



Environmental
Science &
Engineering, Inc.

ENVIRONMENTAL
PROTECTION
95 JUN 20 AM 9:52

June 15, 1995

Ms. Madhulla Logan
Alameda County Health Agency
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

**SUBJECT: SECOND QUARTER OF 1995
GROUND WATER MONITORING REPORT
JAMES RIVER CORPORATION
2101 WILLIAMS STREET
SAN LEANDRO, CALIFORNIA
ESE PROJECT NO. 65-95-022**

Dear Ms. Logan:

This report presents the results of the second quarter of 1995 ground water monitoring activities conducted by Environmental Science & Engineering, Inc. (ESE) for the James River Corporation facility at 2101 Williams Street, San Leandro, California (Figure 1). This document was prepared under the supervision of a California Registered Geologist and for the sole use of the James River Corporation and the Alameda County Health Care Services Agency (HCSA), the only intended beneficiaries of our work. No other party may rely on the information contained in this report without prior written consent of ESE.

SECOND QUARTER 1995 GROUND WATER MONITORING

Field Investigation

On May 2, 1995, ground water samples were collected from monitoring wells W-3, W-5, W-6, W-7, W-8, W-9, W-10, and B-1 for chemical analyses. All sampling equipment was decontaminated before sampling activities began and after each sampling event at each well. All ground water sampling was performed according to HCSA requirements and ESE's Standard Operating Procedure No. 3 for Ground Water Monitoring and Sampling from Monitoring Wells (Appendix A). Copies of ESE's ground water sample collection logs are presented in Appendix B.

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Before the eight wells were purged and sampled, water-level measurements were obtained using an electronic ground water well sounder with an accuracy of 0.01 foot. The measurements were repeated several times until consecutive measurements differed by less than 0.01 foot. The final measurements were recorded on ESE's sample collection logs.

Each well was purged of at least three well volumes of water using a decontaminated centrifugal pump. Field parameters (consisting of temperature, specific conductance, and pH) were monitored during purging and recorded on the ESE ground water sample collection logs. Samples were collected after the parameter readings had stabilized. Field parameter measurements for purged water are presented in Table 1 and on ESE's sample collection logs (Appendix B).

After purging, ground water samples were collected from each well using a new disposable Teflon bailer. To minimize the potential for cross-contamination, a new dropline and a new bailer were used for sample collection at each well. Samples collected for volatile organic analysis (VOA) were decanted into three 40-milliliter VOA vials. In addition, a one-liter amber glass bottle of ground water was collected from wells W-7 and W-8 for analysis of total petroleum hydrocarbons (as diesel and as motor oil). Samples were assigned numbers related to the well of origin, stored on ice, and delivered with a chain-of-custody record to Curtis & Tompkins, Ltd. (a state-certified laboratory) located in Berkeley, California.

One VOA trip blank was also submitted to the laboratory as a quality assurance (QA) check. The purpose of the trip blank was to identify the presence of artifact laboratory chemicals in the sample bottles or contamination of volatile chemicals during transport. This sample was entered on the chain-of-custody form and delivered to the laboratory in the cooler containing the ground water samples.

Ground Water Gradient and Flow Direction

Potentiometric surface elevations measured during the period of June 1994 to May 1995 are presented in Table 2. The direction of ground water flow during this quarter is towards the west at a gradient of approximately 0.004 foot/foot (Figure 2). Ground water flow direction and gradient data are consistent with data collected from previous monitoring periods.

Chemical Analyses

Samples collected on May 2, 1995 were analyzed using EPA Test Methods 8240 and 8015. Figure 3 presents the reported concentration of analytes detected in each well. Table 3 presents reported ground water sample analytical results for the period of June 1994 through May 1995. Chemical analytes and concentrations reported in May 1995 were, in most cases, consistent with past reports. Compared to the previous monitoring report, trichloroethene (TCE) concentrations were reported to have increased in wells W-3 (from less than 5 micrograms per liter, - $\mu\text{g/L}$, to 160 $\mu\text{g/L}$), W-5 (from 290 $\mu\text{g/L}$ to 360 $\mu\text{g/L}$), and in W-9 (from 3 $\mu\text{g/L}$ to 72 $\mu\text{g/L}$). TCE concentrations decreased in wells W-6 (from 250 $\mu\text{g/L}$ to 230 $\mu\text{g/L}$) and W-7 (from 180 $\mu\text{g/L}$ to 100 $\mu\text{g/L}$). Tetrachloroethene (PCE) concentrations increased in wells W-3 (from less than 5 $\mu\text{g/L}$ to 270 $\mu\text{g/L}$) and well W-9 (from 3 $\mu\text{g/L}$ to 72 $\mu\text{g/L}$). The vinyl chloride concentration was reported to have increased in well W-3 (from less than 10 $\mu\text{g/L}$ to 28 $\mu\text{g/L}$), in W-7 (from less than 10 $\mu\text{g/L}$ to 59 $\mu\text{g/L}$), and in W-8 (from 82 $\mu\text{g/L}$ to 260 $\mu\text{g/L}$). In well W-10, the acetone concentration decreased from 47,000 $\mu\text{g/L}$ to 21,000 $\mu\text{g/L}$.

Cis-1,2 dichloroethene (DCE) concentrations were reported to have decreased in wells W-5, W-6, and W-9, and increased in wells W-3, W-7, and W-8. Carbon disulfide, 1,1-DCE, 4-methyl-2-pentanone (MIBK), and 1,1 DCA were non-detected for this sampling event.

ESE collected ground water from wells W-7 and W-8 for analysis of TPH as motor oil (TPH-MO) and diesel (TPH-D). These analyses were first performed during the June 1994 quarterly monitoring event to investigate the extent of a petroleum hydrocarbon release from the abandoned cardboard bailer vault located inside the Flexible Packaging Plant. Peaks on the chromatograph identifying both diesel and motor oil were reported by the laboratory for well W-7. The sample from well W-7 was reported to contain TPH-D and TPH-MO at 15,000 $\mu\text{g/L}$ and 9,600 $\mu\text{g/L}$, respectively. As stated in the Curtis and Tompkins report, the sample chromatogram for W-7 does not resemble the hydrocarbon standard pattern. A copy of the laboratory report and chain-of-custody documentation are presented in Appendix C.

Conclusions and Recommendations

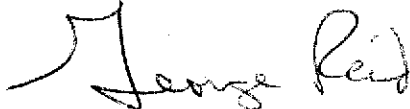
Results of quarterly ground water sampling and analysis performed during May 1995, indicate that chlorinated hydrocarbons continue to be present in the shallow ground water beneath the James River Facility in San Leandro. Findings are consistent with those collected during the past and are indicative of an upgradient offsite source of chlorinated hydrocarbons.

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The next ground water monitoring event is scheduled to take place in August 1995. If you have any questions regarding this report, please contact George Reid at (510) 685-4053.

Respectfully submitted,

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.



George Reid
Senior Geologist
Registered Geologist #3608

Attachments: Table 1	Field Parameter Measurements of Water Purged from Monitoring Wells May 2, 1995
Table 2	Water-Level Measurements
Table 3	Analytical Results for Ground Water Samples
Figure 1	Location Map
Figure 2	Ground Water Level Contour Map
Figure 3	Ground Water Quality Analytical Results
Appendix A	ESE Standard Operating Procedure No. 3
Appendix B	Sample Collection Logs
Appendix C	Analytical Reports with Chain-of-Custody Documentation

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TABLE 1

FIELD PARAMETER MEASUREMENTS OF WATER PURGED
FROM MONITORING WELLS

May 2, 1995

James River Corporation
San Leandro, California

Well No.	Gallons Purged	pH	Specific Conductance* (µmhos/cm)	Temperature (°F)	Turbidity (NTU)
B-1	0	5.6	510	66.7	--
	35	6.8	520	66.3	--
	75	7.5	520	67.2	2.2
W-3	0	8.6	900	65.6	--
	25	6.2	720	66.2	--
	50	5.8	620	66.1	10.01
W-5	0	7.5	580	70.8	--
	7	6.9	530	67.8	--
	15	6.9	520	67.6	24.1
W-6	0	7.8	540	63.1	--
	7	7.4	520	65.9	--
	15	7.2	530	66.7	35.4
W-7	0	6.4	570	67.6	--
	25	7.6	590	69.6	--
	50	7.8	580	70.4	56.4
W-8	0	6.1	450	65.2	--
	25	6	490	65.9	--
	50	5.8	480	67.7	12.5
W-9	0	7.7	670	72.6	--
	20	7.6	710	67.3	--
	50	8.2	670	68.3	15.6
W10	0	5.7	840	64.8	--
	7	5.2	820	65.3	--
	15	5.7	770	63.2	30.5

Notes:

NC=Not Completed

* = at 25°C

µmhos/cm = Micromhos per centimeter

°F = Degrees Fahrenheit

TABLE 2

WATER-LEVEL MEASUREMENTS

James River Corporation
San Leandro, California

Well Number	Date	Top of Well Casing Elevation (feet above MSL)	Depth to Water Below Top of Casing (feet)	Water Table Elevation (feet above MSL)
W-1	Jun-94	20.67	11.62	9.05
	Sep-94	20.67	12.27	8.40
	Dec-94	20.67	10.96	9.71
	Feb-95	20.67	10.26	10.41
	May-95	20.67	10.32	10.35
W-3	Jun-94	20.80	11.82	8.98
	Sep-94	20.80	12.48	8.32
	Dec-94	20.80	11.20	9.60
	Feb-95	20.80	10.52	10.28
	May-95	20.80	10.38	10.42
W-4	Jun-94	21.00	11.98	9.02
	Sep-94	21.00	12.63	8.37
	Dec-94	21.00	11.35	9.65
	Feb-95	21.00	10.66	10.34
	May-95	21.00	10.72	10.28
W-5	Jun-94	21.64	12.64	9.00
	Sep-94	21.64	13.29	8.35
	Dec-94	21.64	12.00	9.64
	Feb-95	21.64	11.32	10.32
	May-95	21.64	11.36	10.28
W-6	Jun-94	21.05	11.97	9.08
	Sep-94	21.05	12.62	8.43
	Dec-94	21.05	11.35	9.70
	Feb-95	21.05	10.63	10.42
	May-95	21.05	10.30	10.35
W-7	Jun-94	20.41	12.02	8.39
	Sep-94	20.41	12.63	7.78
	Dec-94	20.41	11.44	8.97
	Feb-95	20.41	10.84	9.57
	May-95	20.41	10.30	9.51

TABLE 2 (cont)

WATER-LEVEL MEASUREMENTS

James River Corporation
San Leandro, California

Well Number	Date	Top of Well Casing Elevation (feet above MSL)	Depth to Water Below Top of Casing (feet)	Water Table Elevation (feet above MSL)
W-8	Jun-94	20.50	11.48	9.02
	Sep-94	20.50	12.08	8.42
	Dec-94	20.50	10.85	9.65
	Feb-95	20.50	10.19	10.31
	May-95	20.50	10.55	9.95
W-9	Jun-94	20.16	11.52	8.64
	Sep-94	20.16	12.00	8.16
	Dec-94	20.16	10.92	9.24
	Feb-95	20.16	10.30	9.86
	May-95	20.16	10.38	9.78
W-10	Jun-94	20.22	12.16	8.06
	Sep-94	20.22	12.85	7.37
	Dec-94	20.22	11.53	8.69
	Feb-95	20.22	10.98	9.24
	May-95	20.22	10.95	9.27
B-1	Jun-94	20.59	11.60	8.99
	Sep-94	20.59	12.26	8.33
	Dec-94	20.59	10.97	9.62
	Feb-95	20.59	10.28	10.31
	May-95	20.59	10.34	10.25

TABLE 3

ANALYTICAL RESULTS FOR GROUND WATER SAMPLES

James River Corporation
 San Leandro, California
 (Concentrations in ug/L)

Well Name	Sample Date	Benzene	Ethyl-benzene	Toluene	Total Xylenes	TPH Diesel	TPH Motor Oil
W-3	Jun-94	<5	<5	<5	<5	NA	NA
	Sep-94	<5	<5	<5	<5	NA	NA
	Dec-94	<5	<5	<5	<5	NA	NA
	Feb-95	<5	<5	<5	<5	NA	NA
	May-95	<10	<10	<5	<10	NA	NA
W-5	Jun-94	<50	<50	<50	<50	NA	NA
	Sep-94	<50	<50	<50	<50	NA	NA
	Dec-94	<50	<50	<50	<50	NA	NA
	Feb-95	<100	<100	<100	<100	NA	NA
	May-95	<50	<50	<50	<50	NA	NA
W-6	Jun-94	<5	<5	<5	<5	NA	NA
	Sep-94	<5	<5	<5	<5	NA	NA
	Dec-94	<5	<5	<5	<5	NA	NA
	Feb-95	<10	<10	<10	<10	NA	NA
	May-95	<5	<5	<5	<5	NA	NA
W-7	Jun-94	<5	<5	<5	<5	130	130
	Sep-94	<5	<5	<5	<5	71	630
	Dec-94	<5	<5	<5	<5	300	120
	Feb-95	<5	<5	<5	<5	<50	<50
	May-95	<5	<5	<5	<5	15,000	9,600
W-8	Jun-94	<5	<5	<5	<5	200	110
	Sep-94	<5	<5	<5	<5	170	870
	Dec-94	<5	<5	<5	<5	450	270
	ND<5	<5	<5	<5	<5	3,100	1,200
	May-95	<5	<5	<5	<5	<50	<1,300
W-9	Jun-94	<5	<5	<5	<5	NA	NA
	Sep-94	<5	<5	<5	<5	NA	NA
	Dec-94	<5	<5	<5	<5	NA	NA
	Feb-95	<5	<5	<5	<5	NA	NA
	May-95	<5	<5	<5	<5	NA	NA
W-10	Jun-94	<2,000	<2,000	<2,000	<2,000	NA	NA
	Sep-94	<2,500	<2,500	<2,500	<2,500	NA	NA
	Dec-94	<500	<500	<500	<500	NA	NA
	Feb-95	<1,300	<1,300	<1,300	<1,300	NA	NA
	May-95	<1,000	<1,000	<1,000	<1,000	NA	NA
B-1	Jun-94	<5	<5	<5	<5	NA	NA
	Sep-94	<5	<5	<5	<5	NA	NA
	Dec-94	<5	<5	<5	<5	NA	NA
	Feb-95	<5	<5	<5	<5	NA	NA
	May-95	<5	<5	<5	<5	NA	NA

TABLE 3 (cont)

ANALYTICAL RESULTS FOR GROUND WATER SAMPLES

James River Corporation
San Leandro, California
(Concentrations in ug/L)

Well Name	Sample Date	TCE	Vinyl Chloride	PCE	TCA	Cis-1,2DCE	1,1-DCA	Acetone	MIBK	1,1-DCE	Carbon Disulfide
W-3	Jun-94	<5	<10	<5	<5	8	<5	<20	210	<5	<5
	Sep-94	14	<10	19	<5	8	<5	<20	<10	<5	<5
	Dec-94	<5	<10	<5	<5	61	<5	<20	<10	<5	<5
	Feb-95	<5	<10	<5	<5	11	<5	<20	<10	<5	4
	May-95	160	28	270	<10	23	<10	<40	<20	<10	<10
W-5	Jun-94	530	160	3,400	<50	1,700	<50	<200	<100	<50	<50
	Sep-94	530	140	2,500	<50	1,300	<50	<200	<100	<50	<50
	Dec-94	350	<100	1,800	<50	1,600	<50	<200	<100	<50	<50
	Feb-95	290	<200	1,900	<100	2,100	<100	<400	<200	<100	<100
	May-95	360	<100	3,600*	<50	540	<50	<200	<100	<50	<50
W-6	Jun-94	310	<10	450	5	100	<5	<20	<10	<5	<5
	Sep-94	230	<10	310	<5	380	<5	<20	<10	<5	<5
	Dec-94	78	<10	120	<5	280	<5	<20	<10	<5	<5
	Feb-95	250	<20	320	<10	24	<10	<40	<20	<10	<10
	May-95	230	<10	440	<5	16	<5	<20	<10	<5	<5
W-7	Jun-94	240	<10	240	<5	26	<5	<20	<10	<5	<5
	Sep-94	120	<10	86	<5	230	<5	<20	<10	<5	<5
	Dec-94	9	37	8	<5	120	<5	<20	<10	<5	<5
	Feb-95	180	<10	170	<5	17	<5	<20	<10	<5	<5
	May-95	100	59	97	<5	110	<5	<20	<10	<5	<5
W-8	Jun-94	<5	280	<5	<5	290	<5	<20	<10	<5	<5
	Sep-94	<5	43	<5	<5	59	<5	<20	<10	<5	<5
	Dec-94	<5	<10	<5	<5	15	<5	<20	<10	<5	<5
	Feb-95	<5	82	<5	<5	79	<5	<20	<10	<5	10
	May-95	<5	260	<5	<5	160	<5	<20	<10	<5	<5
W-9	Jun-94	110	<10	12	5	<5	<5	<20	<10	6	<5
	Sep-94	80	<10	7	<5	30	<5	<20	<10	<5	<5
	Dec-94	<5	<10	<5	<5	110	<5	<20	<10	<5	<5
	Feb-95	3	<10	<5	<5	63	<5	<20	<10	<5	23
	May-95	72	<10	7.2	<5	<5	<5	<20	<10	<5	<5
W-10	Jun-94	<2,000	<4,000	<2,000	<4,000	<2,000	<2,000	15,000	4,800	<2,000	<2,000
	Sep-94	<2,500	<5,000	<2,500	<2,500	<2,500	<2,500	74,000	5,000	<2,500	<2,500
	Dec-94	<500	<1,000	<500	<500	<500	<500	18,000	1,600	<500	<500
	Feb-95	<1,300	<2,500	<1,300	<1,300	<1,300	<1,300	47,000	1,300	<1,300	<1,300
	May-95	<1,000	<2,000	<1,000	<1,000	<1,000	<1,000	21,000	<2,000	<1,300	<1,000
B-1	Jun-94	<5	<10	<5	<5	<5	<5	27	<10	<5	<5
	Sep-94	<5	<10	<5	<5	<5	<5	66	<10	<5	<5
	Dec-94	<5	<10	<5	<5	<5	<5	23	<10	<5	<5
	Feb-95	<5	<10	<5	<5	<5	<5	62	<10	<5	53
	May-95	<5	<10	<5	<5	<5	<5	<20	<10	<5	<5

Notes:

NA = Not Analyzed

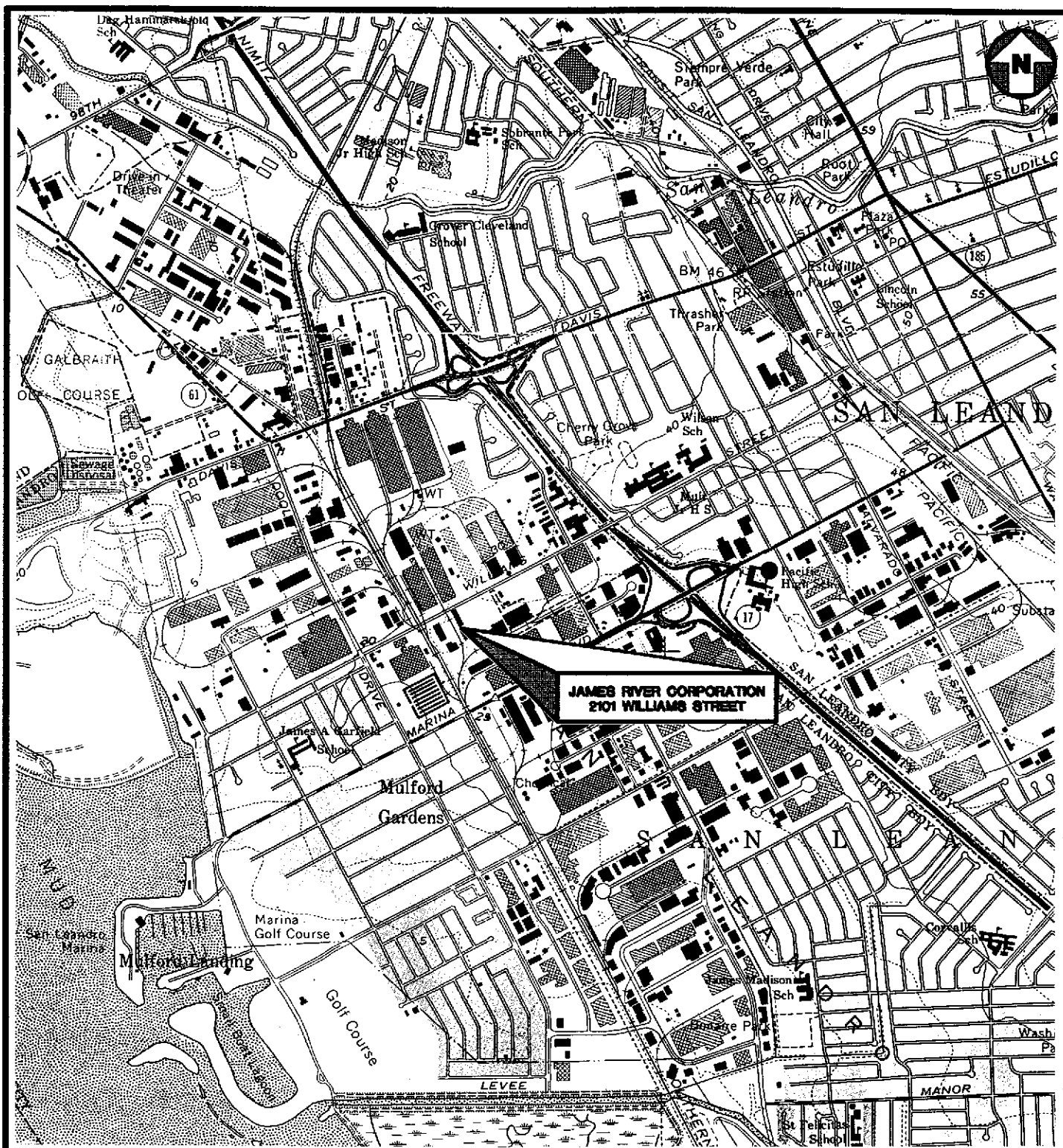
<5 = Not detected at the listed concentration.

MIBK= Listed in laboratory reports as 4-Methyl-2-pentanone.

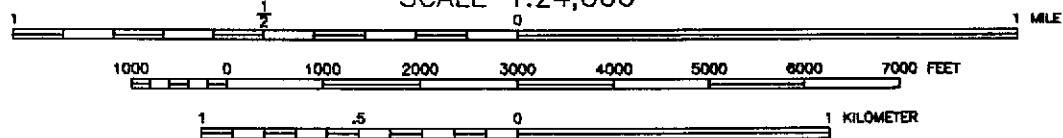
* Result obtained from a 1:20 dilution analyzed on 5/08/95.

** Result obtained from a 1:2 dilution analyzed on 5/06/95.


() Below the detection limit.

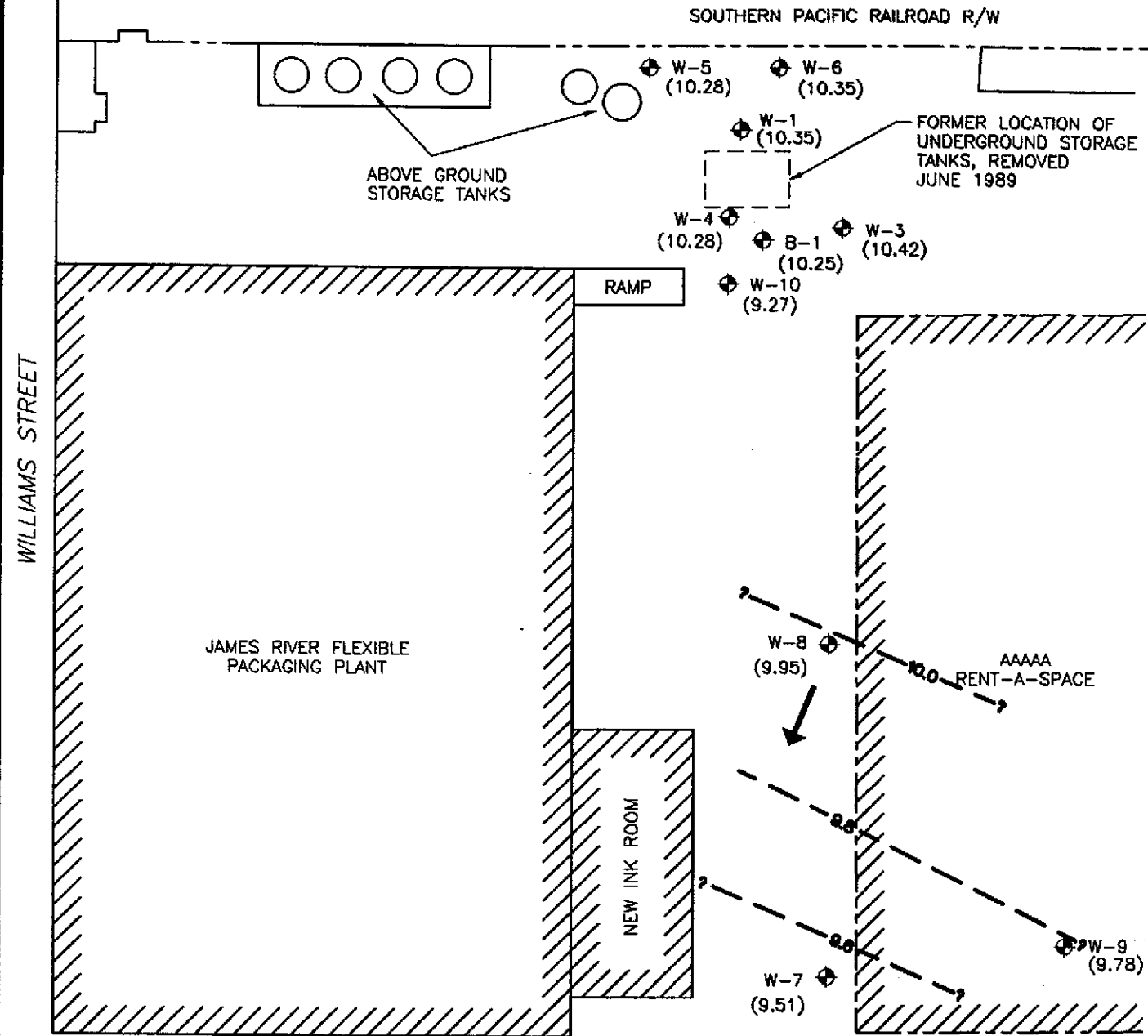


SCALE 1:24,000



ADAPTED FROM U.S.G.S. SAN LEANDRO, CA. 7.5 MINUTE TOPOGRAPHIC QUADRANGLE MAP 1959, PHOTOREVISED 1980.


	Environmental Science & Engineering, Inc.	DATE 3/10/95	LOCATION MAP	FIGURE NO. 1
	4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	REVISED		JAMES RIVER CORPORATION 2101 WILLIAMS STREET SAN LEANDRO, CALIFORNIA

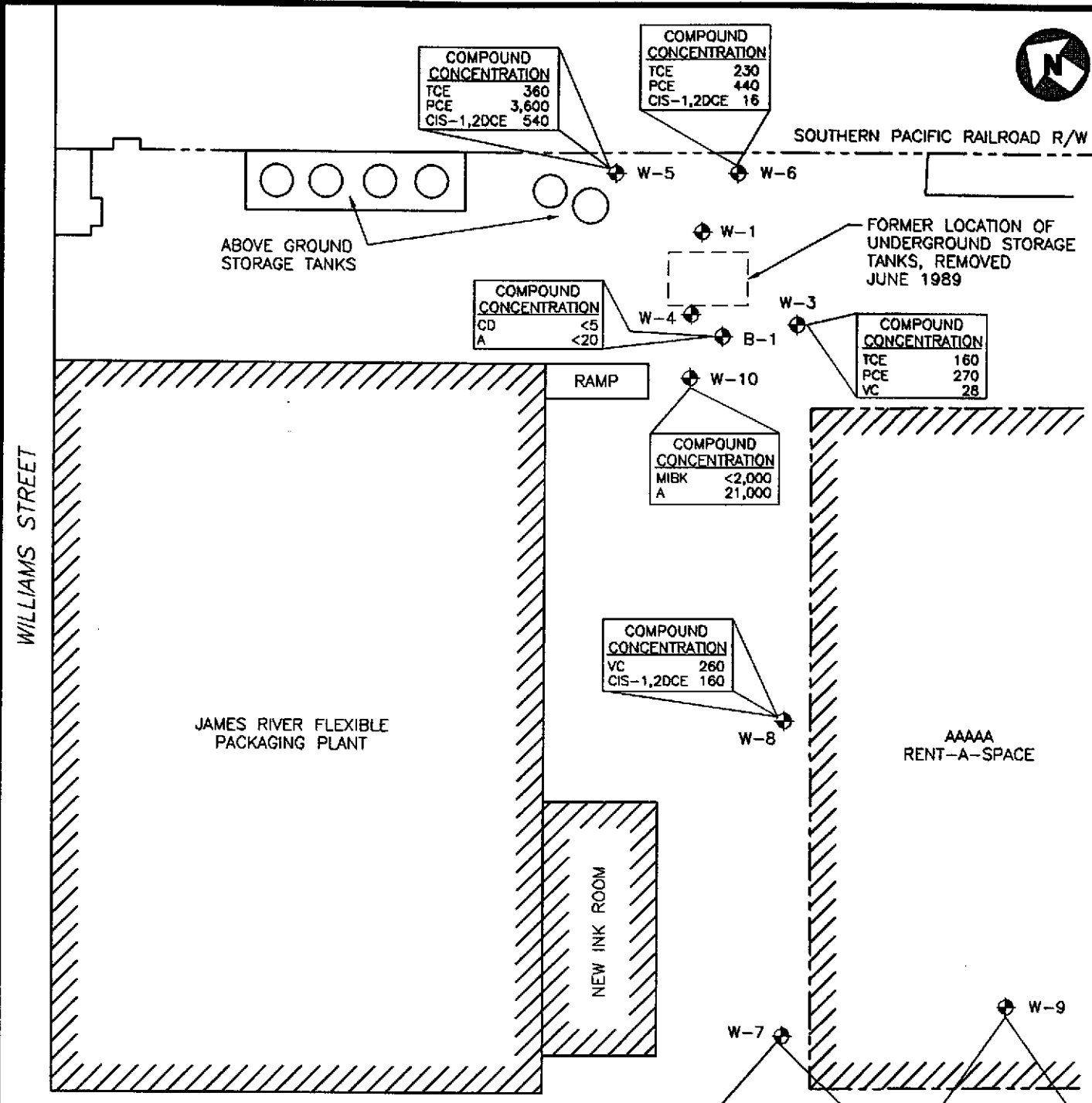


LEGEND

- W-5 (9.57) ◆ GROUND WATER MONITORING WELL WITH ELEVATION
- PROPERTY LINE
- 9.6 → GROUND WATER POTENTIOMETRIC CONTOUR WITH ELEVATION
- APPROXIMATE GROUND WATER FLOW DIRECTION



 Environmental Science & Engineering, Inc.	DATE 3/9/95	GROUND WATER LEVEL CONTOUR MAP	FIGURE NO. 2
	REVISD 6/5/95		JAMES RIVER CORPORATION 2101 WILLIAMS STREET SAN LEANDRO, CALIFORNIA
4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	CAD FILE 65502201		



LEGEND

- ⊕ GROUND WATER ELEVATION
- - - PROPERTY LINE
- A ACETONE
- CD CARBON DISULFIDE
- DCE CIS-1,2 DICHLOROETHENE
- MIBK 4-METHYL-2-PENTANONE
- PCE TETRACHLOROETHENE
- TCE TRICHLOROETHENE
- TPH-D TOTAL PETROLEUM HYDROCARBONS (TPH) AS DIESEL
- TPH-MO TPH AS MOTOR OIL
- VC VINYL CHLORIDE

*ALL CONCENTRATIONS REPORTED AS MICROGRAMS PER LITER



Environmental Science & Engineering, Inc.

4090 NELSON AVENUE, SUITE J
CONCORD, CA 94520

DATE
3/9/95
REVISED
6/5/95
CAD FILE
65502202

**GROUND WATER QUALITY ANALYTICAL RESULTS
MAY 15, 1995**

JAMES RIVER CORPORATION
2101 WILLIAMS STREET
SAN LEANDRO, CALIFORNIA

FIGURE NO.
3
PROJ. NO.
65-95-022

Appendix A

ESE Standard Operating Procedure No. 3

**ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
CONCORD, CALIFORNIA OFFICE**

**STANDARD OPERATING PROCEDURE NO. 3
FOR GROUND WATER MONITORING AND SAMPLING FROM MONITORING WELLS**

Environmental Science & Engineering, Inc. (ESE) typically performs ground water monitoring at project sites on a quarterly basis. As part of the monitoring program an ESE staff member will first gauge the depth to water and free product (if present) in each well, then collect ground water samples from each well. Depth to water measurements are taken by lowering an electric fiberglass tape measure into the well and recording the occurrence of water in feet below a fixed datum set on the top of the well-casing. If free-phase liquid hydrocarbons (free product) are known or suspected to be present in the well, then an electric oil/water interface probe is used to determine the depth to the occurrence of ground water and the free product in feet below the fixed datum on the top of the well-casing. Depth to water and depth to product measurements are measured and recorded within an accuracy of 0.005-foot. The electric tape and the electric oil/water interface probe are washed with an Alconox® detergent and tap water solution then rinsed with tap water between uses in different wells.

Ground water samples are collected from a well subsequent to purging a minimum of three to four well-casing volumes of ground water from the well, if the well bails dry prior to the removal of the required minimum volume, then the samples are collected upon the recovery of the ground water in that well to 80% of its initial static level. Ground water is typically purged from monitoring wells using either a hand-operated positive displacement pump, constructed of polyvinylchloride (PVC); a new (precleaned), disposable polyethylene bailer; or, a variable-flow submersible pump, constructed of stainless steel and Teflon®. The hand pumps and the submersible pumps are cleaned between each use with an Alconox® detergent and tap water solution followed by a tap water rinse. During the well purging process the conductivity, pH and temperature of the ground water are monitored by the ESE staff member. Ground water samples are collected from the well subsequent to the stabilization of the of the conductivity, pH and temperature of the purge water, and the removal of four well-casing volumes of ground water (unless the well bails dry). The parameters are deemed to have stabilized when two consecutive measurements are within 10% of each other, for each respective parameter. The temperature, pH, conductivity and purge volume measurements, and observations of water clarity and sediment content will be documented by the ESE staff member on ESE Ground Water Sampling Data Forms.

Ground water samples are collected by lowering a new (precleaned), disposable polyethylene bailer into the well using new, disposable nylon cord. The filled bailer is retrieved, emptied, then filled again. The ground water from this bailer is decanted into appropriate laboratory supplied glassware and/or plastic containers (if sample preservatives are required, they are added to the empty containers at the laboratory prior to the sampling event). The containers are filled carefully so that no headspace is present to avoid volatilization of the sample. The filled sample containers are then labeled and placed in a cooler with ice for transport under chain of custody documentation to the designated analytical laboratory. The ESE staff member will document the time and method of sample collection, and the type of sample containers and preservatives (if any) used. These facts will appear on the ESE Ground Water Sampling Data Forms. ESE will collect a duplicate ground water sample from one well for every ten wells sampled at each site. The duplicate will be a blind sample (its well designation will be unknown to the laboratory). The duplicate sample is for Quality Assurance and Quality Control (QA/QC) purposes, and provides a check on ESE sampling procedures and laboratory sample handling procedures. When VOCs are included in the laboratory analyses, ESE will include a trip blank, if required, in the cooler with the ground water samples for analysis for the identical VOCs. The trip blank is supplied by the laboratory and consists of deionized water. The trip blank is for QA/QC purposes and provides a check on both ESE and laboratory sample handling and storage procedures. Since disposable bailers are used for sample collection, and are not reused, no equipment blank (rinsate) samples are collected.

Appendix B
Sample Collection Logs



Environmental Science & Engineering, Inc.

SAMPLE COLLECTION LOG

PROJECT NAME: James River
PROJECT NO.: 65-95-022
DATE: May 2, 95

SAMPLE LOCATION I.D.: W-1
SAMPLER: _____
PROJECT MANAGER: _____

CASING DIAMETER	SAMPLE TYPE	WELL VOLUMES PER UNIT	
		I.D. (inches)	Gal/Ft.
2" _____	Ground Water _____	2.0	0.1632
4" _____	Surface Water _____	4.0	0.6528
Other _____	Treat. Influent _____	6.0	1.4690
	Treat. Effluent _____		
	Other _____		

DEPTH TO PRODUCT: 0 (ft.) PRODUCT THICKNESS: 0 (ft.) MINIMUM PURGE VOLUME _____
DEPTH TO WATER: 10.32 (ft.) WATER COLUMN: _____ (ft.) (3 or 4 WCV): _____ (gal)
DEPTH OF WELL: 39 (ft.) WELL CASING VOLUME: _____ (gal) ACTUAL VOLUME PURGED: _____ (gal)

TIME	Volume (GAL)	pH (Units)	E.C. (Micromhos)	Temperature (F°)	Turbid. (NTU)	Other
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

INSTRUMENT CALIBRATION

pH/COND./TEMP.: TYPE _____ UNIT# _____ DATE: _____ TIME: _____ BY: _____
TURBIDITY: TYPE _____ UNIT# _____ DATE: _____ TIME: _____ BY: _____

PURGE METHOD

Displacement Pump Other
 Bailer (Teflon/PVC/SS) Submersible Pump

SAMPLE METHOD

Bailer (Teflon/PVC/SS) Dedicated
 Bailer (Disposable) Other

SAMPLES COLLECTED

	ID	TIME	DATE	LAB	ANALYSES
SAMPLE	_____	_____	_____	_____	_____
DUPLICATE	_____	_____	_____	_____	_____
SPLIT	_____	_____	_____	_____	_____
FIELD BLANK	_____	_____	_____	_____	_____

COMMENTS: _____

SAMPLER: [Signature] PROJECT MANAGER: [Signature]
4090 Nelson Avenue, Suite J Concord, CA 94520 Phone (510) 685-4053 Fax (510) 685-5323



Environmental Science & Engineering, Inc.

SAMPLE COLLECTION LOG

PROJECT NAME: James Riddle
PROJECT NO.: 65-95-022
DATE: May 2 95

SAMPLE LOCATION I.D.: W-3
SAMPLER: P. Marsden
PROJECT MANAGER: B. Miller

CASING DIAMETER

2" _____
4" X _____
Other _____

SAMPLE TYPE

Ground Water X _____
Surface Water _____
Treat. Influent _____
Treat. Effluent _____
Other _____

WELL VOLUMES PER UNIT

Well Casing I.D. (inches)	Gal/Ft.
2.0	0.1632
4.0	0.6528
6.0	1.4690

DEPTH TO PRODUCT: 0 (ft.) PRODUCT THICKNESS: 0 (ft.) MINIMUM PURGE VOLUME
DEPTH TO WATER: 10.38 (ft.) WATER COLUMN: 26.97 (ft.) (3 or 4 WGV): 52 (gal)
DEPTH OF WELL: 37.35 (ft.) WELL CASING VOLUME: 17.6 (gal) ACTUAL VOLUME PURGED: 52 (gal)

TIME	Volume (GAL)	pH (Units)	E.C. (Micromhos)	Temperature (F°)	Turbid. (NTU)	Other
<u>9:40</u>	<u>0</u>	<u>8.58</u>	<u>1000</u>	<u>65.6°</u>	<u> </u>	
<u>9:43</u>	<u>25</u>	<u>6.2*</u>	<u>2.72</u>	<u>66.7°</u>	<u> </u>	
<u>9:47</u>	<u>50</u>	<u>5.78</u>	<u>0.62</u>	<u>66.1°</u>	<u> </u>	
					<u>10.01</u>	

INSTRUMENT CALIBRATION

pH/COND./TEMP.: TYPE Hydro 9 UNIT# 9010 DATE: 5/2 TIME: 7am BY: PM
TURBIDITY: TYPE Hydro UNIT# 1150 DATE: 5/2 TIME: 9pm BY: PM

PURGE METHOD

___ Displacement Pump
___ Bailer (Teflon/PVC/SS)
X Other Automated services
___ Submersible Pump

SAMPLE METHOD

___ Bailer (Teflon/PVC/SS)
X Bailer (Disposable)
___ Dedicated
___ Other

SAMPLES COLLECTED

SAMPLE	ID	TIME	DATE	LAB	ANALYSES
DUPLICATE	<u>W-3</u>	<u>1240</u>	<u>5/2</u>	<u>CAT</u>	<u>Ve Ar</u>
SPLIT	_____	_____	_____	_____	_____
FIELD BLANK	_____	_____	_____	_____	_____

COMMENTS: _____

SAMPLER: P. Marsden PROJECT MANAGER: B. Miller
4090 Nelson Avenue, Suite J | Concord, CA 94520 | Phone (510) 685-4058 | Fax (510) 685-5323



Environmental Science & Engineering, Inc.

SAMPLE COLLECTION LOG

PROJECT NAME: James River
PROJECT NO.: 68-98-022
DATE: May 2 95

SAMPLE LOCATION I.D.: W-4
SAMPLER:
PROJECT MANAGER:

Table with columns: CASING DIAMETER, SAMPLE TYPE, WELL VOLUMES PER UNIT. Includes rows for 2", 4" Y, and Other casing diameters and Ground Water, Surface Water, Treat. Influent, Treat. Effluent, and Other sample types.

DEPTH TO PRODUCT: (ft.) PRODUCT THICKNESS: (ft.) MINIMUM PURGE VOLUME
DEPTH TO WATER: 10.72 (ft.) WATER COLUMN: (ft.) (3 or 4 WCV): (gal)
DEPTH OF WELL: 38 (ft.) WELL CASING VOLUME: (gal) ACTUAL VOLUME PURGED: (gal)

Table with columns: TIME, Volume (GAL), pH (Units), E.C. (Micromhos), Temperature (F°), Turbid. (NTU), Other. The table is mostly blank with some horizontal lines.

INSTRUMENT CALIBRATION

pH/COND./TEMP.: TYPE UNIT# DATE: TIME: BY:
TURBIDITY: TYPE UNIT# DATE: TIME: BY:

PURGE METHOD

SAMPLE METHOD

Displacement Pump Other Bailer (Teflon/PVC/SS) Dedicated
Bailer (Teflon/PVC/SS) Submersible Pump Bailer (Disposable) Other

SAMPLES COLLECTED

Table with columns: SAMPLE, ID, TIME, DATE, LAB, ANALYSES. Includes rows for SAMPLE, DUPLICATE, SPLIT, and FIELD BLANK.

COMMENTS:

SAMPLER: [Signature] PROJECT MANAGER: [Signature]
4090 Nelson Avenue, Suite J Concord, CA 94520 Phone (510) 685-4053 Fax (510) 685-5323



Environmental
Science &
Engineering, Inc.

SAMPLE COLLECTION LOG

PROJECT NAME: James River
PROJECT NO.: 65-95-022
DATE: May 2 95

SAMPLE LOCATION I.D.: W-5
SAMPLER: P. Marsden
PROJECT MANAGER: Bart Miller

CASING DIAMETER

2" Y
4" _____
Other _____

SAMPLE TYPE

Ground Water X
Surface Water _____
Treat. Influent _____
Treat. Effluent _____
Other _____

WELL VOLUMES PER UNIT

Well Casing	
I.D. (inches)	Gal/Ft.
2.0	0.1632
4.0	0.6528
6.0	1.4690

DEPTH TO PRODUCT: ∅ (ft.) PRODUCT THICKNESS: ∅ (ft.) MINIMUM PURGE VOLUME _____
DEPTH TO WATER: 11.36 (ft.) WATER COLUMN: 23.41 (ft.) (3 or 4 WCV): 11.5 (gal)
DEPTH OF WELL: 34.77 (ft.) WELL CASING VOLUME: 3.81 (gal) ACTUAL VOLUME PURGED: 15 (gal)

TIME	Volume (GAL)	pH (Units)	E.C. (Micromhos)	Temperature (F°)	Turbid. (NTU)	Other
<u>1020</u>	<u>∅</u>	<u>7.54</u>	<u>71000</u>	<u>70.8°</u>		
<u>1022</u>	<u>7</u>	<u>6.93</u>	<u>0.53</u>	<u>67.8°</u>		
<u>1023</u>	<u>15</u>	<u>6.86</u>	<u>0.52</u>	<u>67.6°</u>		
					<u>24.1</u>	

INSTRUMENT CALIBRATION

pH/COND./TEMP.: TYPE Hydra 9 UNIT# 9010 DATE: 5/2 TIME: 7am BY: JM
TURBIDITY: TYPE _____ UNIT# 11150 DATE: 5/2 TIME: 4pm BY: PM

PURGE METHOD

____ Displacement Pump
____ Bailer (Teflon/PVC/SS)
X Other Automated Environmental Services
____ Submersible Pump

SAMPLE METHOD

____ Bailer (Teflon/PVC/SS) ____ Dedicated
X Bailer (Disposable) ____ Other

SAMPLES COLLECTED

SAMPLE	ID	TIME	DATE	LAB	ANALYSES
DUPLICATE	<u>W-5</u>	<u>1250</u>	<u>5/2</u>	<u>CT</u>	<u>VOAS</u>
SPLIT	_____	_____	_____	_____	_____
FIELD BLANK	_____	_____	_____	_____	_____

COMMENTS: _____

SAMPLER: P. Marsden PROJECT MANAGER: B. Miller



Environmental Science & Engineering, Inc.

SAMPLE COLLECTION LOG

PROJECT NAME: James River
PROJECT NO.: 65-95-002
DATE: May 2 95

SAMPLE LOCATION I.D.: W-6
SAMPLER: R. Marsden
PROJECT MANAGER: Bart Miller

CASING DIAMETER

2" [checked]
4"
Other

SAMPLE TYPE

Ground Water [checked]
Surface Water
Treat. Influent
Treat. Effluent
Other

WELL VOLUMES PER UNIT

Table with 2 columns: I.D. (inches) and Gal/Ft. Values: 2.0 (0.1632), 4.0 (0.6528), 6.0 (1.4690)

DEPTH TO PRODUCT: 0 (ft.) PRODUCT THICKNESS: 6 (ft.) MINIMUM PURGE VOLUME
DEPTH TO WATER: 10.70 (ft.) WATER COLUMN: 26.75 (ft.) (3 of 4 WCV): 13 (gal)
DEPTH OF WELL: 32.45 (ft.) WELL CASING VOLUME: 43 (gal) ACTUAL VOLUME PURGED: 15 (gal)

Table with 7 columns: TIME, Volume (GAL), pH (Units), E.C. (Micromhos), Temperature (F°), Turbid. (NTU), Other. Includes handwritten data points for time, volume, pH, and temperature.

INSTRUMENT CALIBRATION

pH/COND./TEMP.: TYPE Hydrac 9 UNIT # 9010 DATE: 5/2 TIME: 7am BY: PM
TURBIDITY: TYPE UNIT # 11150 DATE: 5/2 TIME: 7pm BY: PM

PURGE METHOD

Displacement Pump
Bailer (Teflon/PVC/SS)
Other [checked] Automated Environmental Services
Submersible Pump

SAMPLE METHOD

Bailer (Teflon/PVC/SS)
Bailer (Disposable) [checked]
Dedicated
Other

SAMPLES COLLECTED

Table with 6 columns: SAMPLE, ID, TIME, DATE, LAB, ANALYSES. Includes handwritten entry: W-6, 1300, 5/2, CAT, VOAs

COMMENTS:

SAMPLER: R. Marsden PROJECT MANAGER: Bart Miller
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Environmental Science & Engineering, Inc.

SAMPLE COLLECTION LOG

PROJECT NAME: James River
PROJECT NO.: 65-95-022
DATE: May 2, 95

SAMPLE LOCATION I.D.: W-7
SAMPLER: P. Marso
PROJECT MANAGER: Bart Miller

CASING DIAMETER

2"
4" X
Other

SAMPLE TYPE

Ground Water X
Surface Water
Treat. Influent
Treat. Effluent
Other

WELL VOLUMES PER UNIT

Table with 2 columns: I.D. (inches) and Gal/Ft. Values: 2.0 (0.1632), 4.0 (0.6528), 6.0 (1.4690)

DEPTH TO PRODUCT: 0 (ft.)
DEPTH TO WATER: 10.90 (ft.)
DEPTH OF WELL: 38.20 (ft.)
PRODUCT THICKNESS: 0 (ft.)
WATER COLUMN: 25.36 (ft.)
WELL CASING VOLUME: 16 (gal)
MINIMUM PURGE VOLUME (3 or 4 WCV): 99 (gal)
ACTUAL VOLUME PURGED: 50 (gal)

Table with 7 columns: TIME, Volume (GAL), pH (Units), E.C. (Micromhos), Temperature (F°), Turbid. (NTU), Other. Data points for times 10:23, 11:27, 11:31.

INSTRUMENT CALIBRATION

pH/COND./TEMP.: TYPE Hydro 9 UNIT# 9010 DATE: 5/2 TIME: 7am BY: PM
TURBIDITY: TYPE UNIT# 11150 DATE: 5/2 TIME: 4pm BY: PM

PURGE METHOD

Displacement Pump
Bailer (Teflon/PVC/SS)
Other Automated Environmental Services X
Submersible Pump

SAMPLE METHOD

Bailer (Teflon/PVC/SS)
Bailer (Disposable) X
Dedicated
Other

SAMPLES COLLECTED

Table with 6 columns: SAMPLE, ID, TIME, DATE, LAB, ANALYSES. Row 1: W-7, 1315, 5/2, C&T, VDA, TPH-D, TPH-MO

COMMENTS:

SAMPLER: P. Marso
PROJECT MANAGER: Bart Miller
4090 Nelson Avenue, Suite J Concord, CA 94520 Phone (510) 685-4053 Fax (510) 685-5323



Environmental Science & Engineering, Inc.

SAMPLE COLLECTION LOG

PROJECT NAME: James River
PROJECT NO.: 65-25-022
DATE: May 2, 95

SAMPLE LOCATION I.D.: W-8
SAMPLER: P. Marsden
PROJECT MANAGER: Bart Miller

CASING DIAMETER

2"
4"
Other

SAMPLE TYPE

Ground Water X
Surface Water
Treat. Influent
Treat. Effluent
Other

WELL VOLUMES PER UNIT

Table with 2 columns: I.D. (inches) and Gal/Ft. Values: 2.0 (0.1632), 4.0 (0.6528), 6.0 (1.4690)

DEPTH TO PRODUCT: 0 (ft.) PRODUCT THICKNESS: 0 (ft.) MINIMUM PURGE VOLUME
DEPTH TO WATER: 10.78 (ft.) WATER COLUMN: 22.05 (ft.) (3 or 4 WCV): 52 (gal)
DEPTH OF WELL: 37.6 (ft.) WELL CASING VOLUME: 12 (gal) ACTUAL VOLUME PURGED: 55 (gal)

Table with 7 columns: TIME, Volume (GAL), pH (Units), E.C. (Micromhos), Temperature (F°), Turbid. (NTU), Other. Includes handwritten data points.

INSTRUMENT CALIBRATION

pH/COND./TEMP.: TYPE Hydac 9 UNIT# 9010 DATE: 5/2 TIME: 7am BY: PM
TURBIDITY: TYPE UNIT# 11150 DATE: 5/2 TIME: 4pm BY: PM

PURGE METHOD

Displacement Pump
Bailer (Teflon/PVC/SS)
Other X Automated Services
Submersible Pump

SAMPLE METHOD

Bailer (Teflon/PVC/SS)
Bailer (Disposable) X
Dedicated
Other

SAMPLES COLLECTED

Table with 6 columns: SAMPLE, ID, TIME, DATE, LAB, ANALYSES. Includes handwritten entries for W-8, 1305, 5/2, CIT, and VOA, TPH-D, TPH-MO.

COMMENTS:

SAMPLER: Paul Marsden PROJECT MANAGER: Bart Miller
4090 Nelson Avenue, Suite J Concord, CA 94520 Phone (510) 685-4050 Fax (510) 685-5323



Environmental
Science &
Engineering, Inc. *CD*

cb full 2 empty
SAMPLE COLLECTION LOG

PROJECT NAME: James River
PROJECT NO.: 65-95-022
DATE: May 2 95

SAMPLE LOCATION I.D.: W-9
SAMPLER: P. Maddox
PROJECT MANAGER: Bart Miller

CASING DIAMETER

2" _____
4" X
Other _____

SAMPLE TYPE

Ground Water _____
Surface Water _____
Treat. Influent _____
Treat. Effluent _____
Other _____

WELL VOLUMES PER UNIT

Well Casing I.D. (inches)	Gal/Ft.
2.0	0.1632
4.0	0.6528
6.0	1.4690

DEPTH TO PRODUCT: 0 (ft.) PRODUCT THICKNESS: 0 (ft.) MINIMUM PURGE VOLUME
DEPTH TO WATER: 10.33 (ft.) WATER COLUMN: 20.72 (ft.) (3 or 4 WCV): 40 (gal)
DEPTH OF WELL: 31.14 (ft.) WELL CASING VOLUME: 13 (gal) ACTUAL VOLUME PURGED: 50 (gal)

TIME	Volume (GAL)	pH (Units)	E.C. (Micromhos)	Temperature (F°)	Turbid. (NTU)	Other
<u>1:55</u>	<u>0</u>	<u>7.71</u>	<u>1100</u>	<u>72.6°</u>		
<u>1:57</u>	<u>2.5</u>	<u>7.65</u>	<u>0.71</u>	<u>69.3°</u>		
<u>1:00</u>	<u>50</u>	<u>8.25</u>	<u>0.67</u>	<u>68.3°</u>		
					<u>15.6</u>	

INSTRUMENT CALIBRATION

pH/COND./TEMP.: TYPE Hydra 9 UNIT # 9010 DATE: 5/2 TIME: 7am BY: PM
TURBIDITY: TYPE _____ UNIT # 1150 DATE: 5/2 TIME: 4pm BY: PM

PURGE METHOD

Displacement Pump
 Bailer (Teflon/PVC/SS)
 Other Automated Environmental Services
 Submersible Pump

SAMPLE METHOD

Bailer (Teflon/PVC/SS)
 Bailer (Disposable)
 Dedicated
 Other

SAMPLES COLLECTED

SAMPLE	ID	TIME	DATE	LAB	ANALYSES
DUPLICATE	<u>W-9</u>	<u>1205</u>	<u>5/2</u>	<u>CAT</u>	<u>VOAs</u>
SPLIT	_____	_____	_____	_____	_____
FIELD BLANK	_____	_____	_____	_____	_____

COMMENTS: _____

SAMPLER: P. Maddox PROJECT MANAGER: B. Miller
4090 Nelson Avenue, Suite J Concord, CA 94520 Phone (510) 685-4053 Fax (510) 685-5323



Environmental
Science &
Engineering, Inc.

SAMPLE COLLECTION LOG

PROJECT NAME: James River
PROJECT NO.: 65-95-022
DATE: May 2 95

SAMPLE LOCATION I.D.: W-10
SAMPLER: V. Marsden
PROJECT MANAGER: Barb Miller

CASING DIAMETER

2" _____
4" X
Other _____

SAMPLE TYPE

Ground Water X
Surface Water _____
Treat. Influent _____
Treat. Effluent _____
Other _____

WELL VOLUMES PER UNIT

Well Casing I.D. (inches)	Gal/Ft.
2.0	0.1632
4.0	0.6528
6.0	1.4690

DEPTH TO PRODUCT: 6 (ft.) PRODUCT THICKNESS: 6 (ft.) MINIMUM PURGE VOLUME
DEPTH TO WATER: 10.95 (ft.) WATER COLUMN: 5.8 (ft.) 300 + WCV: 11 (gal)
DEPTH OF WELL: 16.75 (ft.) WELL CASING VOLUME: 3 (gal) ACTUAL VOLUME PURGED: 15 (gal)

TIME	Volume (GAL)	pH (Units)	E.C. (Micromhos)	Temperature (F)	Turbid. (NTU)	Other
<u>10:50</u>	<u>0</u>	<u>5.73</u>	<u>81000</u>	<u>64.5°</u>	<u> </u>	
<u>10:54</u>	<u>7</u>	<u>5.22</u>	<u>0.82</u>	<u>65.3°</u>	<u> </u>	
<u>10:56</u>	<u>15</u>	<u>5.66</u>	<u>0.77</u>	<u>63.2°</u>	<u> </u>	
					<u>30.5</u>	

INSTRUMENT CALIBRATION

pH/COND./TEMP.: TYPE Hydro 9 UNIT# 9010 DATE: 5/2 TIME: 7am BY: JM
TURBIDITY: TYPE _____ UNIT# 1150 DATE: 5/2 TIME: 4pm BY: LM

PURGE METHOD

____ Displacement Pump
____ Bailer (Teflon/PVC/SS)
X Other Automated Services
____ Submersible Pump

SAMPLE METHOD

____ Bailer (Teflon/PVC/SS) ____ Dedicated
X Bailer (Disposable) ____ Other

SAMPLES COLLECTED

SAMPLE	ID	TIME	DATE	LAB	ANALYSES
DUPLICATE	<u>W-10</u>	<u>1220</u>	<u>5/2</u>	<u>ETT</u>	<u>VOAs</u>
SPLIT	_____	_____	_____	_____	_____
FIELD BLANK	_____	_____	_____	_____	_____

COMMENTS: _____

SAMPLER: V. Marsden PROJECT MANAGER: Barb Miller
4090 Nelson Avenue, Suite J Concord, CA 94520 Phone (510) 685-4053 Fax (510) 685-5323



Environmental
Science &
Engineering, Inc.

SAMPLE COLLECTION LOG

PROJECT NAME: James River
PROJECT NO.: 65-95-022
DATE: May 7 95

SAMPLE LOCATION I.D.: B-1
SAMPLER: R. Marsden
PROJECT MANAGER: Bart Miller

CASING DIAMETER

2" _____
4" X
Other _____

SAMPLE TYPE

Ground Water X
Surface Water _____
Treat. Influent _____
Treat. Effluent _____
Other _____

WELL VOLUMES PER UNIT

Well Casing I.D. (Inches)	Gal/Ft.
2.0	0.1632
4.0	0.6528
6.0	1.4690

DEPTH TO PRODUCT: 0 (ft.) PRODUCT THICKNESS: 0 (ft.) MINIMUM PURGE VOLUME
DEPTH TO WATER: 10.34 (ft.) WATER COLUMN: 37.66 (ft.) (3 or 4 WCY): 73 (gal)
DEPTH OF WELL: 48 (ft.) WELL CASING VOLUME: 24 (gal) ACTUAL VOLUME PURGED: 75 (gal)

TIME	Volume (GAL)	pH (Units)	E.C. (Micromhos)	Temperature (F°)	Turbid. (NTU)	Other
<u>1028</u>	<u>0</u>	<u>5.61</u>	<u>X1000</u> <u>0.51</u>	<u>66.7°</u>	<u>1</u>	
<u>1031</u>	<u>35</u>	<u>6.75</u>	<u>0.52</u>	<u>66.3°</u>	<u>1</u>	
<u>1035</u>	<u>75</u>	<u>7.5</u>	<u>0.52</u>	<u>67.2°</u>	<u>2.2</u>	

INSTRUMENT CALIBRATION

pH/COND./TEMP.: TYPE Hydax 9 UNIT # 9010 DATE: 5/2 TIME: 7am BY: RM
TURBIDITY: TYPE _____ UNIT # 11150 DATE: 5/2 TIME: 4pm BY: RM

PURGE METHOD

___ Displacement Pump
___ Bailer (Teflon/PVC/SS)
___ Submersible Pump

SAMPLE METHOD

X ^{RM Automated} Other ^{Environmental Services}
___ Bailer (Teflon/PVC/SS)
X Bailer (Disposable)
___ Dedicated
___ Other

SAMPLES COLLECTED

SAMPLE	ID	TIME	DATE	LAB	ANALYSES
	<u>B-1</u>	<u>1230</u>	<u>5/2</u>	<u>CAT</u>	<u>VOAs</u>
DUPLICATE	_____	_____	_____	_____	_____
SPLIT	_____	_____	_____	_____	_____
FIELD BLANK	_____	_____	_____	_____	_____

COMMENTS: _____

SAMPLER: R. Marsden PROJECT MANAGER: Bart Miller
4090 Nelson Avenue, Suite I | Concord, CA 94520 | Phone (510) 685-4053 | Fax (510) 685-5323

Appendix C

ANALYTICAL REPORTS WITH CHAIN-OF-CUSTODY DOCUMENTS



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

A N A L Y T I C A L R E P O R T

Prepared for:

Environmental Science & Engineering
4090 Nelson Avenue
Suite J
Concord, CA 94520

Date: 11-MAY-95
Lab Job Number: 120894
Project ID: 65-95-022
Location: James River Corporation

Reviewed by:

Teresa K Morris

Reviewed by:

[Signature]

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LABORATORY NUMBER: 120894
 CLIENT: ENVIRONMENTAL SCIENCE & ENGINEERING
 PROJECT ID: 65-95-022
 LOCATION: JAMES RIVER CORPORATION

DATE SAMPLED: 05/02/95
 DATE RECEIVED: 05/03/95
 DATE EXTRACTED: 05/05/95
 DATE ANALYZED: 05/10/95
 DATE REPORTED: 05/11/95
 BATCH NO: 20469

Extractable Petroleum Hydrocarbons in Aqueous Solutions
 California DOHS Method
 LUFT Manual October 1989

LAB ID	SAMPLE ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	MOTOR OIL RANGE (ug/L)	SURROGATE RECOVERY (Hexacosane)
120894-004	W-7	**	15,000*	9,600*	+ %
120894-005	W-8	ND(50)	ND(50)	ND(1,300)	98 %
METHOD BLANK	N/A	ND(50)	ND(50)	ND(1,300)	98 %

* Sample chromatogram does not resemble the hydrocarbon standard pattern.
 + Surrogate out of control limits due to matrix interference.

Surrogate recovery limits: 60% - 150%

ND = Not detected at or above the reporting limit. Reporting limit indicated in parantheses.

QA/QC SUMMARY: BS/BSD

RPD, %	1	(Limit: <25)
RECOVERY, %	95	(Limits: 75 - 125)



LABORATORY NUMBER: 120894-001
CLIENT: ENVIRONMENTAL SCIENCE & ENG
PROJECT ID: 65-95-022
LOCATION: JAMES RIVER CORPORATION
SAMPLE ID: W-3

DATE SAMPLED: 05/02/95
DATE RECEIVED: 05/03/95
DATE ANALYZED: 05/08/95
DATE REPORTED: 05/11/95
BATCH NO: 20473

EPA METHOD 8240: VOLATILE ORGANICS IN WATER

COMPOUND	Result ug/L	Reporting Limit (ug/L)
Chloromethane	ND	20
Bromomethane	ND	20
Vinyl chloride	28	20
Chloroethane	ND	20
Methylene chloride	ND	40
Acetone	ND	40
Carbon disulfide	ND	10
Trichlorofluoromethane	ND	10
1,1-Dichloroethene	ND	10
1,1-Dichloroethane	ND	10
trans-1,2-Dichloroethene	ND	10
cis-1,2-Dichloroethene	23	10
Chloroform	ND	10
Freon 113	ND	10
1,2-Dichloroethane	ND	10
2-Butanone	ND	20
1,1,1-Trichloroethane	ND	10
Carbon tetrachloride	ND	10
Vinyl acetate	ND	100
Bromodichloromethane	ND	10
1,2-Dichloropropane	ND	10
cis-1,3-Dichloropropene	ND	10
Trichloroethene	160	10
Dibromochloromethane	ND	10
1,1,2-Trichloroethane	ND	10
Benzene	ND	10
trans-1,3-Dichloropropene	ND	10
Bromoform	ND	10
2-Hexanone	ND	20
4-Methyl-2-pentanone	ND	20
1,1,2,2-Tetrachloroethane	ND	10
Tetrachloroethene	270	10
Toluene	ND	10
Chlorobenzene	ND	10
Ethyl benzene	ND	10
Styrene	ND	10
Total xylenes	ND	10

ND = Not detected at or above reporting limit

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	97 %
Toluene-d8	105 %
Bromofluorobenzene	105 %



Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 120894-002
 CLIENT: ENVIRONMENTAL SCIENCE & ENG
 PROJECT ID: 65-95-022
 LOCATION: JAMES RIVER CORPORATION
 SAMPLE ID: W-5

DATE SAMPLED: 05/02/95
 DATE RECEIVED: 05/03/95
 DATE ANALYZED: 05/06/95
 DATE REPORTED: 05/11/95
 BATCH NO: 20463

EPA METHOD 8240: VOLATILE ORGANICS IN WATER

COMPOUND	Result ug/L	Reporting Limit (ug/L)
Chloromethane	ND	100
Bromomethane	ND	100
Vinyl chloride	ND	100
Chloroethane	ND	100
Methylene chloride	ND	200
Acetone	ND	200
Carbon disulfide	ND	50
Trichlorofluoromethane	ND	50
1,1-Dichloroethene	ND	50
1,1-Dichloroethane	ND	50
trans-1,2-Dichloroethene	540	50
cis-1,2-Dichloroethene	ND	50
Chloroform	ND	50
Freon 113	ND	50
1,2-Dichloroethane	ND	100
2-Butanone	ND	50
1,1,1-Trichloroethane	ND	50
Carbon tetrachloride	ND	500
Vinyl acetate	ND	50
Bromodichloromethane	ND	50
1,2-Dichloropropane	ND	50
cis-1,3-Dichloropropane	360	50
Trichloroethene	ND	50
Dibromochloromethane	ND	50
1,1,2-Trichloroethane	ND	50
Benzene	ND	50
trans-1,3-Dichloropropene	ND	50
Bromoform	ND	100
2-Hexanone	ND	100
4-Methyl-2-pentanone	ND	50
1,1,2,2-Tetrachloroethane	3,600*	100
Tetrachloroethene	ND	50
Toluene	ND	50
Chlorobenzene	ND	50
Ethyl benzene	ND	50
Styrene	ND	50
Total xylenes	ND	50

* Result obtained from a 1:20 dilution analyzed on 05/08/95 (Batch No: 20473.)

ND = Not detected at or above reporting limit

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	93 %
Toluene-d8	102 %
Bromofluorobenzene	99 %



LABORATORY NUMBER: 120894-003
 CLIENT: ENVIRONMENTAL SCIENCE & ENG
 PROJECT ID: 65-95-022
 LOCATION: JAMES RIVER CORPORATION
 SAMPLE ID: W-6

DATE SAMPLED: 05/02/95
 DATE RECEIVED: 05/03/95
 DATE ANALYZED: 05/05/95
 DATE REPORTED: 05/11/95
 BATCH NO: 20422

EPA METHOD 8240: VOLATILE ORGANICS IN WATER

COMPOUND	Result ug/L	Reporting Limit (ug/L)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5.0
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	16	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Vinyl acetate	ND	50
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	230*	25
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0
Benzene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	5.0
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5.0
Tetrachloroethene	440*	25
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethyl benzene	ND	5.0
Styrene	ND	5.0
Total xylenes	ND	5.0

* Result obtained from a 1:5 dilution analyzed on 05/06/95 (Batch No: 20463.

ND = Not detected at or above reporting limit

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	88 %
Toluene-d8	90 %
Bromofluorobenzene	90 %



LABORATORY NUMBER: 120894-004
CLIENT: ENVIRONMENTAL SCIENCE & ENG
PROJECT ID: 65-95-022
LOCATION: JAMES RIVER CORPORATION
SAMPLE ID: W-7

DATE SAMPLED: 05/02/95
DATE RECEIVED: 05/03/95
DATE ANALYZED: 05/05/95
DATE REPORTED: 05/11/95
BATCH NO: 20422

EPA METHOD 8240: VOLATILE ORGANICS IN WATER

COMPOUND	Result ug/L	Reporting Limit (ug/L)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	59	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5.0
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	110	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Vinyl acetate	ND	50
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	100	5.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0
Benzene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	5.0
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5.0
Tetrachloroethene	97	5.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethyl benzene	ND	5.0
Styrene	ND	5.0
Total xylenes	ND	5.0

ND = Not detected at or above reporting limit

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	90 %
Toluene-d8	89 %
Bromofluorobenzene	91 %



LABORATORY NUMBER: 120894-005
 CLIENT: ENVIRONMENTAL SCIENCE & ENG
 PROJECT ID: 65-95-022
 LOCATION: JAMES RIVER CORPORATION
 SAMPLE ID: W-8

DATE SAMPLED: 05/02/95
 DATE RECEIVED: 05/03/95
 DATE ANALYZED: 05/05/95
 DATE REPORTED: 05/11/95
 BATCH NO: 20422

EPA METHOD 8240: VOLATILE ORGANICS IN WATER

COMPOUND	Result ug/L	Reporting Limit (ug/L)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	260*	20
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5.0
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	160	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Vinyl acetate	ND	50
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	5.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0
Benzene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	5.0
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5.0
Tetrachloroethene	ND	5.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethyl benzene	ND	5.0
Styrene	ND	5.0
Total xylenes	ND	5.0

* Result obtained from a 1:2 dilution analyzed on 05/06/95 (Batch No: 20463.

ND = Not detected at or above reporting limit

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	90 %
Toluene-d8	89 %
Bromofluorobenzene	89 %



LABORATORY NUMBER: 120894-006
CLIENT: ENVIRONMENTAL SCIENCE & ENG
PROJECT ID: 65-95-022
LOCATION: JAMES RIVER CORPORATION
SAMPLE ID: W-9

DATE SAMPLED: 05/02/95
DATE RECEIVED: 05/03/95
DATE ANALYZED: 05/05/95
DATE REPORTED: 05/11/95
BATCH NO: 20422

EPA METHOD 8240: VOLATILE ORGANICS IN WATER

COMPOUND	Result ug/L	Reporting Limit (ug/L)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5.0
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Vinyl acetate	ND	50
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	72	5.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0
Benzene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	5.0
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5.0
Tetrachloroethene	7.2	5.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethyl benzene	ND	5.0
Styrene	ND	5.0
Total xylenes	ND	5.0

ND = Not detected at or above reporting limit

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	90 %
Toluene-d8	90 %
Bromofluorobenzene	89 %



LABORATORY NUMBER: 120894-007
CLIENT: ENVIRONMENTAL SCIENCE & ENG
PROJECT ID: 65-95-022
LOCATION: JAMES RIVER CORPORATION
SAMPLE ID: W-10

DATE SAMPLED: 05/02/95
DATE RECEIVED: 05/03/95
DATE ANALYZED: 05/08/95
DATE REPORTED: 05/11/95
BATCH NO: 20473

EPA METHOD 8240: VOLATILE ORGANICS IN WATER

COMPOUND	Result ug/L	Reporting Limit (ug/L)
Chloromethane	ND	2,000
Bromomethane	ND	2,000
Vinyl chloride	ND	2,000
Chloroethane	ND	2,000
Methylene chloride	ND	4,000
Acetone	21,000	4,000
Carbon disulfide	ND	1000
Trichlorofluoromethane	ND	1000
1,1-Dichloroethene	ND	1000
1,1-Dichloroethane	ND	1000
trans-1,2-Dichloroethene	ND	1000
cis-1,2-Dichloroethene	ND	1000
Chloroform	ND	1000
Freon 113	ND	1000
1,2-Dichloroethane	ND	1000
2-Butanone	ND	2000
1,1,1-Trichloroethane	ND	1000
Carbon tetrachloride	ND	1000
Vinyl acetate	ND	10000
Bromodichloromethane	ND	1000
1,2-Dichloropropane	ND	1000
cis-1,3-Dichloropropene	ND	1000
Trichloroethene	ND	1000
Dibromochloromethane	ND	1000
1,1,2-Trichloroethane	ND	1000
Benzene	ND	1000
trans-1,3-Dichloropropene	ND	1000
Bromoform	ND	1000
2-Hexanone	ND	2000
4-Methyl-2-pentanone	ND	2000
1,1,2,2-Tetrachloroethane	ND	1000
Tetrachloroethene	ND	1000
Toluene	ND	1000
Chlorobenzene	ND	1000
Ethyl benzene	ND	1000
Styrene	ND	1000
Total xylenes	ND	1000

ND = Not detected at or above reporting limit

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	99 %
Toluene-d8	107 %
Bromofluorobenzene	105 %



Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 120894-008
CLIENT: ENVIRONMENTAL SCIENCE & ENG
PROJECT ID: 65-95-022
LOCATION: JAMES RIVER CORPORATION
SAMPLE ID: B-1

DATE SAMPLED: 05/02/95
DATE RECEIVED: 05/03/95
DATE ANALYZED: 05/08/95
DATE REPORTED: 05/11/95
BATCH NO: 20473

EPA METHOD 8240: VOLATILE ORGANICS IN WATER

COMPOUND	Result ug/L	Reporting Limit (ug/L)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5.0
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Vinyl acetate	ND	50
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropane	ND	5.0
Trichloroethene	ND	5.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0
Benzene	ND	5.0
trans-1,3-Dichloropropane	ND	5.0
Bromoform	ND	5.0
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5.0
Tetrachloroethene	ND	5.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethyl benzene	ND	5.0
Styrene	ND	5.0
Total xylenes	ND	5.0

ND = Not detected at or above reporting limit

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	99 %
Toluene-d8	106 %
Bromofluorobenzene	101 %



LABORATORY NUMBER: 120894-009
CLIENT: ENVIRONMENTAL SCIENCE & ENG
PROJECT ID: 65-95-022
LOCATION: JAMES RIVER CORPORATION
SAMPLE ID: TRIP BLANK

DATE SAMPLED: 05/02/95
DATE RECEIVED: 05/03/95
DATE ANALYZED: 05/05/95
DATE REPORTED: 05/11/95
BATCH NO: 20422

EPA METHOD 8240: VOLATILE ORGANICS IN WATER

COMPOUND	Result ug/L	Reporting Limit (ug/L)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5.0
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Vinyl acetate	ND	50
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	5.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0
Benzene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	5.0
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5.0
Tetrachloroethene	ND	5.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethyl benzene	ND	5.0
Styrene	ND	5.0
Total xylenes	ND	5.0

ND = Not detected at or above reporting limit

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	88 %
Toluene-d8	92 %
Bromofluorobenzene	87 %



LABORATORY NUMBER: 120894-METHOD BLANK
CLIENT: ENVIRONMENTAL SCIENCE & ENG
PROJECT ID: 65-95-022
LOCATION: JAMES RIVER CORPORATION
SAMPLE ID: MB

DATE ANALYZED: 05/04/95
DATE REPORTED: 05/11/95
BATCH NO: 20422

EPA METHOD 8240: VOLATILE ORGANICS IN WATER

COMPOUND	Result ug/L	Reporting Limit (ug/L)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5.0
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Vinyl acetate	ND	50
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	5.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0
Benzene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	5.0
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5.0
Tetrachloroethene	ND	5.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethyl benzene	ND	5.0
Styrene	ND	5.0
Total xylenes	ND	5.0

ND = Not detected at or above reporting limit

SURROGATE RECOVERIES

=====

1,2-Dichloroethane-d4	88 %
Toluene-d8	89 %
Bromofluorobenzene	88 %



LABORATORY NUMBER: 120894-METHOD BLANK
CLIENT: ENVIRONMENTAL SCIENCE & ENG
PROJECT ID: 65-95-022
LOCATION: JAMES RIVER CORPORATION
SAMPLE ID: MB

DATE ANALYZED: 05/06/95
DATE REPORTED: 05/11/95
BATCH NO: 20463

EPA METHOD 8240: VOLATILE ORGANICS IN WATER

COMPOUND	Result ug/L	Reporting Limit (ug/L)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5.0
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Vinyl acetate	ND	50
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	5.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0
Benzene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	5.0
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5.0
Tetrachloroethene	ND	5.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethyl benzene	ND	5.0
Styrene	ND	5.0
Total xylenes	ND	5.0

ND = Not detected at or above reporting limit

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	94 %
Toluene-d8	105 %
Bromofluorobenzene	100 %



LABORATORY NUMBER: 120894-METHOD BLANK
CLIENT: ENVIRONMENTAL SCIENCE & ENG
PROJECT ID: 65-95-022
LOCATION: JAMES RIVER CORPORATION
SAMPLE ID: MB

DATE ANALYZED: 05/08/95
DATE REPORTED: 05/11/95
BATCH NO: 20473

EPA METHOD 8240: VOLATILE ORGANICS IN WATER

COMPOUND	Result ug/L	Reporting Limit (ug/L)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5.0
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Vinyl acetate	ND	50
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	5.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0
Benzene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	5.0
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5.0
Tetrachloroethene	ND	5.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethyl benzene	ND	5.0
Styrene	ND	5.0
Total xylenes	ND	5.0

ND = Not detected at or above reporting limit

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	96 %
Toluene-d8	103 %
Bromofluorobenzene	98 %



8240 MS/MSD Report

Matrix Sample Number: 120894-008

Date Analyzed: 05-MAY-95

Lab No: QC91857 QC91858

Spike File: DE437

Matrix: WATER

Spike Dup File: DE438

Batch No: 20422 435125066037 435125072038 435125060036 Analyst: TW

	Instrdg	SpikeAmt	% Rec	Limits
<u>MS RESULTS</u>				
1,1-Dichloroethene	43.4	50	87 %	61-145%
Trichloroethene	47.6	50	95 %	71-120%
Benzene	49.2	50	98 %	76-127%
Toluene	47.7	50	96 %	76-125%
Chlorobenzene	46.9	50	94 %	75-130%
Surrogate Recoveries				
1,2-Dichloroethane-d4	44.4	50	89 %	75-143%
Toluene-d8	44.5	50	89 %	77-134%
Bromofluorobenzene	44.8	50	90 %	65-129%
<u>MSD RESULTS</u>				
1,1-Dichloroethene	42.7	50	85 %	61-145%
Trichloroethene	43.3	50	87 %	71-120%
Benzene	44.4	50	89 %	76-127%
Toluene	44.6	50	89 %	76-125%
Chlorobenzene	43.6	50	87 %	75-130%
Surrogate Recoveries				
1,2-Dichloroethane-d4	45.7	50	91 %	75-143%
Toluene-d8	45.1	50	90 %	77-134%
Bromofluorobenzene	44.5	50	89 %	65-129%
<u>MATRIX RESULTS</u>				
1,1-Dichloroethene	0			
Trichloroethene	0			
Benzene	0			
Toluene	0			
Chlorobenzene	0			
<u>RPD DATA</u>				
1,1-Dichloroethene	2 %			< 14%
Trichloroethene	9 %			< 14%
Benzene	10 %			< 11%
Toluene	7 %			< 13%
Chlorobenzene	7 %			< 13%

Curtis & Tompkins, Ltd



8240 MS/MSD Report

Matrix Sample Number: 120863-001 Date Analyzed: 06-MAY-95
 Lab No: QC92074 QC92075 Spike File: BE533
 Matrix: WATER Spike Dup File: BE534
 Batch No: 20463 415126120033 415126127034 415125228013 Analyst: LFL

	Instrdrg	SpikeAmt	% Rec	Limits
<u>MS RESULTS</u>				
1,1-Dichloroethene	45.5	50	91 %	61-145%
Trichloroethene	50.6	50	80 %	71-120%
Benzene	40	50	80 %	76-127%
Toluene	45.8	50	92 %	76-125%
Chlorobenzene	45.2	50	90 %	75-130%
Surrogate Recoveries				
1,2-Dichloroethane-d4	51.1	50	102 %	76-114%
Toluene-d8	54.8	50	110 %	88-110%
Bromofluorobenzene	53.3	50	107 %	86-115%
<u>MSD RESULTS</u>				
1,1-Dichloroethene	50.4	50	101 %	61-145%
Trichloroethene	54.9	50	88 %	71-120%
Benzene	46.9	50	94 %	76-127%
Toluene	52.9	50	106 %	76-125%
Chlorobenzene	49.9	50	100 %	75-130%
Surrogate Recoveries				
1,2-Dichloroethane-d4	49.1	50	98 %	76-114%
Toluene-d8	51.9	50	104 %	88-110%
Bromofluorobenzene	51.6	50	103 %	86-115%
<u>MATRIX RESULTS</u>				
1,1-Dichloroethene	0			
Trichloroethene	10.8			
Benzene	0			
Toluene	0			
Chlorobenzene	0			
<u>RPD DATA</u>				
1,1-Dichloroethene	10 %			< 14%
Trichloroethene	8 %			< 14%
Benzene	16 %			< 11% *
Toluene	15 %			< 13% *
Chlorobenzene	10 %			< 13%

** Result is out of limits

