gettler — ryan inc.

91 SEP 23 PM 3:10

September 18, 1991

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

Reference: Former Shell Service Station
15275 Washington Street
San Leandro, California
WIC 204-6852-1008

Ms. Evans:

As requested by Jack Brastad of Shell Oil Company, we are forwarding the September 13, 1991 Site Update report prepared for the referenced location. The report presents the results of the ground-water sampling conducted during the third quarter of 1991.

Should have any questions or comments please do not hesitate to call.

Sincerely,

John Werfal
Project Manager

enclosure

cc: Mr. Tom Callaghan, Regional Water Quality Control Board
Mr. Jack Brastad, Shell Oil Company.

2150 west winton avenue • hayward, california 94545-1210 • (415) 783-7500

GeoStrategies Inc.

SITE UPDATE

Former Shell Service Station
15275 Washington Avenue
San Leandro, California
WIC 204-6852-1008

761501-14

September 13, 1991

GeoStrategies Inc.
2140 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545

September 13, 1991

Gettler-Ryan Inc.
2150 West Winton Avenue
Hayward, California 94545

Attn: Mr. John Werfal

Re: SITE UPDATE
Former Shell Service Station
15275 Washington Avenue
San Leandro, California

Gentlemen:

This Site Update has been prepared by GeoStrategies Inc. (GSI) and presents the results of the 1991 third quarter ground-water sampling performed by Gettler-Ryan Inc. (G-R) for the above referenced site (Plate 1). The scope of work presented in this document was performed at the request of Shell Oil Company. Field work and laboratory analysis methods were performed to comply with current State of California Water Resources Control Board guidelines.

SITE BACKGROUND

There are currently sixteen monitoring wells and one recovery well at the site; Wells S-1, S-3, S-5 through S-18, and SR-1 (Plate 2). These wells were installed between 1985 and 1991 by EMCON Associates, Woodward-Clyde Consultants, and GSI. The former underground storage tanks were removed and Wells S-2 and S-4 were destroyed in June 1987. Wells S-1, S-3, S-5 through S-7, S-16, and SR-1 are onsite. Wells S-8 through S-18 are offsite. These wells were installed to evaluate the vertical and horizontal extent of petroleum hydrocarbons in soils and shallow groundwater beneath the site.

Quarterly monitoring and sampling of wells began in September 1988. Ground-water samples have been analyzed for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline) according to EPA Method 8015 (Modified) and Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) according to EPA Method 8020.

CURRENT QUARTERLY SAMPLING RESULTS

Potentiometric Data

Prior to ground-water sampling, depth to water-level measurements were obtained in each monitoring well (S-1, S-3, and S-5 through S-18) using an electronic oil-water interface probe. Static ground-water levels were measured from the surveyed top of well box and recorded to the nearest $\pm$0.01 foot. Corresponding elevations, referenced to Mean Sea Level (MSL) datum are presented in Table 1. Water-level data were used to construct a quarterly potentiometric map (Plate 3). Shallow ground-water flow is to the southwest at a calculated gradient of 0.003.

Floating Product Measurements

Each well was checked for the presence of floating product using an electronic oil-water interface probe. A clear acrylic bailer was used to confirm probe results. Floating product was not observed in the wells this quarter.

Ground-water Analytical Data

Ground-water samples were collected on July 9, 1991. The samples were analyzed for TPH-Gasoline according to EPA Method 8015 (Modified) and BTEX according to EPA Method 8020 by International Technology (IT), a State of California certified laboratory located in San Jose, California.

TPH-Gasoline was detected in Wells S-1, S-3, S-5, S-8, S-9, S-13, S-14 and SR-1 at concentrations ranging from 0.16 to 50. parts per million (ppm). Benzene concentrations detected in these same wells and in Wells S-12 and S-16 ranged from 0.0006 to 3.6 ppm. These data are summarized in Table 2 and included in Appendix A. Chemical isoconcentration maps for TPH-Gasoline and benzene are presented on Plates 4 and 5. Historical chemical analytical data are presented in Table 3.

Quality Control

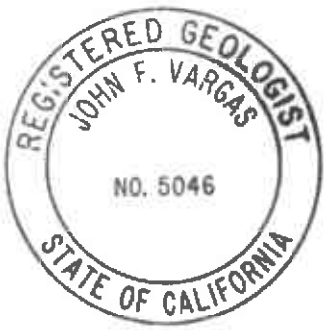
Quality Control (QC) samples for this quarter's sampling included a trip blank and a duplicate sample. The duplicate sample was collected as a second (split) sample to assess analytical precision. The trip blank was prepared in the laboratory using organic-free water to evaluate laboratory handling procedures of samples. The results of QC sample analyses are presented in Table 2.

If you have any questions, please call.

GeoStrategies Inc. by,

Ellen C. Fostersmith
Geologist

John F. Vargas
Senior Geologist
R.G. 5046



ECF/JFV/kjj

Plate 1. Vicinity Map
Plate 2. Site Plan
Plate 3. Potentiometric Map
Plate 4. TPH-G Isoconcentration Map
Plate 5. Benzene Isoconcentration Map

Appendix A: Analytical Laboratory Report and Chain-of-Custody

QC Review: _____

761501-14

TABLE 1

FIELD MONITORING DATA

WELL NO.	MONITORING DATE	CASING DIA. (IN)	TOTAL WELL DEPTH (FT)	WELL ELEV. (FT)	DEPTH TO WATER (FT)	PRODUCT THICKNESS (FT)	STATIC WATER ELEV. (FT)	PURGED WELL VOLUMES	pH	TEMPERATURE (F)	CONDUCTIVITY (uMHOS/cm)
S-1	09-Jul-91	3	19.9	21.55	8.22	----	13.33	5	7.37	69.2	1187
S-3	09-Jul-91	3	15.3	21.14	8.07	----	13.07	2	7.65	68.7	651
S-5	09-Jul-91	4	18.4	21.41	8.52	----	12.89	4	7.30	68.1	1499
S-6	09-Jul-91	3	24.6	22.02	8.81	----	13.21	2	7.26	68.7	1065
S-7	09-Jul-91	3	21.7	21.47	8.41	----	13.06	3	7.37	70.3	1388
S-8	09-Jul-91	3	24.3	20.72	7.98	----	12.74	4	7.79	70.4	1655
S-9	09-Jul-91	3	17.9	20.96	8.00	----	12.96	3	7.47	71.2	1547
S-10	09-Jul-91	3	18.1	20.69	8.14	----	12.55	3	7.39	63.6	965
S-11	09-Jul-91	3	22.6	21.26	8.85	----	12.41	5	7.85	67.6	1078
S-12	09-Jul-91	3	24.1	21.05	8.42	----	12.63	6	7.80	66.5	1164
S-13	09-Jul-91	3	23.9	20.57	8.12	----	12.45	5	7.59	66.9	1596

Notes: 1. Static water elevations referenced to Mean Sea Level (MSL).
2. Physical parameter measurements represent stabilized values.

* SR-1 surveyed to top of box. Water levels measured to top of casing. No off-set between elevations available.

TABLE 1

FIELD MONITORING DATA

WELL NO.	MONITORING DATE	CASING DIA. (IN)	TOTAL WELL DEPTH (FT)	WELL ELEV. (FT)	DEPTH TO WATER (FT)	PRODUCT THICKNESS (FT)	STATIC WATER ELEV. (FT)	PURGED WELL VOLUMES	pH	TEMPERATURE (F)	CONDUCTIVITY (uMHOS/cm)
S-14	09-Jul-91	3	23.2	20.44	7.69	----	12.75	5	7.77	67.2	1384
S-15	09-Jul-91	3	23.7	22.22	8.93	----	13.29	5	8.12	68.2	980
S-16	09-Jul-91	3	24.0	21.82	8.48	----	13.34	5	7.42	65.5	1385
S-17	09-Jul-91	3	24.3	20.95	8.24	----	12.71	5	7.66	66.3	1142
S-18	09-Jul-91	3	18.1	21.03	8.23	----	12.80	2	7.62	70.1	1152
SR-1	09-Jul-91	6	21.2	21.45	8.11*	----	----	4	7.17	67.8	1613

TABLE 2

GROUND-WATER ANALYSIS DATA

WELL NO	SAMPLE DATE	ANALYSIS DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
S-1	09-Jul-91	11-Jul-91	0.20	0.016	<0.0005	0.0013	0.0058
S-3	09-Jul-91	12-Jul-91	50.	3.6	2.3	1.8	10.
S-5	09-Jul-91	12-Jul-91	4.9	0.48	0.036	0.36	1.0
S-6	09-Jul-91	12-Jul-91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
S-7	09-Jul-91	12-Jul-91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
S-8	09-Jul-91	12-Jul-91	0.20	0.033	<0.0005	0.0018	0.0028
S-9	09-Jul-91	12-Jul-91	1.4	0.22	0.0028	0.082	0.10
S-10	09-Jul-91	12-Jul-91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005

CURRENT REGIONAL WATER QUALITY CONTROL BOARD MAXIMUM CONTAMINANT LEVELS
Benzene 0.001 ppm Xylenes 1.750 ppm Ethylbenzene 0.680 ppm

CURRENT DHS ACTION LEVELS
Toluene 0.1000 ppm

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline
PPM = Parts Per Million

SD = Duplicate Sample
TB = Trip Blank

* Compounds detected and calculated as low boiling hydrocarbons consist of compounds eluting within the chromatographic range of gasoline, but are not characteristic of the standard gasoline pattern.

Notes: 1. All data shown as <x are reported as ND (none detected).
2. DHS Action Levels and MCLs are subject to change pending State review.

761501-14

TABLE 2

GROUND-WATER ANALYSIS DATA

WELL NO	SAMPLE DATE	ANALYSIS DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
S-11	09-Jul-91	12-Jul-91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
S-12	09-Jul-91	11-Jul-91	<0.05	0.0029	<0.0005	<0.0005	<0.0005
S-13	09-Jul-91	11-Jul-91	0.32*	0.0006	<0.0005	<0.0005	<0.0005
S-14	09-Jul-91	15-Jul-91	0.16	0.030	0.0053	0.0050	0.016
S-15	09-Jul-91	11-Jul-91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
S-16	09-Jul-91	12-Jul-91	<0.05	0.0010	<0.0005	<0.0005	<0.0005
S-17	09-Jul-91	11-Jul-91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
S-18	09-Jul-91	11-Jul-91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
SR-1	09-Jul-91	13-Jul-91	1.4	0.20	0.027	0.13	0.34
SD-5	09-Jul-91	12-Jul-91	4.7	0.45	0.032	0.36	0.93
TB	----	11-Jul-91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005

TABLE 3

HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
08-Jul-85	S-1	0.52	N/A	N/A	N/A	N/A
06-Sep-88	S-1	<0.05	<0.0005	<0.001	<0.001	<0.003
16-Nov-88	S-1	<0.05	<0.0005	<0.001	<0.001	<0.003
27-Feb-89	S-1	<0.05	0.0005	<0.001	<0.001	<0.003
04-May-89	S-1	<0.05	0.001	<0.001	<0.001	<0.003
10-Aug-89	S-1	<0.05	0.0007	<0.001	<0.001	<0.003
10-Oct-89	S-1	<0.05	<0.0005	<0.001	<0.001	<0.003
25-Jan-90	S-1	<0.050	<0.0005	<0.0005	<0.0005	<0.001
18-Apr-90	S-1	<0.050	<0.0005	<0.0005	<0.0005	<0.001
23-Jul-90	S-1	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
18-Oct-90	S-1	0.08	0.0050	<0.0005	<0.0005	0.0030
28-Jan-91	S-1	<0.05	.0045	<0.0005	<0.0005	0.002
25-Apr-91	S-1	0.08&	0.0037	<0.0005	0.0007	0.0020
09-Jul-91	S-1	0.20	0.016	<0.0005	0.0013	0.0058
08-Jul-85	S-2	2.20	N/A	N/A	N/A	N/A
06-Sep-88	S-3	96.	3.4	9.5	2.7	17.
16-Nov-88	S-3	70.	4.6	8.4	2.5	13.
27-Feb-89	S-3	32.	2.4	3.1	1.5	6.4
04-May-89	S-3	47.	4.4	6.3	2.4	15.
09-Aug-89	S-3	110.	5.7	5.7	3.2	19.
10-Oct-89	S-3	52.	4.6	3.3	2.6	15.
25-Jan-90	S-3	420.	5.2	4.1	6.7	34.
18-Apr-90	S-3	58.	3.8	1.4	2.4	12.
23-Jul-90	S-3	49.	3.4	1.8	2.3	12.
18-Oct-90	S-3	44.	3.5	0.65	2.4	11.
28-Jan-91	S-3	64.	4.09	0.57	1.94	8.09
25-Apr-91	S-3	120.	3.9	3.6	2.4	8.9
09-Jul-91	S-3	50.	3.6	2.3	1.8	10.

TABLE 3

HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
08-Jul-85	S-4	32.	N/A	N/A	N/A	N/A
08-Jan-87	S-5	7.8	0.38	0.510	----	1.0
06-Sep-88	S-5	7.	2.6	0.06	0.4	0.7
16-Nov-88	S-5	3.	0.66	0.06	0.12	0.22
27-Feb-89	S-5	5.7	2.	0.22	0.26	0.32
04-May-89	S-5	9.	3.	0.6	0.63	1.7
09-Aug-89	S-5	5.1	1.1	<0.05	0.27	0.4
10-Oct-89	S-5	15.	3.3	0.16	0.83	2.2
25-Jan-90	S-5	12.	2.4	0.36	0.57	1.4
18-Apr-90	S-5	5.2	1.1	0.04	0.30	0.46
23-Jul-90	S-5	5.5	1.3	0.14	0.32	0.73
18-Oct-90	S-5	12.	3.2	0.04	0.72	0.90
28-Jan-91	S-5	2.55	0.41	.015	0.11	0.06
25-Apr-91	S-5	67.	5.1	3.1	2.8	11.
09-Jul-91	S-5	4.9	0.48	0.036	0.36	1.0
16-Nov-88	S-6	0.05	0.0007	<0.001	<0.001	<0.003
27-Feb-89	S-6	<0.05	<0.0005	<0.001	<0.001	<0.003
04-May-89	S-6	<0.05	<0.0005	<0.001	<0.001	<0.003
10-Aug-89	S-6	<0.05	<0.0005	<0.001	<0.001	<0.003
10-Oct-89	S-6	<0.05	<0.0005	<0.001	<0.001	<0.003
25-Jan-90	S-6	<0.050	<0.0005	<0.0005	<0.0005	<0.001
18-Apr-90	S-6	<0.050	<0.0005	0.0006	<0.0005	0.001
23-Jul-90	S-6	<0.05	<0.0005	0.0009	<0.0005	0.0018
18-Oct-90	S-6	<0.05	<0.0005	0.0007	<0.0005	0.0008
28-Jan-91	S-6	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
25-Apr-91	S-6	<0.05	<0.0005	<0.0005	<0.0005	0.0007
09-Jul-91	S-6	<0.05	<0.0005	<0.0005	<0.0005	<0.0005

TABLE 3

HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
16-Nov-88	S-7	0.1	0.0051	0.015	0.002	0.013
27-Feb-89	S-7	0.05	0.0005	0.003	0.001	0.011
04-May-89	S-7	<0.05	<0.0005	<0.001	<0.001	<0.003
10-Aug-89	S-7	<0.05	<0.0005	<0.001	<0.001	<0.003
10-Oct-89	S-7	<0.05	<0.0005	<0.001	<0.001	<0.003
25-Jan-90	S-7	<0.050	<0.0005	<0.0005	<0.0005	<0.001
18-Apr-90	S-7	<0.050	<0.0005	<0.0005	<0.0005	<0.001
23-Jul-90	S-7	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
18-Oct-90	S-7	<0.05	<0.0005	<0.0005	0.0005	0.0041
28-Jan-91	S-7	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
25-Apr-91	S-7	0.06&	<0.0005	<0.0005	<0.0005	<0.0005
09-Jul-91	S-7	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
16-Nov-88	S-8	0.21	0.005	<0.001	0.001	0.005
27-Feb-89	S-8	<0.05	0.0024	<0.001	<0.001	<0.003
03-May-89	S-8	<0.05	0.0075	<0.001	0.002	<0.003
09-Aug-89	S-8	<0.05	0.0006	<0.001	<0.001	<0.003
09-Oct-89	S-8	<0.05	<0.0005	<0.001	<0.001	<0.003
25-Jan-90	S-8	<0.050	<0.0005	<0.0005	<0.0005	<0.001
18-Apr-90	S-8	<0.050	<0.0005	<0.0005	<0.0005	<0.001
23-Jul-90	S-8	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
18-Oct-90	S-8	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
28-Jan-91	S-8	<0.05	0.055	0.0005	<0.0005	0.0014
25-Apr-91	S-8	0.13&	0.019	<0.0005	0.0013	0.0011
09-Jul-91	S-8	0.20	0.033	<0.0005	0.0018	0.0028
16-Nov-88	S-9	1.4	0.069	0.003	0.052	0.18
27-Feb-89	S-9	1.6	0.24	0.004	0.13	0.18
03-May-89	S-9	2.6	0.47	0.01	0.24	0.48
09-Aug-89	S-9	0.52	0.073	<0.01	0.04	<0.03
09-Oct-89	S-9	0.38	0.082	<0.001	0.046	0.013

TABLE 3

HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
25-Jan-90	S-9	0.75	0.14	0.0012	0.069	0.075
18-Apr-90	S-9	0.68	0.15	0.0017	0.050	0.037
23-Jul-90	S-9	0.49	0.094	0.0012	0.032	0.024
18-Oct-90	S-9	0.39	0.14	0.0007	0.0033	0.024
28-Jan-91	S-9	1.040	0.450	.0046	0.085	0.097
25-Apr-91	S-9	5.8	0.88	0.0090	0.36	0.50
09-Jul-91	S-9	1.4	0.22	0.0028	0.082	0.10
16-Nov-88	S-10	0.33	0.0005	<0.001	0.001	0.011
27-Feb-89	S-10	0.14	<0.0005	<0.003	0.002	0.006
03-May-89	S-10	0.22	<0.0005	0.001	0.002	0.007
09-Aug-89	S-10	<0.05	<0.0005	<0.001	<0.001	<0.003
09-Oct-89	S-10	0.17	<0.0005	<0.001	<0.001	<0.003
25-Jan-90	S-10	<0.050	<0.0005	<0.0005	0.0011	0.004
18-Apr-90	S-10	<0.050	<0.0005	0.0009	<0.0005	0.002
23-Jul-90	S-10	0.59	<0.0005	<0.0005	0.0019	0.019
18-Oct-90	S-10	0.14	<0.0005	0.0007	<0.0005	0.0070
28-Jan-91	S-10	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
25-Apr-91	S-10	<0.05	<0.0005	<0.0005	0.0011	0.0008
09-Jul-91	S-10	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
16-Nov-88	S-11	<0.05	<0.0005	<0.001	<0.001	<0.003
27-Feb-89	S-11	<0.05	<0.0005	<0.001	<0.001	<0.003
03-May-89	S-11	<0.05	<0.0005	<0.001	<0.001	<0.003
09-Aug-89	S-11	<0.05	<0.0005	<0.001	<0.001	<0.003
09-Oct-89	S-11	<0.05	<0.0005	<0.001	<0.001	<0.003
25-Jan-90	S-11	<0.050	<0.0005	<0.0005	<0.0005	<0.001
18-Apr-90	S-11	<0.050	<0.0005	<0.0005	<0.0005	<0.001
23-Jul-90	S-11	<0.05	<0.0005	0.0006	<0.0005	0.0011
18-Oct-90	S-11	<0.05	<0.0005	<0.0005	<0.0005	0.0005
28-Jan-91	S-11	.063	<0.0005	0.0033	0.0009	0.007

TABLE 3

HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
25-Apr-91	S-11	<0.05	<0.0005	<0.0005	0.0008	<0.0005
09-Jul-91	S-11	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
16-Nov-88	S-12	0.05	0.0035	<0.001	<0.001	<0.003
27-Feb-89	S-12	<0.05	0.0008	<0.001	<0.001	<0.003
03-May-89	S-12	<0.05	<0.0005	<0.001	<0.001	<0.003
09-Aug-89	S-12	<0.05	<0.0005	<0.001	<0.001	<0.003
09-Oct-89	S-12	<0.05	<0.0005	<0.001	<0.001	<0.003
25-Jan-90	S-12	<0.050	<0.0005	<0.0005	<0.0005	<0.001
18-Apr-90	S-12	<0.050	<0.0005	<0.0005	<0.0005	<0.001
23-Jul-90	S-12	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
18-Oct-90	S-12	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
28-Jan-91	S-12	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
25-Apr-91	S-12	0.09	0.0054	<0.0005	0.0011	0.0007
09-Jul-91	S-12	<0.05	0.0029	<0.0005	<0.0005	<0.0005
03-May-89	S-13	0.15	0.0049	0.004	0.002	0.014
09-Aug-89	S-13	0.11	0.0029	<0.001	<0.001	<0.003
09-Oct-89	S-13	0.077	0.0014	<0.001	<0.001	<0.003
25-Jan-90	S-13	0.051	0.0005	<0.0005	<0.0005	<0.001
18-Apr-90	S-13	0.085	0.0087	<0.0005	<0.0005	<0.001
23-Jul-90	S-13	0.08	0.0008	<0.0005	<0.0005	<0.0005
18-Oct-90	S-13	0.13	<0.0005	<0.0005	<0.0005	<0.0005
28-Jan-91	S-13	<0.05	<0.0005	0.0009	<0.0005	0.001
25-Apr-91	S-13	0.44&	0.0038	<0.0005	0.0012	0.0006
09-Jul-91	S-13	0.32&	0.0006	<0.0005	<0.0005	<0.0005
03-May-89	S-14	5.3	0.75	0.4	0.200	0.800
09-Aug-89	S-14	1.8	0.54	0.14	0.042	0.050
09-Oct-89	S-14	1.0	0.36	0.06	0.020	0.030
25-Jan-90	S-14	0.64	0.16	0.077	0.017	0.039

TABLE 3

HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
18-Apr-90	S-14	1.2	0.20	0.11	0.030	0.096
23-Jul-90	S-14	5.0	0.43	0.34	0.14	0.66
19-Oct-90	S-14	1.8	0.77	0.013	0.017	0.12
28-Jan-91	S-14	0.72	0.200	0.036	0.021	0.078
25-Apr-91	S-14	14.	0.93	0.43	0.25	0.97
09-Jul-91	S-14	0.16	0.030	0.0053	0.0050	0.016
03-May-89	S-15	<0.05	<0.0005	<0.001	<0.001	<0.003
09-Aug-89	S-15	<0.05	<0.0005	<0.001	<0.001	<0.003
09-Oct-89	S-15	<0.05	<0.0005	<0.001	<0.001	<0.003
25-Jan-90	S-15	<0.050	<0.0005	<0.0005	<0.0005	<0.001
18-Apr-90	S-15	<0.050	<0.0005	<0.0005	<0.0005	<0.001
23-Jul-90	S-15	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
18-Oct-90	S-15	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
28-Jan-91	S-15	<0.05	<0.0005	0.0006	<0.0005	0.0008
25-Apr-91	S-15	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
09-Jul-91	S-15	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
04-May-89	S-16	0.38	0.044	0.003	0.002	<0.003
10-Aug-89	S-16	<0.05	0.0006	<0.001	<0.001	<0.003
10-Oct-89	S-16	<0.05	<0.0005	<0.001	<0.001	<0.003
25-Jan-90	S-16	0.24	0.16	0.0033	0.0008	0.011
18-Apr-90	S-16	<0.050	0.0010	<0.0005	<0.0005	<0.001
23-Jul-90	S-16	<0.05	0.0011	<0.0005	<0.0005	<0.0005
18-Oct-90	S-16	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
28-Jan-91	S-16	<0.05	<0.0005	0.0006	<0.0005	0.0009
25-Apr-91	S-16	0.06*	0.021	0.0005	0.0032	0.0048
09-Jul-91	S-16	<0.05	0.0010	<0.0005	<0.0005	<0.0005
03-May-89	S-17	<0.05	<0.005	<0.001	<0.001	<0.003
09-Aug-89	S-17	<0.05	<0.0005	<0.001	<0.001	<0.003

TABLE 3

HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
09-Oct-89	S-17	<0.05	<0.0005	<0.001	<0.001	<0.003
25-Jan-90	S-17	<0.050	<0.0005	<0.0005	<0.0005	<0.001
18-Apr-90	S-17	<0.050	<0.0005	<0.0005	<0.0005	<0.001
23-Jul-90	S-17	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
18-Oct-90	S-17	0.39	0.010	0.062	0.022	0.11
28-Jan-91	S-17	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
25-Apr-91	S-17	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
09-Jul-91	S-17	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
31-May-91	S-18	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
09-Jul-91	S-18	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
22-Mar-89	SR-1	5.4	1.1	0.23	0.35	1.3
25-Jan-90	SR-1	2.2	0.47	0.12	0.11	0.51
18-Apr-90	SR-1	1.0	0.13	0.047	0.047	0.22
23-Jul-90	SR-1	3.2	0.47	0.32	0.17	0.87
18-Oct-90	SR-1	1.3	0.28	0.0066	0.11	0.13
28-Jan-91	SR-1	1.1	0.120	0.012	0.051	0.110
09-Jul-91	SR-1	1.4	0.20	0.027	0.13	0.34

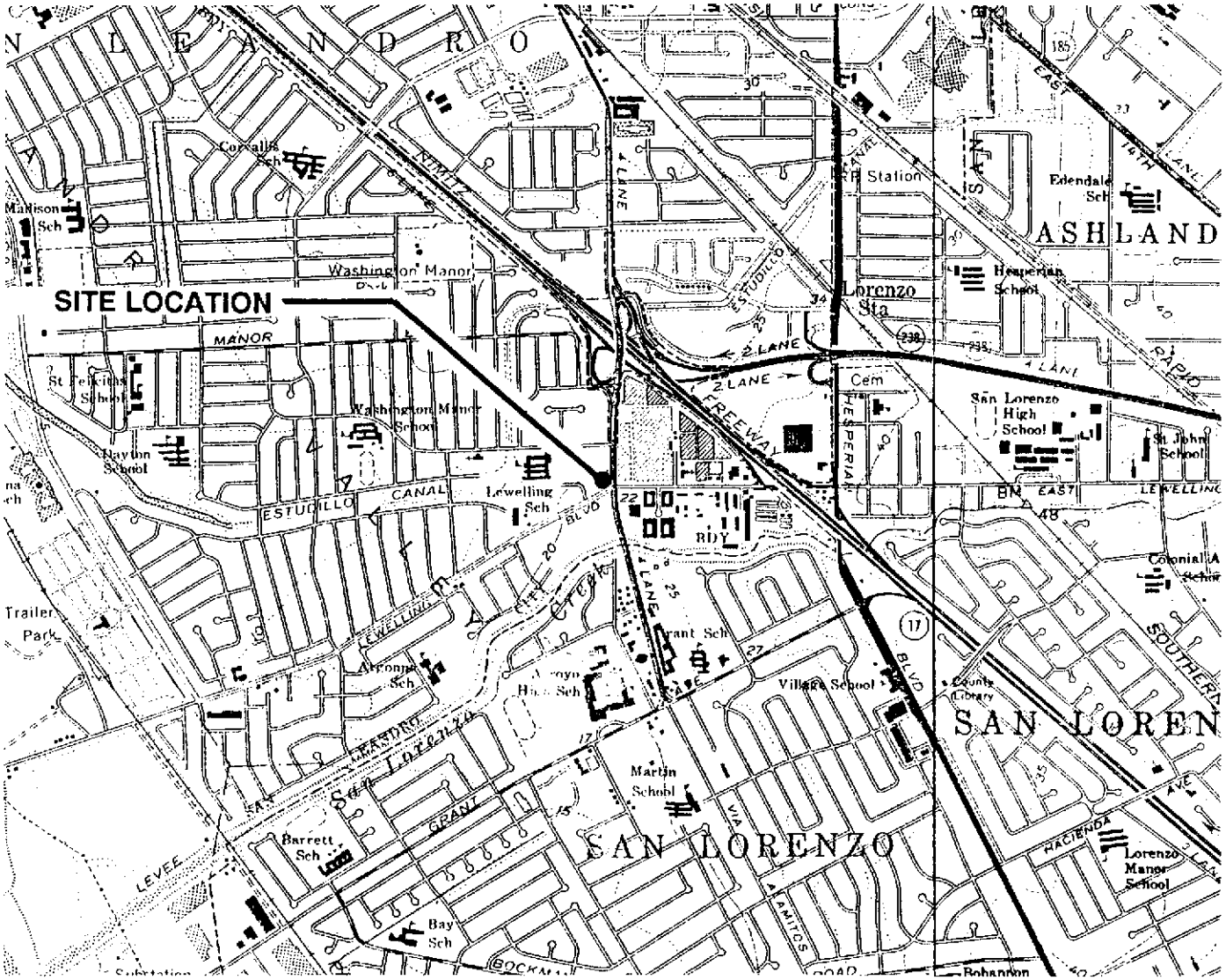
TABLE 3

HISTORICAL GROUND-WATER QUALITY DATABASE

Current Regional Water Quality Control Board Maximum Contaminant Levels
Benzene 0.001 ppm Xylenes 1.750 ppm Ethylbenzene 0.680 ppm

Current DHS Action Levels Toluene 0.1000 ppm

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline
PPM = Parts Per Million
* Compounds detected and calculated as low boiling hydrocarbons are due to the volatile aromatics (BETX) present in the sample. Gasoline was not detected.
& Compounds detected and calculated as low boiling hydrocarbons consist of compounds eluting within the chromatographic range of gasoline, but are not characteristic of the standard gasoline pattern.
NOTE: 1. DHS Action levels and MCL's are subject to change pending State of California review.
2. All data shown as <X are reported as ND (none detected).

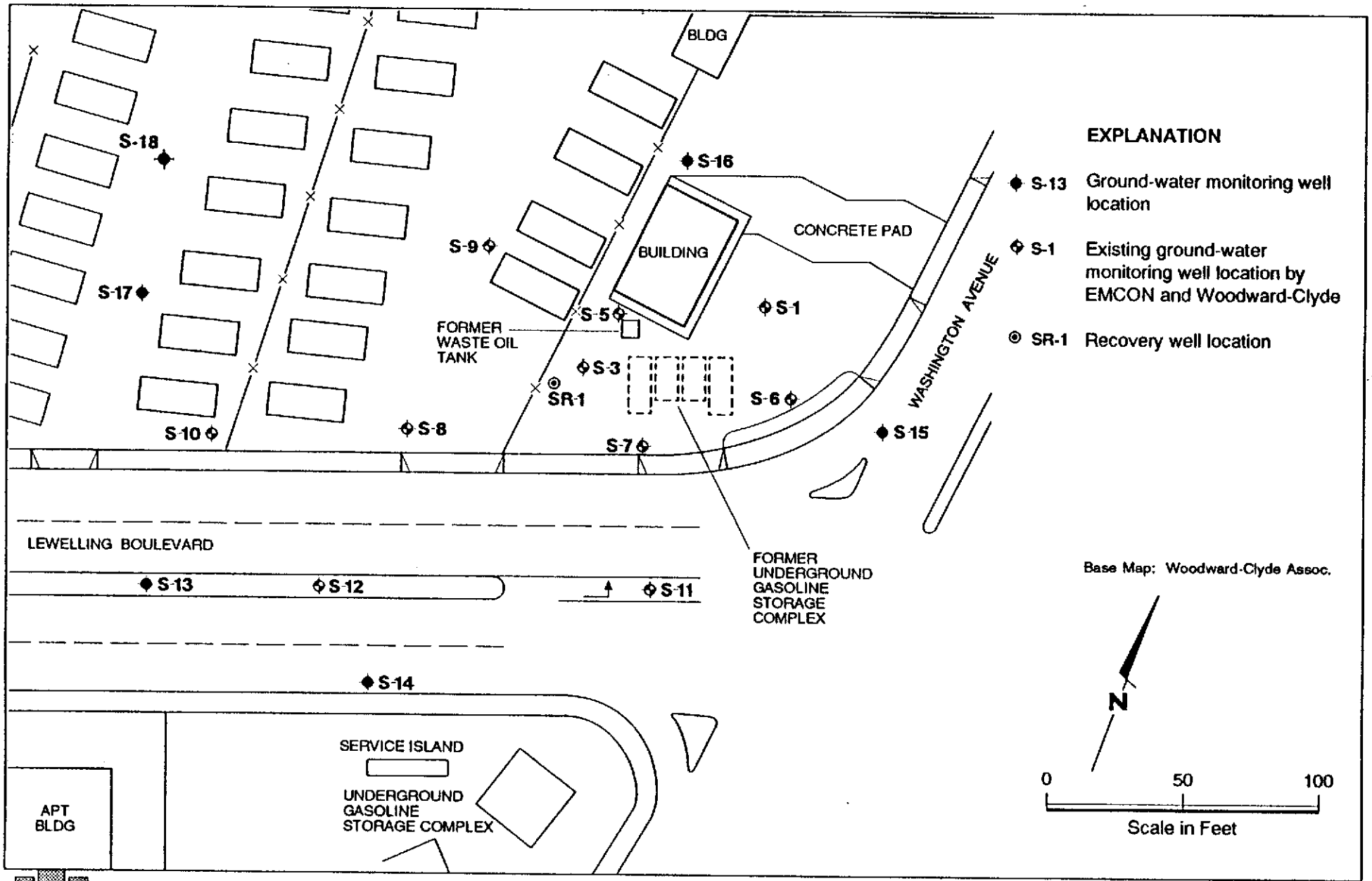


GeoStrategies Inc.

Vicinity Map
Former Shell Service Station
15275 Washington Avenue
San Leandro, California

PLATE
1

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7615		11/89		

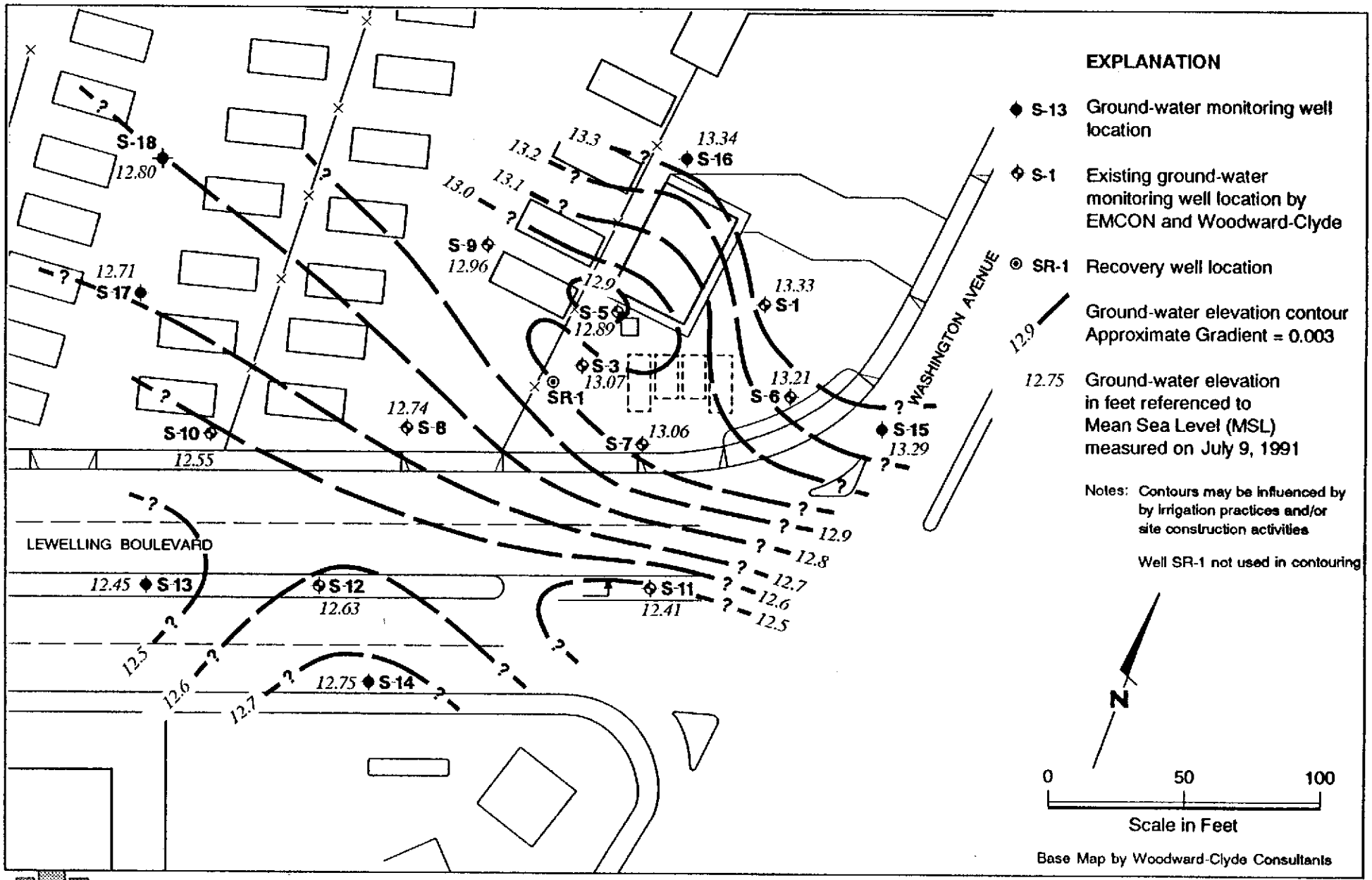


GeoStrategies Inc.

Site Plan
Former Shell Service Station
15275 Washington Avenue
San Leandro, California

PLATE
2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
761501-14	SRS	9/91		

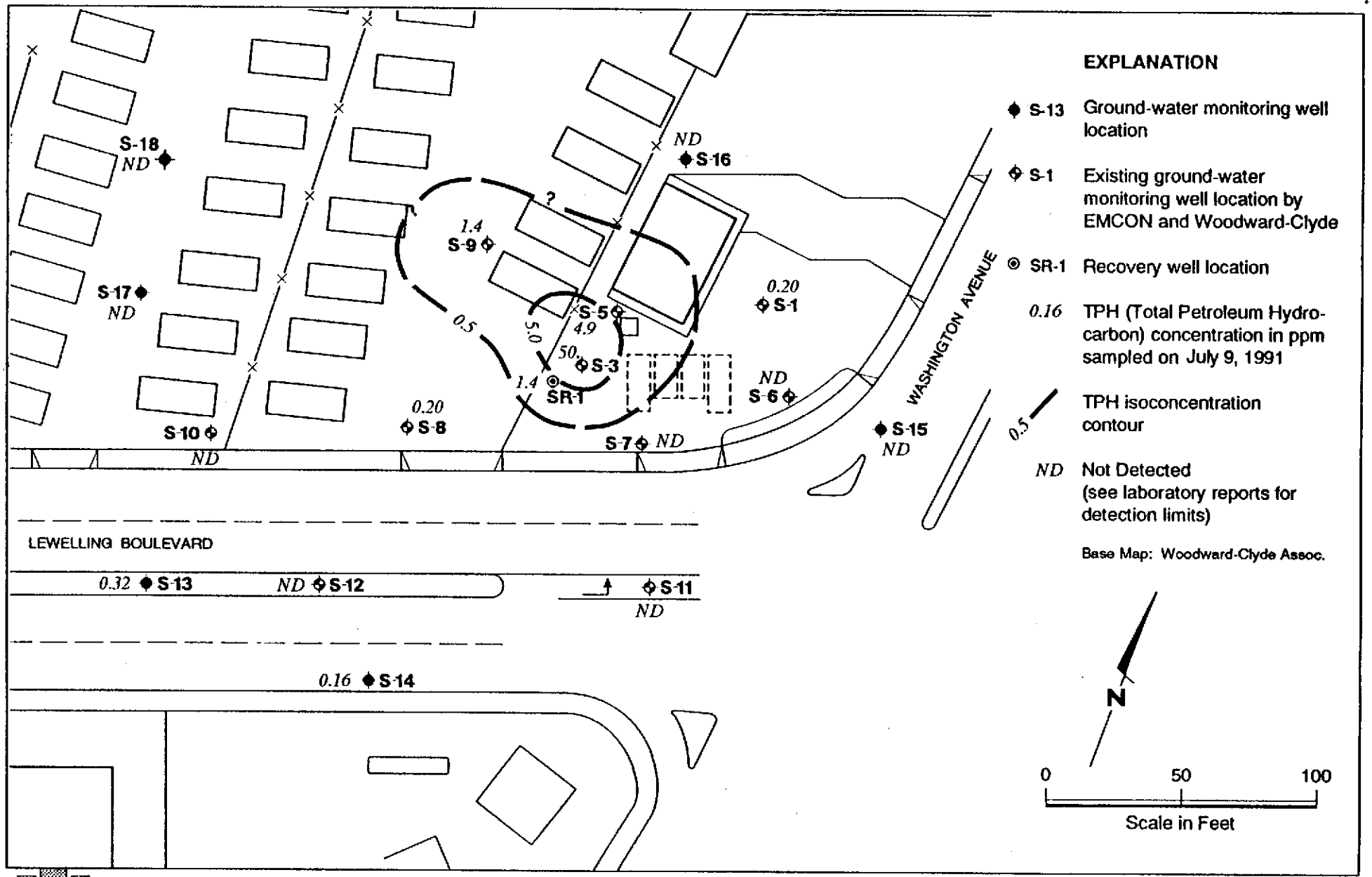


GeoStrategies Inc.

Potentiometric Map
Former Shell Service Station
15275 Washington Avenue
San Leandro, California

PLATE
3

JOB NUMBER	REVIEWED	DATE	REVISED DATE	REVISED DATE
761501-14	GFS	9/91		

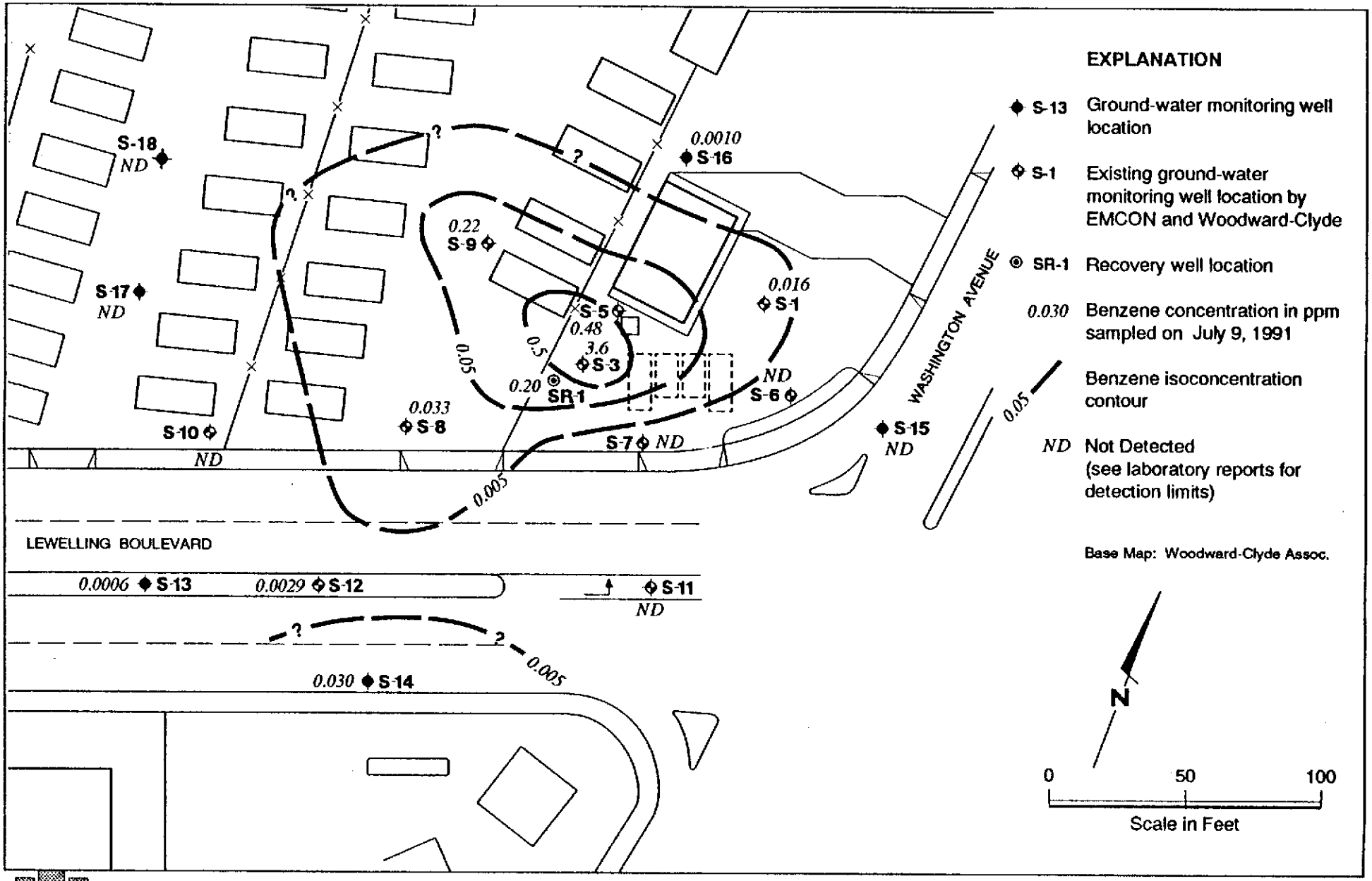


GeoStrategies Inc.

TPH Isoconcentration Map
Former Shell Service Station
15275 Washington Avenue
San Leandro, California

PLATE
4

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
761501-14	CPS	9/91		



GeoStrategies Inc.

Benzene Isoconcentration Map
Former Shell Service Station
15275 Washington Avenue
San Leandro, California

PLATE
5

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
761501-14	EFS	9/91		

APPENDIX A
ANALYTICAL LABORATORY REPORT
AND CHAIN-OF-CUSTODY

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

RECEIVED
JUL 23 1991
GETTLER-RYAN INC.
GENERAL CONTRACTORS

CERTIFICATE OF ANALYSIS

Shell Oil Company
Gettler-Ryan
2150 West Winton
Hayward, CA 94545
Tom Paulson

Date: 07/22/91

Work Order: T1-07-111 P.O. Number: MOH 880-021 Vendor #I0002402

This is the Certificate of Analysis for the following samples:

Client Work ID: GR3615, 15275 Wash., S.Lndro
Date Received: 07/10/91
Number of Samples: 9
Sample Type: aqueous

TABLE OF CONTENTS FOR ANALYTICAL RESULTS

Reviewed and Approved:

Suzanne Veaudry
Project Manager

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

Work Order: T1-07-111

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-1
SAMPLE DATE: 07/09/91
LAB SAMPLE ID: T107111-01
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/11/91
Low Boiling Hydrocarbons	Mod.8015		07/11/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	0.20
BTEX		
Benzene	0.0005	0.016
Toluene	0.0005	None
Ethylbenzene	0.0005	0.0013
Xylenes (total)	0.0005	0.0058

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	111.
1,3-Dichlorobenzene (BTEX)	97.

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-111

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-3
SAMPLE DATE: 07/09/91
LAB SAMPLE ID: T107111-02
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/12/91
Low Boiling Hydrocarbons	Mod.8015		07/12/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	5.	50.
BTEX		
Benzene	0.05	3.6
Toluene	0.05	2.3
Ethylbenzene	0.05	1.8
Xylenes (total)	0.05	10.

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	111.
1,3-Dichlorobenzene (BTEX)	101.

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-111

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-5
SAMPLE DATE: 07/09/91
LAB SAMPLE ID: T107111-03
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/12/91
Low Boiling Hydrocarbons	Mod.8015		07/12/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	2.5	4.9
BTEX		
Benzene	0.025	0.48
Toluene	0.025	0.036
Ethylbenzene	0.025	0.36
Xylenes (total)	0.025	1.0

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	115.
1,3-Dichlorobenzene (BTEX)	100.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

Work Order: T1-07-111

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-6
SAMPLE DATE: 07/09/91
LAB SAMPLE ID: T107111-04
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/12/91
Low Boiling Hydrocarbons	Mod.8015		07/12/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	None
Toluene	0.0005	None
Ethylbenzene	0.0005	None
Xylenes (total)	0.0005	None

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	111.
1,3-Dichlorobenzene (BTEX)	98.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

Work Order: T1-07-111

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-7
SAMPLE DATE: 07/09/91
LAB SAMPLE ID: T107111-05
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/12/91
Low Boiling Hydrocarbons	Mod.8015		07/12/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	None
Toluene	0.0005	None
Ethylbenzene	0.0005	None
Xylenes (total)	0.0005	None

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	112.
1,3-Dichlorobenzene (BTEX)	97.

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-111

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-8
SAMPLE DATE: 07/09/91
LAB SAMPLE ID: T107111-06
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/12/91
Low Boiling Hydrocarbons	Mod.8015		07/12/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	0.20
BTEX		
Benzene	0.0005	0.033
Toluene	0.0005	None
Ethylbenzene	0.0005	0.0018
Xylenes (total)	0.0005	0.0028

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	113.
1,3-Dichlorobenzene (BTEX)	101.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

Work Order: T1-07-111

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-9
SAMPLE DATE: 07/09/91
LAB SAMPLE ID: T107111-07
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/12/91
Low Boiling Hydrocarbons	Mod.8015		07/12/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.25	1.4
BTEX		
Benzene	0.0025	0.22
Toluene	0.0025	0.0028
Ethylbenzene	0.0025	0.082
Xylenes (total)	0.0025	0.10

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	107.
1,3-Dichlorobenzene (BTEX)	101.

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-111

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-10
SAMPLE DATE: 07/09/91
LAB SAMPLE ID: T107111-08
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/12/91
Low Boiling Hydrocarbons	Mod.8015		07/12/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	None
Toluene	0.0005	None
Ethylbenzene	0.0005	None
Xylenes (total)	0.0005	None

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	113.
1,3-Dichlorobenzene (BTEX)	98.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

Work Order: T1-07-111

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-11
SAMPLE DATE: 07/09/91
LAB SAMPLE ID: T107111-09
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/12/91
Low Boiling Hydrocarbons	Mod.8015		07/12/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	None
Toluene	0.0005	None
Ethylbenzene	0.0005	None
Xylenes (total)	0.0005	None

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	112.
1,3-Dichlorobenzene (BTEX)	99.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

Work Order: T1-07-111

TEST NAME: Spike and Spike Duplicates

SAMPLE ID: Quality Control
SAMPLE DATE: not spec
LAB SAMPLE ID: T107111-10A
EXTRACTION DATE:
ANALYSIS DATE: 07/11/91
ANALYSIS METHOD: Mod. 8015

QUALITY CONTROL REPORT

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Analyses

RESULTS in Micrograms per Liter

PARAMETER	Sample Amt	Spike Amt	MS Result	MSD Result	MS %Rec	MSD %Rec	RPD
Gasoline	ND<50.	500.	442.	425.	88.	85.	3.

SURROGATES	MS %Rec	MSD %Rec
1,3-Dichlorobenzene	106.	109.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

Work Order: T1-07-111

TEST NAME: Spike and Spike Duplicates

SAMPLE ID: Quality Control
SAMPLE DATE: not spec
LAB SAMPLE ID: T107111-10B
EXTRACTION DATE:
ANALYSIS DATE: 07/11/91
ANALYSIS METHOD: 8020

QUALITY CONTROL REPORT

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Analyses

RESULTS in Micrograms per Liter

PARAMETER	Sample Amt	Spike Amt	MS Result	MSD Result	MS %Rec	MSD %Rec	RPD
Benzene	ND<0.5	50.0	46.7	45.1	93.	90.	3.
Toluene	ND<0.5	50.0	48.2	46.6	96.	93.	3.
Ethyl benzene	ND<0.5	50.0	48.3	46.7	97.	93.	4.
Xylenes	ND<0.5	150.	142.	138.	95.	92.	3.

SURROGATES	MS %Rec	MSD %Rec
1,3-Dichlorobenzene	101.	99.

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-111

TEST CODE TPHVB TEST NAME TPH Gas,BTEX by 8015/8020

The method of analysis for low boiling hydrocarbons is taken from EPA Methods modified 8015, 8020 and 5030. The sample is examined using the purge and trap technique. Final detection is by gas chromatography using a flame ionization detector in series with a photoionization detector. The result for total low boiling hydrocarbons is calculated as gasoline. Results in soils are corrected for moisture content and are reported on a dry soil basis unless otherwise noted.

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

RECEIVED

JUL 2 3 1991

GETTLER-RYAN INC.
GENERAL CONTRACTORS

CERTIFICATE OF ANALYSIS

Shell Oil Company
Gettler-Ryan
2150 West Winton
Hayward, CA 94545
Tom Paulson

Date: 07/22/91

Work Order: T1-07-112

P.O. Number: MOH 880-021 Vendor #I0002402

This is the Certificate of Analysis for the following samples:

Client Work ID: GR3615, 15275 Wash., S.Lndro
Date Received: 07/10/91
Number of Samples: 10
Sample Type: aqueous

TABLE OF CONTENTS FOR ANALYTICAL RESULTS

Reviewed and Approved:

Suzanne Veaudry
Project Manager

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

Work Order: T1-07-112

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-12
SAMPLE DATE: 07/09/91
LAB SAMPLE ID: T107112-01
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/11/91
Low Boiling Hydrocarbons	Mod.8015		07/11/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	0.0029
Toluene	0.0005	None
Ethylbenzene	0.0005	None
Xylenes (total)	0.0005	None

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	114.
1,3-Dichlorobenzene (BTEX)	97.

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-112

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-13
SAMPLE DATE: 07/09/91
LAB SAMPLE ID: T107112-02
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/11/91
Low Boiling Hydrocarbons	Mod.8015		07/11/91

PARAMETER	DETECTION LIMIT	DETECTED	
Low Boiling Hydrocarbons calculated as Gasoline	0.05	0.32	&
BTEX			
Benzene	0.0005	0.0006	
Toluene	0.0005	None	
Ethylbenzene	0.0005	None	
Xylenes (total)	0.0005	None	

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	114.
1,3-Dichlorobenzene (BTEX)	100.

Comments:
& Compounds detected and calculated as low boiling hydrocarbons consist of compounds eluting within the chromatographic range of gasoline, but are not characteristic of the standard gasoline standard pattern.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

Work Order: T1-07-112

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-14
SAMPLE DATE: 07/09/91
LAB SAMPLE ID: T107112-03
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/15/91
Low Boiling Hydrocarbons	Mod.8015		07/15/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	0.16
BTEX		
Benzene	0.0005	0.030
Toluene	0.0005	0.0053
Ethylbenzene	0.0005	0.0050
Xylenes (total)	0.0005	0.016

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	103.
1,3-Dichlorobenzene (BTEX)	100.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

Work Order: T1-07-112

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-15
SAMPLE DATE: 07/09/91
LAB SAMPLE ID: T107112-04
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/11/91
Low Boiling Hydrocarbons	Mod.8015		07/11/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	None
Toluene	0.0005	None
Ethylbenzene	0.0005	None
Xylenes (total)	0.0005	None

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	114.
1,3-Dichlorobenzene (BTEX)	99.

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-112

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-16
SAMPLE DATE: 07/09/91
LAB SAMPLE ID: T107112-05
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/12/91
Low Boiling Hydrocarbons	Mod.8015		07/12/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	0.0010
Toluene	0.0005	None
Ethylbenzene	0.0005	None
Xylenes (total)	0.0005	None

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	115.
1,3-Dichlorobenzene (BTEX)	99.

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-112

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-17
SAMPLE DATE: 07/09/91
LAB SAMPLE ID: T107112-06
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/11/91
Low Boiling Hydrocarbons	Mod.8015		07/11/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	None
Toluene	0.0005	None
Ethylbenzene	0.0005	None
Xylenes (total)	0.0005	None

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	117.
1,3-Dichlorobenzene (BTEX)	100.

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-112

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-18
SAMPLE DATE: 07/09/91
LAB SAMPLE ID: T107112-07
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/11/91
Low Boiling Hydrocarbons	Mod.8015		07/11/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	None
Toluene	0.0005	None
Ethylbenzene	0.0005	None
Xylenes (total)	0.0005	None

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	114.
1,3-Dichlorobenzene (BTEX)	100.

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-112

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: SR-1
SAMPLE DATE: 07/09/91
LAB SAMPLE ID: T107112-08
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/13/91
Low Boiling Hydrocarbons	Mod.8015		07/13/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.25	1.4
BTEX		
Benzene	0.0025	0.20
Toluene	0.0025	0.027
Ethylbenzene	0.0025	0.13
Xylenes (total)	0.0025	0.34

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	110.
1,3-Dichlorobenzene (BTEX)	103.

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-112

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: SD-5
SAMPLE DATE: 07/09/91
LAB SAMPLE ID: T107112-09
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/12/91
Low Boiling Hydrocarbons	Mod.8015		07/12/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	2.5	4.7
BTEX		
Benzene	0.025	0.45
Toluene	0.025	0.032
Ethylbenzene	0.025	0.36
Xylenes (total)	0.025	0.93

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	113.
1,3-Dichlorobenzene (BTEX)	99.

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-112

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: Trip Blank
SAMPLE DATE: not spec
LAB SAMPLE ID: T107112-10
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/11/91
Low Boiling Hydrocarbons	Mod.8015		07/11/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	None
Toluene	0.0005	None
Ethylbenzene	0.0005	None
Xylenes (total)	0.0005	None

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	112.
1,3-Dichlorobenzene (BTEX)	98.

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-112

TEST NAME: Spike and Spike Duplicates

SAMPLE ID: Quality Control
SAMPLE DATE: not spec
LAB SAMPLE ID: T107112-11A
EXTRACTION DATE:
ANALYSIS DATE: 07/11/91
ANALYSIS METHOD: Mod. 8015

QUALITY CONTROL REPORT

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Analyses

RESULTS in Micrograms per Liter

PARAMETER	Sample Amt	Spike Amt	MS Result	MSD Result	MS %Rec	MSD %Rec	RPD
Gasoline	ND<50.	500.	442.	425.	88.	85.	3.

SURROGATES	MS %Rec	MSD %Rec
1,3-Dichlorobenzene	106.	109.

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-112

TEST NAME: Spike and Spike Duplicates

SAMPLE ID: Quality Control
SAMPLE DATE: not spec
LAB SAMPLE ID: T107112-11B
EXTRACTION DATE:
ANALYSIS DATE: 07/11/91
ANALYSIS METHOD: 8020

QUALITY CONTROL REPORT

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Analyses

RESULTS in Micrograms per Liter

PARAMETER	Sample Amt	Spike Amt	MS Result	MSD Result	MS %Rec	MSD %Rec	RPD
Benzene	ND<0.5	50.0	46.7	45.1	93.	90.	3.
Toluene	ND<0.5	50.0	48.2	46.6	96.	93.	3.
Ethyl benzene	ND<0.5	50.0	48.3	46.7	97.	93.	4.
Xylenes	ND<0.5	150.	142.	138.	95.	92.	3.

SURROGATES	MS %Rec	MSD %Rec
1,3-Dichlorobenzene	101	99

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-112

TEST NAME: Spike and Spike Duplicates

SAMPLE ID: Quality Control
SAMPLE DATE: not spec
LAB SAMPLE ID: T107112-11C
EXTRACTION DATE:
ANALYSIS DATE: 07/12/91
ANALYSIS METHOD: 8020

QUALITY CONTROL REPORT

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Analyses

RESULTS in Micrograms per Liter

PARAMETER	Sample Amt	Spike Amt	MS Result	MSD Result	MS %Rec	MSD %Rec	RPD
Benzene	ND<0.5	50.0	49.4	50.3	99.	101.	2.
Toluene	ND<0.5	50.0	49.9	50.5	100.	101.	1.
Ethyl benzene	ND<0.5	50.0	50.5	51.1	101.	102.	1.
Xylenes	ND<0.5	150.	160.	162.	107.	108.	1.

SURROGATES	MS %Rec	MSD %Rec
1,3-Dichlorobenzene	100.	99.

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: 4 GR3615, 15275 Wash., S.Lndro

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-112

TEST CODE TPHVB TEST NAME TPH Gas,BTEX by 8015/8020

The method of analysis for low boiling hydrocarbons is taken from EPA Methods modified 8015, 8020 and 5030. The sample is examined using the purge and trap technique. Final detection is by gas chromatography using a flame ionization detector in series with a photoionization detector. The result for total low boiling hydrocarbons is calculated as gasoline. Results in soils are corrected for moisture content and are reported on a dry soil basis unless otherwise noted.

Gettler - Ryan Inc. T1-07-111 ENVIRONMENTAL DIVISION **3048 Chain of Custody**

COMPANY Shell JOB NO.

JOB LOCATION 15275 WASHINGTON

CITY SAN LEANDRO PHONE NO. 783-7500

AUTHORIZED Tom PAULSON DATE 7-9-91 P.O. NO. 3615.01

SAMPLE ID	NO. OF CONTAINERS	SAMPLE MATRIX	DATE/TIME SAMPLED	ANALYSIS REQUIRED	SAMPLE CONDITION LAB ID
S-1	3	H_2O	7-9-91 / 1211	TPH(gas) BTXE	Cool/OK
S-3			/ 1330		
S-5			/ 1401		
S-6			/ 1410		
S-7			/ 1320		
S-8			/ 1305		
S-9			/ 1310		
S-10			/ 1255		
S-11			/ 1329		

RELINQUISHED BY: 7-9-91 1540

RECEIVED BY: 7-9-91 1540
REFPIC #1

RELINQUISHED BY:
REFNG #1 7/11/91 0200AM

RECEIVED BY: 7/10/91 0200AM

RELINQUISHED BY: 7/10/91

RECEIVED BY LAB:
J DeHaven 7/10/91 12:55

DESIGNATED LABORATORY: JT(SCV) DHS #: 137

REMARKS: NORMAL TAT WIC # 2046852-1008 Exp# 5461

Eng: J Brasted

DATE COMPLETED 7-9-91 FOREMAN

Gettler - Ryan Inc. — T1-07-112 — ENVIRONMENTAL DIVISION — **3047 Chain of Custody**

COMPANY Shell — JOB NO. _____

JOB LOCATION 15275 Washington Ave

CITY San Leandro — PHONE NO. 783-7500

AUTHORIZED Tom Paulson — DATE 7-9-91 — P.O. NO. 3615.01

SAMPLE ID	NO. OF CONTAINERS	SAMPLE MATRIX	DATE/TIME SAMPLED	ANALYSIS REQUIRED	SAMPLE CONDITION LAB ID
S-12	3	H_2O	7-9-91 / 13:07	THC (gas) BTXE	Cool / OK
S-13	↓	↓	/ 12:42	↓	↓
S-14			/ 13:50		
S-15			/ 14:20		
S-16			/ 12:40		
S-17			/ 8:55		
S-18			/ 9:30		
SR-1			/ 13:40		
SD-5	↓	↓	/ —	↓	↓
trip	~~2~~ 1	↓	/ —	↓	↓

RELINQUISHED BY: Guadalupe Sanchez 7-9-91 15:40

RECEIVED BY: Kafrig #1 7-9-91 15:40

RELINQUISHED BY: A-PAIG #1 7/10/91 0800 AM

RECEIVED BY: 7/10/91 0800 AM

RELINQUISHED BY: 7/10/91 1345

RECEIVED BY LAB: J DeHaven 7/10/91 13:55

DESIGNATED LABORATORY: IT SCV — DHS #: 137

REMARKS: WIC # 204-6852-1008-

Normal TAT

Eng: J. Brastad

DATE COMPLETED 7-9-91 — FOREMAN Guadalupe Sanchez