
SPIKE SAMPLE ID	7635-1
DUP SAMPLE ID	7635-1

B Not applicable due to matrix interference in the QC sample.
NA Not applicable

Inchcape Testing Services
Anametrix Laboratories
1961 Concourse Drive, Suite E
San Jose, CA 95131
(408) 432-8192 • Fax (408) 432-8198

CHAIN-OF-CUSTODY RECORD

PROJECT NUMBER	PROJECT NAME
96070G6	92CB040

Send Report Attention of:	Report Due	Verbal Due
MR. RICH PHALER	7/19/96	/ /

Sample Number	Date	Time	Comp	Matrix	Station Location	Number of Cntnrs	Type of Containers	Type of Analysis 366.2	Condition of Samples	Initial
3	7/8/96	2020		WATER	MW-3	1	500 mL POLY	X	7468-1	
4	↓	2040		↓	MW-1	↓	↓	↓	2	

ORIGINAL

SCREENED FOR RADIOACTIVITY

COOLER TEMPERATURE WHEN RECEIVED 4 °C

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	7/09/96 1630		
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Date/Time	Received by Lab: Cathie McNair	Date/Time 7/10/96 1200

Remarks: SUBBED TO ITS-DALLAS.

COMPANY: INCHCAPE TESTING SERVICES, ANAMETRIX LABS
ADDRESS: 1961 CONCOURSE DRIVE, SUITE E
SAN JOSE, CA 95131
PHONE : (408) 432-8192 FAX : (408)432-8198

Inchcape Testing Services
Environmental Laboratories

1961 Concourse Drive
Suite E
San Jose, CA 95131
Tel: 408-432-8192
Fax: 408-432-8198

August 1, 1996

Mr. Bill Copeland
Woodward-Clyde Consultants
500 12th St. #100
Oakland, CA 94607

Dear Mr. Copeland,

Enclosed are the analytical results for your Project ID: 92CB040 we received on July 09, 1996. The enclosed work was performed by a laboratory subcontracted by I.T.S - Environmental Laboratories.

I.T.S. Env. ID:	Client ID:
9607066-03	MW-3
9607066-04	MW-1

If you have any questions regarding this workorder, please give me a call at (408) 432-8192.

Sincerely,

I.T.S. - ENVIRONMENTAL LABORATORIES

8/1/96

Rich Phaler
Project Manager

Inchcape Testing Services
Environmental Laboratories

55 South Park Drive
Colchester, VT 05446

75 Green Mountain Drive
South Burlington, VT 05403

Analytical Report

Inchcape Testing Services
1961 Concourse Drive
Suite #E
San Jose, CA 95131

Attention : Rich Phaler

Date : 08/15/96
ETR Number : 59665
Project No.: 93228
No. Samples: 3
Arrived : 07/10/96

Page 1

Job:9607066

Standard analyses were performed in accordance with Methods for Analysis of Water and Wastes, EPA-600/4/79-020, Test Methods for Evaluating Solid Waste, SW-846, or Standard Methods for the Examination of Water and Wastewater.
All results are in mg/l unless otherwise noted.

Lab No./ Method No.	Sample Description/ Parameter	Result
306326	9607066-3:07/08/96 @2020(Water)	
351.3	Total Kjeldahl Nitrogen	1.2
306327	9607066-4:07/08/96 @2040(Water)	
351.3	Total Kjeldahl Nitrogen	<0.24
306328	LCS:(Liquid)	
351.3	Total Kjeldahl Nitrogen	9.29

Comments/Notes

TKN prep blank <0.24mg/L and LCS recovery = 97.8%.
TKN analyzed on 08/14/96, 9 days out of holding time.

< Last Page > Submitted By : Aquatec Inc.

R. Mason McKee

Inchcape Testing Services
Anametrix Laboratories
1961 Concourse Drive, Suite E
San Jose, CA 95131
(408) 432-8192 • Fax (408) 432-8198

CHAIN-OF-CUSTODY RECORD

PROJECT NUMBER	PROJECT NAME
96070066	92CB040

Send Report Attention of:	Report Due	Verbal Due
MR RICH PHALER	7/19/96	/ /

Sample Number	Date	Time	Comp	Matrix	Station Location	Number of Cntnrs	Type of Containers	Type of Analysis: TKN (351.2)	Condition of Samples	Initial
3	7/8/96	2020		WATER	MW-3	1	500ML POLY	X		
4	↓	2040		↓	MW-1	↓	↓	↓		

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	07/09/96 1630		
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Date/Time	Received by Lab: [signature]	Date/Time 7/10/96

Remarks: SUBCONTRACTED TO ITS-BURLINGTON.

COMPANY: INCHCAPE TESTING SERVICES, ANAMETRIX LABS
ADDRESS: 1961 CONCOURSE DRIVE, SUITE E
SAN JOSE, CA 95131
PHONE: (408) 432-8192 FAX: (408)432-8198

Laboratories, Inc.

Environmental Microbiological Services

3220 South
Fair Lane
Suite 18
Tempe, AZ
85282

(602)438.1606

FAX
(602)438.1207

Bill Copeland
Woodward-Clyde Consultants
500 12th Street, Suite 100
Oakland, CA 94607

Date Reported: **7-26-96**
Client Sample ID: **MW-1**
Project #: **92CB040**
Project Name: **IBC-Oakland**
Date Sampled: **7-8-96**
Date Submitted: **7-9-96**
Laboratory ID: **7442**

Results

Parameter	Results	Methods
Heterotrophic Plate Count	1.8×10^4 CFU/ml	SM 9215C
Petroleum Hydrocarbon Degrading Bacteria	1×10^3 CFU/ml	*

CFU/ml- Colony Forming Units/milliliter of sample.

* Petroleum Hydrocarbon Degrading Bacteria - Journal of Industrial Microbiology, 1992, 10:13-23 (modified), determined using gasoline and diesel as the sole carbon sources.

Reviewed by: Vicki N. Bess Date: 7-29-96

Laboratories, Inc.

Environmental Microbiological Services

3220 South
Fair Lane
Suite 18
Tempe, AZ
85282

(602)438.1606

FAX
(602)438.1207

Bill Copeland
Woodward-Clyde Consultants
500 12th Street, Suite 100
Oakland, CA 94607

Date Reported: **7-26-96**
Client Sample ID: **MW-3**
Project #: **92CB040**
Project Name: **IBC-Oakland**
Date Sampled: **7-8-96**
Date Submitted: **7-9-96**
Laboratory ID: **7443**

Results

Parameter	Results	Methods
Heterotrophic Plate Count	1.2×10^3 CFU/ml	SM 9215C
Petroleum Hydrocarbon Degrading Bacteria	$< 1 \times 10^3$ CFU/ml	*

CFU/ml- Colony Forming Units/milliliter of sample.

* Petroleum Hydrocarbon Degrading Bacteria - Journal of Industrial Microbiology, 1992, 10:13-23 (modified), determined using gasoline and diesel as the sole carbon sources.

Reviewed by: Vicki H. Bess Date: 7-29-96

BBC LABORATORIES, INC. Chain of Custody

BBC Laboratories, Inc.
3220 South Fair Lane, Suite 18
Tempe, AZ 85282
(602) 438 1606
FAX (602) 438.1207

DATE 7/8/96 PAGE 1 of 1

REPORT TO: BILL COPELAND
COMPANY: WOODWARD-CLYDE CONS
ADDRESS: 500 12th St. Ste 100
Oakland, CA. 94607
(510)874-3261 (510)874-3268
SAMPLED BY: (Signature) PHONE # FAX #

BILL TO: Larry Brown
COMPANY: International Brands, Inc.
ADDRESS: 1329 Arden Way
Sacramento, CA. 95815

SAMPLE ID	COLLECTED TIME	COLLECTED DATE	SIZE	MATRIX	LAB ID	ANALYSIS REQUEST	# OF CONTAINERS
MW-1	18:10	7/8/96	45 ml.	Water	7442	HPC, PHD	1
MW-3	18:20	7/8/96	45 ml.	Water	7443	HPC, PHD	1

PROJECT INFORMATION	RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.	RELINQUISHED BY: 4.
PROJECT NO.: 92CB040	Signature: Jon Haus Time: 19:00	Signature: Time:	Signature: Time:	Signature: Time:
PROJECT NAME: IBC-Oakland	Printed Name: JON HAUS Date: 7/8/96	Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
P.O. NO.:	Company: WOODWARD-CLYDE CONS.	Company:	Company:	Company:
Comments:	**RECEIVED BY: 1.**	**RECEIVED BY: 2.**	**RECEIVED BY: 3.**	**RECEIVED BY: 4.**
	Signature: Vicki Bess Time:	Signature: Time:	Signature: Time:	Signature: Time:
	Printed Name: Vicki Bess Date: 7-9-96	Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
	Company: BBC Laboratories	Company:	Company:	Company:

White, Canary, Pink: BBC Goldenrod: Originator

Inchcape Testing Services
Environmental Laboratories

1961 Concourse Drive
Suite E
San Jose, CA 95131
Tel: 408-432-8192
Fax: 408-432-8198

MR. BILL COPELAND
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4014

Workorder # : 9607066
Date Received : 07/09/96
Project ID : 92CB040
Purchase Order: N/A

The following samples were received at Inchcape for analysis :

ANAMETRIX ID	CLIENT SAMPLE ID
9607066- 1	TBLANK
9607066- 2	MW-4
9607066- 3	MW-3
9607066- 4	MW-1
9607066- 5	MW-2

This report is organized in sections according to the specific Inchcape laboratory group which performed the analysis(es) and generated the data.

The results contained within this report relate to only the sample(s) tested. Additionally, these data should be considered in their entirety and Inchcape cannot be responsible for the detachment, separation, or otherwise partial use of this report.

Inchcape is certified by the California Department of Health Services (DHS) to perform environmental testing under Certificate Number 1234.

If you have any further questions or comments on this report, please call your project manager as soon as possible. Thank you for using Inchcape Testing Services.

Project Manager

Date 7/24/96

This report consists of 36 pages.

REPORT SUMMARY
INCHCAPE, INC. (408)432-8192

MR. BILL COPELAND
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4014

Workorder # : 9607066
Date Received : 07/09/96
Project ID : 92CB040
Purchase Order: N/A
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

INCHCAPE SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9607066- 2	MW-4	WATER	07/08/96	TPHd
9607066- 3	MW-3	WATER	07/08/96	TPHd
9607066- 4	MW-1	WATER	07/08/96	TPHd
9607066- 5	MW-2	WATER	07/08/96	TPHd
9607066- 1	TBLANK	WATER	06/25/96	TPHgBTEX
9607066- 2	MW-4	WATER	07/08/96	TPHgBTEX
9607066- 3	MW-3	WATER	07/08/96	TPHgBTEX
9607066- 4	MW-1	WATER	07/08/96	TPHgBTEX
9607066- 5	MW-2	WATER	07/08/96	TPHgBTEX

REPORT SUMMARY
INCHCAPE, INC. (408)432-8192

MR. BILL COPELAND
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4014

Workorder # : 9607066
Date Received : 07/09/96
Project ID : 92CB040
Purchase Order: N/A
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- All holding times have been met for the analyses reported in this section.
- The concentrations reported as diesel for samples MW-4 and MW-1 are primarily due to the presence of a lighter petroleum product of hydrocarbon range C6-C12, possibly gasoline.

Department Supervisor 7/16/96 Date

Chemist 07/16/96 Date

TOTAL PETROLEUM HYDROCARBONS AS GASOLINE WITH BTEX

INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES

(408) 432-8192

DATA SUMMARY FORM

Laboratory ID:	9607066-01	Client Project ID:	92CB040
Matrix:	WATER	Client Sample ID:	TBLANK
Date Sampled:	6/25/96	Instrument ID:	HP12
Date Analyzed:	7/10/96	Surrogate Recovery:	101%
Date Released:	7/11/96	Concentration Units:	ug/L

COMPOUND	Dilution Factor	Reporting Limit	Amount Found
MtBE	1	5.0	ND
Benzene	1	0.5	ND
Toluene	1	0.5	ND
Ethylbenzene	1	0.5	ND
Total Xylenes	1	0.5	ND
Gasoline	1	50	ND

ND: Not detected at or above the reporting limit for the method.

TPHg: Total Petroleum Hydrocarbons as gasoline is determined by GC/FID (modified EPA Method 8015) following sample purge and trap by EPA Method 5030

BTEX: BTEX as Methyl tert-Butyl Ether, Benzene, Toluene, Ethylbenzene, and Total Xylenes is determined by GC/PID (modified EPA Method 8021) following sample purge and trap by EPA Method 5030.

Surrogate recovery quality control limits for p-Bromofluorobenzene are 61-139%.

All testing procedures follow California Department of Health Services approved methods.

TOTAL PETROLEUM HYDROCARBONS AS GASOLINE WITH BTEX

INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES
(408) 432-8192

DATA SUMMARY FORM

Laboratory ID:	9607066-02	Client Project ID:	92CB040
Matrix:	WATER	Client Sample ID:	MW-4
Date Sampled:	7/8/96	Instrument ID:	HP12
Date Analyzed:	7/10/96	Surrogate Recovery:	96%
Date Released:	7/11/96	Concentration Units:	ug/L

COMPOUND	Dilution Factor	Reporting Limit	Amount Found
MtBE	10	50	ND
Benzene	10	5.0	9.5
Toluene	10	5.0	85
Ethylbenzene	10	5.0	120
Total Xylenes	10	5.0	270
Gasoline	10	500	2600

ND: Not detected at or above the reporting limit for the method.
TPHg: Total Petroleum Hydrocarbons as gasoline is determined by GC/FID (modified EPA Method 8015) following sample purge and trap by EPA Method 5030
BTEX: BTEX as Methyl tert-Butyl Ether, Benzene, Toluene, Ethylbenzene, and Total Xylenes is determined by GC/PID (modified EPA Method 8021) following sample purge and trap by EPA Method 5030.
Surrogate recovery quality control limits for p-Bromofluorobenzene are 61-139%.
All testing procedures follow California Department of Health Services approved methods.

TOTAL PETROLEUM HYDROCARBONS AS GASOLINE WITH BTEX

INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES
(408) 432-8192

DATA SUMMARY FORM

Laboratory ID:	9607066-03	Client Project ID:	92CB040
Matrix:	WATER	Client Sample ID:	MW-3
Date Sampled:	7/8/96	Instrument ID:	HP12
Date Analyzed:	7/10/96	Surrogate Recovery:	104%
Date Released:	7/11/96	Concentration Units:	ug/L

COMPOUND	Dilution Factor	Reporting Limit	Amount Found
MtBE	1	5.0	ND
Benzene	1	0.5	ND
Toluene	1	0.5	ND
Ethylbenzene	1	0.5	ND
Total Xylenes	1	0.5	ND
Gasoline	1	50	ND

ND: Not detected at or above the reporting limit for the method.
TPHg: Total Petroleum Hydrocarbons as gasoline is determined by GC/FID (modified EPA Method 8015) following sample purge and trap by EPA Method 5030
BTEX: BTEX as Methyl tert-Butyl Ether, Benzene, Toluene, Ethylbenzene, and Total Xylenes is determined by GC/PID (modified EPA Method 8021) following sample purge and trap by EPA Method 5030.
Surrogate recovery quality control limits for p-Bromofluorobenzene are 61-139%.
All testing procedures follow California Department of Health Services approved methods.

TOTAL PETROLEUM HYDROCARBONS AS GASOLINE WITH BTEX

INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES

(408) 432-8192

DATA SUMMARY FORM

Laboratory ID:	9607066-04	Client Project ID:	92CB040
Matrix:	WATER	Client Sample ID:	MW-1
Date Sampled:	7/8/96	Instrument ID:	HP12
Date Analyzed:	7/10/96	Surrogate Recovery:	99%
Date Released:	7/11/96	Concentration Units:	ug/L

COMPOUND	Dilution Factor	Reporting Limit	Amount Found
MtBE	25	125	ND
Benzene	25	12.5	89
Toluene	25	12.5	79
Ethylbenzene	25	12.5	140
Total Xylenes	25	12.5	350
Gasoline	25	1250	3000

ND: Not detected at or above the reporting limit for the method.

TPHg: Total Petroleum Hydrocarbons as gasoline is determined by GC/FID (modified EPA Method 8015) following sample purge and trap by EPA Method 5030

BTEX: BTEX as Methyl tert-Butyl Ether, Benzene, Toluene, Ethylbenzene, and Total Xylenes is determined by GC/PID (modified EPA Method 8021) following sample purge and trap by EPA Method 5030.

Surrogate recovery quality control limits for p-Bromofluorobenzene are 61-139%.

All testing procedures follow California Department of Health Services approved methods.

TOTAL PETROLEUM HYDROCARBONS AS GASOLINE WITH BTEX

INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES
(408) 432-8192

DATA SUMMARY FORM

Laboratory ID:	9607066-05	Client Project ID:	92CB040
Matrix:	WATER	Client Sample ID:	MW-2
Date Sampled:	7/8/96	Instrument ID:	HP12
Date Analyzed:	7/10/96	Surrogate Recovery:	100%
Date Released:	7/11/96	Concentration Units:	ug/L

COMPOUND	Dilution Factor	Reporting Limit	Amount Found
MtBE	1	5.0	ND
Benzene	1	0.5	ND
Toluene	1	0.5	ND
Ethylbenzene	1	0.5	ND
Total Xylenes	1	0.5	ND
Gasoline	1	50	ND

ND: Not detected at or above the reporting limit for the method.
TPHg: Total Petroleum Hydrocarbons as gasoline is determined by GC/FID (modified EPA Method 8015) following sample purge and trap by EPA Method 5030
BTEX: BTEX as Methyl tert-Butyl Ether, Benzene, Toluene, Ethylbenzene, and Total Xylenes is determined by GC/PID (modified EPA Method 8021) following sample purge and trap by EPA Method 5030.
Surrogate recovery quality control limits for p-Bromofluorobenzene are 61-139%.
All testing procedures follow California Department of Health Services approved methods.

TOTAL PETROLEUM HYDROCARBONS AS GASOLINE WITH BTEX

INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES

(408) 432-8192

DATA SUMMARY FORM

Laboratory ID:	BL1001E1	Client Project ID:	92CB040
Matrix:	WATER	Client Sample ID:	Method Blank
Date Sampled:	-----	Instrument ID:	HP12
Date Analyzed:	7/10/96	Surrogate Recovery:	98%
Date Released:	7/11/96	Concentration Units:	ug/L

COMPOUND	Dilution Factor	Reporting Limit	Amount Found
MtBE	1	5.0	ND
Benzene	1	0.5	ND
Toluene	1	0.5	ND
Ethylbenzene	1	0.5	ND
Total Xylenes	1	0.5	ND
Gasoline	1	50	ND

ND: Not detected at or above the reporting limit for the method.

TPHg: Total Petroleum Hydrocarbons as gasoline is determined by GC/FID (modified EPA Method 8015) following sample purge and trap by EPA Method 5030

BTEX: BTEX as Methyl tert-Butyl Ether, Benzene, Toluene, Ethylbenzene, and Total Xylenes is determined by GC/PID (modified EPA Method 8021) following sample purge and trap by EPA Method 5030.

Surrogate recovery quality control limits for p-Bromofluorobenzene are 61-139%.

All testing procedures follow California Department of Health Services approved methods.

TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES
(408) 432-8192

MATRIX SPIKE RECOVERY REPORT

Client Project ID:	92CB040	Laboratory ID:	9607066-05
Client Sample ID:	MW-2	Date Released:	7/11/96
Date Sampled:	7/8/96	Instrument ID:	HP12
Date Analyzed:	7/10/96	Matrix:	WATER
		Concentration Units:	ug/L

COMPOUND NAME	SPIKE AMT	SAMPLE CONC	MS CONC	% REC MS	MSD CONC	%REC MSD	RPD
Gasoline	400	0	390	98%	380	95%	-3%
p-Bromofluorobenzene				95%		95%	

Quality control limits for MS/MSD recovery are 48-149%

Quality control limits for RPD(relative percent difference) are +/- 30%

Quality control limits for p-Bromofluorobenzene recovery are 61-139%.

TOTAL PETROLEUM HYDROCARBONS AS GASOLINE

INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES

(408) 432-8192

LABORATORY CONTROL SAMPLE REPORT

Client Project ID:	92CB040	Laboratory ID:	ML1001E1
Matrix:	WATER	Date Released:	7/11/96
Date Analyzed:	7/10/96	Instrument ID:	HP12
		Concentration Units:	ug/L

COMPOUND NAME	SPIKE AMT	LCS CONC	%REC LCS
Gasoline	400	390	98%
p-Bromofluorobenzene			100%

Quality control limits for LCS recovery are 67-127%.

Quality control limits for p-Bromofluorobenzene recovery are 61-139%.

TOTAL PETROLEUM HYDROCARBONS AS BTEX

INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES

(408) 432-8192

LABORATORY CONTROL SAMPLE REPORT

Client Project ID:	92CB040	Laboratory ID:	NL1001E3
Matrix:	WATER	Date Released:	7/11/96
Date Analyzed:	7/10/96	Instrument ID:	HP12
		Concentration Units:	ug/L

COMPOUND NAME	SPIKE AMT	LCS CONC	%REC LCS
MtBE	10.0	9.2	92%
Benzene	10.0	10.7	107%
Toluene	10.0	11.8	118%
Ethylbenzene	10.0	11.0	110%
Total Xylenes	10.0	12.5	125%
p-Bromofluorobenzene			103%

Quality control limits for LCS recovery are 50-150% for MTBE, 52-133% for benzene, 57-136% for toluene, 56-139% for ethylbenzene, and 56-141% for total xylenes.

Quality control limits for p-Bromofluorobenzene recovery are 61-139%.

TOTAL PETROLEUM HYDROCARBONS AS DIESEL

INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES

(408) 432-8192

DATA SUMMARY FORM

Laboratory Workorder	9607066	Client Project ID:	92CB040
Matrix:	WATER	Date Released:	7/16/96
Date Extracted:	7/11/96	Concentration Units:	ug/L
Instrument ID:	HP23		

Laboratory ID	Client ID	Date Sampled	Date Analyzed	Dilution Factor	Reporting Limit	Amount Found	Surrogate Recovery
9607066-02	MW-4	7/8/96	7/12/96	1	50	580	97%
9607066-03	MW-3	7/8/96	7/12/96	1	50	ND	97%
9607066-04	MW-1	7/8/96	7/12/96	1	50	670	97%
9607066-05	MW-2	7/8/96	7/12/96	1	50	ND	93%
BL1111F1	Method Blank	-----	7/12/96	1	50	ND	91%

ND: Not detected at or above the reporting limit for the method.
TPHd: Total Petroleum Hydrocarbons as C10-C28 is determined by GC/FID (modified EPA Method 8015) following sample extraction by EPA Method 3510.
Surrogate recovery quality control limits for o-terphenyl are 65-122%.
All testing procedures follow California Department of Health Services approved methods.

Issued on 7/16/96 at 13:19

TOTAL PETROLEUM HYDROCARBONS AS DIESEL

INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES

(408) 432-8192

MATRIX SPIKE RECOVERY REPORT

Client Project ID:	92CB040	Laboratory ID:	9607075-01
Client Sample ID:	Batch Spike	Date Released:	7/16/96
Date Sampled:	7/9/96	Instrument ID:	HP9
Date Extracted:	7/11/96	Matrix:	WATER
Date Analyzed:	7/13/96	Concentration Units:	ug/L

COMPOUND NAME	SPIKE AMT	SAMPLE CONC	MS CONC	% REC MS	MSD CONC	%REC MSD	RPD
Diesel	1250	98	881	63%	896	64%	2%
o-Terphenyl				91%		95%	

Quality control limits for MS/MSD recovery are 32-143%

Quality control limits for RPD(relative percent difference) are +/- 30%.

Quality control limits for o-terphenyl recovery are 65-122%.

TOTAL PETROLEUM HYDROCARBONS AS DIESEL

INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES

(408) 432-8192

LABORATORY CONTROL SAMPLE REPORT

Client Project ID:	92CB040	Laboratory ID:	M/NL1111F1
Matrix:	WATER	Date Released:	7/16/96
Date Extracted:	7/11/96	Instrument ID:	HP23
Date Analyzed:	7/12/96	Concentration Units:	ug/L

COMPOUND NAME	SPIKE AMT	LCS CONC	% REC LCS	LCSD CONC	%REC LCSD	RPD
Diesel	1250	728	58%	650	52%	-11%
o-Terphenyl			91%		81%	

Quality control limits for LCS/LCSD recovery are 34-111%.

Quality control limits for RPD(relative percent difference) are +/- 18%.

Quality control limits for o-terphenyl recovery are 65-122%.

INCHCAPE TESTING SERVICES, SAN JOSE LABORATORIES
REPORT DESCRIPTION - INORGANICS

Analytical Data Report (ADR)

The ADR contains tabulated results for inorganic analytes. All field samples, QC samples and blanks were prepared and analyzed according to procedures in the following references:

- "Test Methods for Evaluating Solid Waste," SW-846, EPA, 3rd Edition, November 1986.
- "Methods for Chemical Analysis of Water and Wastes," EPA, 3rd Edition, 1983.
- CCR Title 22, Section 66261, Appendix II, California Waste Extraction Test.
- CCR Title 22, Section 66261, Appendix XI, Organic Lead.
- "Standard Methods for the Examination of Water and Wastewater," APHA, AWWA, WEF, 18th Edition, 1992.
- USEPA Contract Laboratory Program Statement of Work for Inorganic Analyses, ILM02.1, 1991.

Matrix Spike Report (MSR)

The MSR summarizes percent recovery and relative percent difference information for matrix spikes and matrix spike duplicates. This information is a statement of both accuracy and precision. MSRs may not be provided with all analytical reports. ITS-SJ control limit for MSR is 75-125% with 25% for RPD limits, except for Method 6010A, which is 80-120% with 25% RPD limits.

Laboratory Control Sample Report (LCSR)

The LCSR summarizes percent recovery information for laboratory control spikes on reagent water or soil. This information is a statement of performance for the method, i.e., the samples are properly prepared and analyzed according to the applicable methods. ITS-SJ control limit for LCSR is 80-120%.

Method Blank Report (MBR)

The MBR summarizes quality control information for reagents used in preparing samples. The absolute value of each analyte measured in the method blank should be below the method reporting limit for that analyte.

Post Digestion Spike Report (PDSR)

The PDSR summarizes percent recovery information for post digestion spikes. A post digestion spike is performed for a particular analyte if the matrix spike recovery is outside of established control limits. Any percent recovery for a post digestion spike outside of established limits for an analyte indicates probable matrix effects and interferences for that analyte. ITS-SJ control limit for PDSR is 75-125%.

Qualifiers (Q)

ITS-SJ uses several data qualifiers in inorganic reports. These qualifiers give additional information on the analytes reported. The following is a list of qualifiers and their meanings:

- I - Sample was analyzed at the stated dilution due to interferences.
- U - Analyte concentration was below the method reporting limit. For matrix and post digestion spike reports, a value of "0.0" is entered for calculation of the percent recovery.
- B - Sample concentration was below the reporting limit but above the instrument detection limit. Result is entered for calculation of the percent recovery only.
- H - Spike percent recovery is not calculated due to possible interferences from relatively high concentration level of the analyte in the unspiked sample.
- L - Reporting limit was increased to compensate for background absorbances or matrix interferences.

Comment Codes

In addition to qualifiers, the following codes are used in the comment section of all reports to give additional information about sample preparation methods:

- A - Sample was prepared for silver based on the silver digestion method developed by the Southern California Laboratory, Department of Health Services, "Acid Digestion for Sediments, Sludges, Soils and Solid Wastes. A Proposed Alternative to EPA SW846, Method 3050." Environmental Science and Technology, 1989, 23, 898-900.
- T - Spikes were prepared after extraction by the Toxicity Characteristic Leaching Procedure (TCLP).
- C - Spikes were prepared after extraction by the California Waste Extraction Test (CWET) method.
- D - Reported results are dissolved, not total, metals.

Reporting Conventions

Analytical values reported are gross values, i.e., <u>not</u> corrected for method blank contamination. Solid matrices are reported on a wet weight basis, unless specifically requested otherwise.

REPORT SUMMARY
INCHCAPE, INC. (408)432-8192

MR. BILL COPELAND
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4014

Workorder # : 9607066
Date Received : 07/09/96
Project ID : 92CB040
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

SAMPLE INFORMATION:

INCHCAPE SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9607066- 3	MW-3	WATER	07/08/96	160.1
9607066- 4	MW-1	WATER	07/08/96	160.1
9607066- 3	MW-3	WATER	07/08/96	300.0
9607066- 4	MW-1	WATER	07/08/96	300.0
9607066- 3	MW-3	WATER	07/08/96	350.3
9607066- 4	MW-1	WATER	07/08/96	350.3

REPORT SUMMARY
INCHCAPE, INC. (408)432-8192

MR. BILL COPELAND
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4014

Workorder # : 9607066
Date Received : 07/09/96
Project ID : 92CB040
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

QA/QC SUMMARY :

- Holding times have been met for the analyses reported in this section.

Mona Kamel for 07/19/96
Department Supervisor Date

Wendy Lee 7/18/96
Chemist Date

INCHCAPE TESTING SERVICES
SAN JOSE LABORATORIES
(408) 432-8192
DATA REPORT

ITS-SJ Sample ID: **9607066-03**
Client Sample ID: **MW-3**
Client Project Number: **92CB040**
Matrix: **WATER**

SDG #: **N/A**
Date Sampled: **07/08/96**
Analyst:
Supervisor:

Analyte	Prep. Method	Prep. Batch	Analytical Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Reporting Limit	Results	Q
Total Dissolved Solids	160.1	13174	160.1	N/A	07/11/96	07/15/96	1	mg/L	10.0	**596**	
Nitrite as N	300.0	13137	300.0	IC1	07/09/96	07/09/96	1	mg/L	0.030	**ND**	
Nitrate as N	300.0	13137	300.0	IC1	07/09/96	07/09/96	1	mg/L	0.020	**ND**	
Ammonia as N	350.3	13158	350.3	MET2	07/12/96	07/12/96	1	mg/L	0.10	**0.98**	

COMMENTS:

INCHCAPE TESTING SERVICES
SAN JOSE LABORATORIES
(408) 432-8192
DATA REPORT

ITS-SJ Sample ID: **9607066-04**
Client Sample ID: **MW-1**
Client Project Number: **92CB040**
Matrix: **WATER**

SDG #: **N/A**
Date Sampled: **07/08/96**
Analyst:
Supervisor:

Analyte	Prep. Method	Prep. Batch	Analytical Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Reporting Limit	Results	Q
Total Dissolved Solids	160.1	13174	160.1	N/A	07/11/96	07/15/96	1	mg/L	10.0	**271**	
Nitrite as N	300.0	13137	300.0	IC1	07/09/96	07/09/96	1	mg/L	0.030	**ND**	
Nitrate as N	300.0	13137	300.0	IC1	07/09/96	07/09/96	1	mg/L	0.020	**2.5**	
Ammonia as N	350.3	13158	350.3	MET2	07/12/96	07/12/96	1	mg/L	0.10	**ND**	

COMMENTS:

INCHCAPE TESTING SERVICES
SAN JOSE LABORATORIES
(408) 432-8192
METHOD BLANK REPORT

ITS-SJ Sample ID: **BL116WA**
Client Sample ID: **N/A**
ITS-SJ WO #: **9607066**
Client Project Number: **92CB040**
Matrix: **WATER**

SDG #: **NA**
Prep. Batch: **13174**
Analyst:
Supervisor:

Analyte	Prep. Method	Analytical Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Reporting Limit	Results	Q
Total Dissolved Solids	160.1	160.1	N/A	07/11/96	07/15/96	1	mg/L	10.0	**ND**	

COMMENTS:

INCHCAPE TESTING SERVICES
SAN JOSE LABORATORIES
(408) 432-8192
METHOD BLANK REPORT

ITS-SJ Sample ID: **BL096WA**
Client Sample ID: **N/A**
ITS-SJ WO #: **9607066**
Client Project Number: **92CB040**
Matrix: **WATER**

SDG #: **NA**
Prep. Batch: **13137**
Analyst: JF
Supervisor: SC

Analyte	Prep. Method	Analytical Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Reporting Limit	Results	Q
Nitrite as N	300.0	300.0	IC1	07/09/96	07/09/96	1	mg/L	0.030	**ND**	
Nitrate as N	300.0	300.0	IC1	07/09/96	07/09/96	1	mg/L	0.020	**ND**	

COMMENTS:

INCHCAPE TESTING SERVICES
SAN JOSE LABORATORIES
(408) 432-8192
METHOD BLANK REPORT

ITS-SJ Sample ID: **BL096WB**
Client Sample ID: **N/A**
ITS-SJ WO #: **9607066**
Client Project Number: **92CB040**
Matrix: **WATER**

SDG #: **NA**
Prep. Batch: **13137**
Analyst: gc
Supervisor: gc

Analyte	Prep. Method	Analytical Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Reporting Limit	Results	Q
Nitrite as N	300.0	300.0	IC1	07/09/96	07/09/96	1	mg/L	0.030	**ND**	

COMMENTS:

INCHCAPE TESTING SERVICES
SAN JOSE LABORATORIES
(408) 432-8192
METHOD BLANK REPORT

ITS-SJ Sample ID: **BL126WA**
Client Sample ID: **N/A**
ITS-SJ WO #: **9607066**
Client Project Number: **92CB040**
Matrix: **WATER**

SDG #: **NA**
Prep. Batch: **13158**
Analyst: SC
Supervisor: [signature]

Analyte	Prep. Method	Analytical Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Reporting Limit	Results	Q
Ammonia as N	350.3	350.3	MET2	07/12/96	07/12/96	1	mg/L	0.10	**ND**	

COMMENTS:

INCHCAPE TESTING SERVICES
SAN JOSE LABORATORIES
(408) 432-8192
SAMPLE DUPLICATE REPORT

ITS-SJ Sample ID: **9606052-02D**
Client Sample ID: **BATCH QC**
Client Project Number: **92CB040**
Matrix: **WATER**
Associated W.O. #: **9607066**

SDG #: **NA**
Analyst: SC
Supervisor: JV

Analyte	Prep. Meth.	Prep. Batch	Analyt. Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Sample Conc.	Sample Duplicate Conc.	RPD	Q
Nitrite as N	300.0	13137	300.0	IC1	07/09/96	07/09/96	20	mg/L	**ND**	**ND**	**N/A**	I
Nitrate as N	300.0	13137	300.0	IC1	07/09/96	07/09/96	1	mg/L	**1.1**	**1.1**	**0.0**	

COMMENTS:

INCHCAPE TESTING SERVICES
SAN JOSE LABORATORIES
(408) 432-8192
SAMPLE DUPLICATE REPORT

ITS-SJ Sample ID: **9607066-03D**
Client Sample ID: **MW-3**
Client Project Number: **92CB040**
Matrix: **WATER**

SDG #: **NA**
Analyst: SC
Supervisor: [signature]

Analyte	Prep. Meth.	Prep. Batch	Analyt. Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Sample Conc.	Sample Duplicate Conc.	RPD	Q
Ammonia as N	350.3	13158	350.3	MET2	07/12/96	07/12/96	1	mg/L	**0.98**	**0.88**	**10.8**	

COMMENTS:

INCHCAPE TESTING SERVICES
SAN JOSE LABORATORIES
(408) 432-8192
SAMPLE DUPLICATE REPORT

ITS-SJ Sample ID: **9607066-04D**
Client Sample ID: **MW-1**
Client Project Number: **92CB040**
Matrix: **WATER**

SDG #: **NA**
Analyst: SC
Supervisor: JL

Analyte	Prep. Meth.	Prep. Batch	Analyt. Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Sample Conc.	Sample Duplicate Conc.	RPD	Q
Total Dissolved Solids	160.1	13174	160.1	N/A	07/11/96	07/15/96	1	mg/L	**271**	**273**	**0.735**	

COMMENTS:

INCHCAPE TESTING SERVICES
SAN JOSE LABORATORIES
(408) 432-8192
MATRIX SPIKE REPORT

ITS-SJ Sample ID: **9606052-02MS, MD**
Client Sample ID: **BATCH QC**
Client Proj. Number: **92CB040**
Matrix: **WATER**
Associated W.O. #: **9607066**

SDG #: **NA**
Analyst: SC
Supervisor: TV

Analyte	Prep. Batch	Analyt. Method	Instr. I.D.	Date Prepared	Date Analyzed	Units	Spike Amnt.	Sample Conc.	Matrix Spike Conc.	% Rec.	Matrix Sp. Dup. Conc.	% Rec.	RPD	Q
Nitrite as N	13137	300.0	IC1	07/09/96	07/10/96	mg/L	20.0	0.0	22.3	**112**	22.3	**112**	**0.0**	U
Nitrate as N	13137	300.0	IC1	07/09/96	07/09/96	mg/L	1.0	1.1	1.9	**80.0**	2.1	**100**	**10.0**	

COMMENTS:

INCHCAPE TESTING SERVICES
SAN JOSE LABORATORIES
(408) 432-8192
MATRIX SPIKE REPORT

ITS-SJ Sample ID: **9607066-03MS, MD**
Client Sample ID: **MW-3**
Client Proj. Number: **92CB040**
Matrix: **WATER**

SDG #: **NA**
Analyst:
Supervisor:

Analyte	Prep. Batch	Analyt. Method	Instr. I.D.	Date Prepared	Date Analyzed	Units	Spike Amnt.	Sample Conc.	Matrix Spike Conc.	% Rec.	Matrix Sp. Dup. Conc.	% Rec.	RPD	Q
Ammonia as N	13158	350.3	MET2	07/12/96	07/12/96	mg/L	2.0	0.98	2.6	**81.0**	3.1	**106**	**17.5**	

COMMENTS:

INCHCAPE TESTING SERVICES
SAN JOSE LABORATORIES
(408) 432-8192
MATRIX SPIKE REPORT

ITS-SJ Sample ID: **9607066-04MS, MD**
Client Sample ID: **MW-1**
Client Proj. Number: **92CB040**
Matrix: **WATER**

SDG #: **NA**
Analyst: TV
Supervisor: MH

Analyte	Prep. Batch	Analyt. Method	Instr. I.D.	Date Prepared	Date Analyzed	Units	Spike Amnt.	Sample Conc.	Matrix Spike Conc.	% Rec.	Matrix Sp. Dup. Conc.	% Rec.	RPD	Q
Total Dissolved Solids	13174	160.1	N/A	07/11/96	07/15/96	mg/L	1500	271	1760	**99.3**	1770	**100**	**0.57**	

COMMENTS:

INCHCAPE TESTING SERVICES
SAN JOSE LABORATORIES
(408) 432-8192

LABORATORY CONTROL SAMPLE REPORT

ITS-SJ Sample ID: **LL116WA**
Client Sample ID: **N/A**
ITS-SJ WO #: **9607066**
Client Project Number: **92CB040**
Matrix: **WATER**

SDG #: **NA**
Prep. Batch: **13174**
Analyst: JL
Supervisor: TV

Analyte	Prep. Method	Analytical Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Spike Amount	LCS Results	% Recovery	Q
Total Dissolved Solids	160.1	160.1	N/A	07/11/96	07/15/96	1	mg/L	1500	1460	**97.3**	

COMMENTS:

INCHCAPE TESTING SERVICES
SAN JOSE LABORATORIES
(408) 432-8192

LABORATORY CONTROL SAMPLE REPORT

ITS-SJ Sample ID: **LL096WA**
Client Sample ID: **N/A**
ITS-SJ WO #: **9607066**
Client Project Number: **92CB040**
Matrix: **WATER**

SDG #: **NA**
Prep. Batch: **13137**
Analyst: RC
Supervisor:

Analyte	Prep. Method	Analytical Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Spike Amount	LCS Results	% Recovery	Q
Nitrite as N	300.0	300.0	IC1	07/09/96	07/09/96	1	mg/L	1.0	0.97	**97.0**	
Nitrate as N	300.0	300.0	IC1	07/09/96	07/09/96	1	mg/L	1.0	0.94	**94.0**	

COMMENTS:

INCHCAPE TESTING SERVICES
SAN JOSE LABORATORIES
(408) 432-8192
LABORATORY CONTROL SAMPLE REPORT

ITS-SJ Sample ID: **LL096WB**
Client Sample ID: **N/A**
ITS-SJ WO #: **9607066**
Client Project Number: **92CB040**
Matrix: **WATER**

SDG #: **NA**
Prep. Batch: **13137**
Analyst: SC
Supervisor: TV

Analyte	Prep. Method	Analytical Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Spike Amount	LCS Results	% Recovery	Q
Nitrite as N	300.0	300.0	IC1	07/09/96	07/09/96	1	mg/L	1.0	1.0	**100**	

COMMENTS:

INCHCAPE TESTING SERVICES
SAN JOSE LABORATORIES
(408) 432-8192

LABORATORY CONTROL SAMPLE REPORT

ITS-SJ Sample ID: **LL126WA**
Client Sample ID: **N/A**
ITS-SJ WO #: **9607066**
Client Project Number: **92CB040**
Matrix: **WATER**

SDG #: **NA**
Prep. Batch: **13158**
Analyst:
Supervisor:

Analyte	Prep. Method	Analytical Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Spike Amount	LCS Results	% Recovery	Q
Ammonia as N	350.3	350.3	MET2	07/12/96	07/12/96	1	mg/L	2.0	1.9	95.0	

COMMENTS:

10849

9607066 (10/15) (18)

QUOTE 63040

Woodward-Clyde Consultants
500 12th Street, Suite 100, Oakland, CA 94607-4014
(510) 893-3600

Chain of Custody Record

PROJECT NO. 92CB040

SAMPLERS: (Signature) Jon Hamm

	DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPHg/BTEX	TPHd	TKN(351.2)	300.0	365.2	350.3	160.1	Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
1	6/25/96	—	Trip blank	W					2							2	
2	7/8/96	20:00	MW-4	W					3	2	*					5	
3		20:20	MW-3	W					3	2	1	1	1	1	1	10	
4		20:40	MW-1	W					3	2	1	1	1	1	1	10	
5	7/8/96	21:10	MW-2	W					3	2						5	

Samples iced upon sampling.

Fresh ice added @ 0630 A.M.

Results to: Bill Copeland

TOTAL NUMBER OF CONTAINERS: 32

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
Jon Hamm	7/8/96 22:15	Laura Olson	Laura Olson	7/9/96 1400	

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
			HL	7/9/96 1400

Inchcape Testing Services
Environmental Laboratories

SAMPLE RECEIVING CHECKLIST

Workorder Number: 9607066	*Client Project ID:* 92C B040	*Quote Number:* 63040

Cooler			
Shipping documentation present? If YES, enter Carrier and Airbill #:	YES	NO	(N/A)
Custody Seal on the outside of cooler? *Condition*: Intact ☐ Broken ☐	YES	NO	(N/A)
Temperature of sample(s) within range? List temperatures of cooler(s): 4°C **Note**: If all samples taken within previous 4 hr, circle N/A and place in sample storage area as soon as possible.	(YES)	NO	N/A
Samples			
Chain of custody seal present for each container? *Condition*: Intact ☐ Broken ☐	YES	NO	(N/A)
Samples arrived within holding time?	(YES)	NO	N/A
Samples in proper containers for methods requested? *Condition of containers*: Intact ☑ Broken ☐ If NO, were samples transferred to proper container(s)? Yes ☐ No ☐	(YES)	NO	
Were VOA containers received with zero headspace? If NO, were bubbles < 6 mm? Yes ☑ No ☐	YES	(NO)	N/A
Were container labels complete? (ID, date, time, preservative)	(YES)	NO	N/A
Were samples properly preserved? If NO, was the preservative added at time of receipt? Yes ☐ No ☐	(YES)	NO	N/A
pH check of samples required at time of receipt? If YES, pH checked and recorded by: JP	(YES)	NO	
Sufficient amount of sample received for methods requested? If NO, has the client or PM been notified? Yes ☐ No ☐	(YES)	NO	
Field blanks received with sample batch?	YES	NO	(N/A)
Trip blanks received with sample batch?	(YES)	NO	N/A
Chain of Custody			
Chain of custody form received with samples?	(YES)		NO
Has it been filled out completely and in ink?	(YES)		NO
Sample IDs on chain of custody form agree with labels?	(YES)		NO
Number of containers on chain agree with number received?	(YES)		NO
Analysis methods specified?	(YES)		NO
Sampling date and time indicated?	(YES)		NO
Proper signatures of sampler, courier and custodian in appropriate spaces? With time and date? Yes ☑ No ☐	(YES)		NO
Turnaround time? Standard ☑ Rush ☐			

Any NO responses and/or any BROKEN that was checked must be detailed in a Corrective Action Form.

Sample Custodian: JP Date: 7/9/96 Project Manager: [signature] Date: 7/11/96