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A Report Prepared for

Carnation Company
800 North Brand Boulevard
Glendale, California 91203

**QUARTERLY MONITORING REPORT
APRIL THROUGH JUNE 1992
CARNATION FACILITY
OAKLAND, CALIFORNIA**

HLA Project No. 11909 015

9-10-92

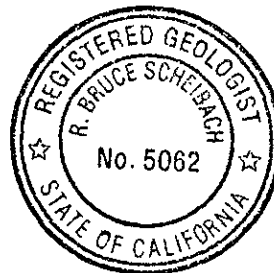
by

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September 10, 1992



September 10, 1992

11909 015

Alameda County Health Care Services
Department of Environmental Health
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, California 94621

Attention: Mr. Dennis J. Byrne
Senior Hazardous Materials Specialist

Ladies and Gentlemen:

**Quarterly Monitoring Report
April Through June 1992
Carnation Facility
Oakland, California**

94607

Enclosed is Harding Lawson Associates' (HLA) Quarterly Monitoring Report covering the period of April through June 1992 for the Carnation Dairy Facility at 1310 14th Street in Oakland, California. This report describes the results of monitoring groundwater quality in June 1992, and measurement of groundwater elevations and product thickness at the facility.

If you have any questions, please contact me at (415) 899-7319.

Yours very truly,

HARDING LAWSON ASSOCIATES

R. Bruce Scheibach
R. Bruce Scheibach
Principal Hydrogeologist

Enclosure: Quarterly Monitoring Report

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1.0 INTRODUCTION

From 1929 to 1991, Carnation Company operated a dairy production facility at 1310 14th Street, Oakland, California (Plate 1). The facility was used for dairy product processing and for vehicle maintenance. An L-shaped warehouse with four vehicle service bays occupies the north and west sides of the site (Plate 2). In January 1989, Carnation removed an underground waste oil tank, two underground gasoline tanks, and two underground diesel tanks from beneath and south of the warehouse. During tank removal, gasoline and diesel were observed floating as a separate phase in the excavations. Carnation investigated the extent of the hydrocarbons and implemented several interim remedial measures. The chemicals detected, i.e., free-phase gasoline, diesel, waste oil, and their dissolved chemical components, are believed to have been released from the waste oil tank and from piping to the four fuel storage tanks. Polychlorinated biphenyls (PCBs) were also detected in oil floating on the water table at one location. Additionally, animal fats were reportedly observed floating on the water table beneath the facility.

In April 1991, Carnation retained Harding Lawson Associates (HLA) to conduct additional site investigations and to perform an engineering analysis of remediation alternatives. A work plan for quarterly monitoring and other site investigation work was submitted to the Alameda County Department of Environmental Health and the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB), in May 1991 (HLA, 1991a). All field work was conducted in accordance with the Quality Assurance/Quality Control (QA/QC) Plan contained in the Work Plan. This report presents the results of the second quarter 1992 groundwater monitoring. A more

comprehensive discussion of environmental work performed at the facility is presented in the Site Characterization Report (*HLA, 1991b*).

2.0 WATER-LEVEL ELEVATION AND FREE-PHASE PETROLEUM PRODUCT MEASUREMENTS AND GROUNDWATER CHEMISTRY MONITORING

2.1 Water-Level Elevation and Free-Phase Petroleum Product Measurements

As part of the monitoring program, HLA measures water-level elevations and free-phase petroleum product thicknesses monthly in accessible monitoring wells and selected product recovery wells. The measurements are taken with an electric oil-water interface probe calibrated with a steel tape, as described in the QA/QC Plan (HLA, 1991a).

2.2 Groundwater Chemistry Monitoring

On June 22 and 23, 1992, groundwater samples for chemical analysis were collected from nine onsite and offsite monitoring wells: Wells MW-3, MW-14, MW-25, MW-26, MW-27, MW-28, MW-29, MW-30, and MW-32 (Plate 2). Sample collection procedures are described in the QA/QC Plan (HLA, 1991a). Well MW-26 was resampled on July 14, 1992 because the laboratory exceeded the sample holding time. One field blank and one duplicate water sample (from Well MW-32) were collected.

National Environmental Testing, Inc., a California-certified laboratory in Santa Rosa, California, analyzed all groundwater samples for benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Test Method 8020. Samples from Wells MW-26 and MW-32, the field duplicate, and the field blank were also analyzed for chlorinated hydrocarbons using EPA Test Method 8010.

The groundwater generated during the sampling was contained onsite and will be discharged to the sanitary sewer under permit from the East Bay Municipal Utility District.

3.0 RESULTS

3.1 Water-Level Elevations

Table 1 presents groundwater elevation and free-phase petroleum product thickness data collected through July 1992 for accessible monitoring wells and selected product recovery wells. Groundwater elevations for wells containing free product were calculated using an assumed product density of 0.80 grams per cubic centimeter.

Plate 3 is a groundwater elevation contour map using data collected June 22, 1992, from monitoring wells containing no free product. The calculated groundwater elevation data from wells having free product were not used in contouring. The elevation data indicate that groundwater flows northward beneath the site (Plate 3) at a hydraulic gradient of approximately 1.2×10^{-2} foot/foot (ft/ft). This flow pattern differs from the March 1992 pattern, most likely due to the repair of an underground water leak on 16th Street in April by the East Bay Municipal Utility District.

3.2 Distribution of Free Product

Free-product thicknesses (Table 1) measured June 22 are shown on Plate 4. In general, free-phase product thicknesses measured in June are slightly less than those measured in March 1992. The apparent product thickness was greatest in Well MW-22 (4.03 feet), near the north wall of the warehouse (Plate 4). However, product was not and has not been observed in the five offsite wells (MW-25 through MW-29), which are all relatively close to the warehouse. The consistent lack of free-phase petroleum product in the offsite wells and the wells on the west side of the property (MW-4, MW-14, MW-15, and MW-16) suggests that the product has not migrated offsite.

3.3 Results of Groundwater Chemistry Monitoring

Analytical results for the groundwater samples collected in June are summarized in Table 2 and shown on Plate 5. Groundwater sampling forms are in Appendix A, and laboratory data sheets are in Appendix B.

3.3.1 Distribution of Petroleum Hydrocarbons in Groundwater

At least one dissolved BTEX compound was found in the samples from Wells MW-3, MW-26, MW-27, MW-30, and MW-32. BTEX compounds were not detected above reporting limits in the samples from Wells MW-14, MW-25, MW-28, and MW-29.

3.3.2 Distribution of Chlorinated Hydrocarbons in Groundwater

One chlorinated hydrocarbon, 1,2-dichloroethane (1,2-DCA), was detected in the two samples from onsite Well MW-32 at concentrations of 7.9 and 6.2 micrograms per liter ($\mu\text{g}/\text{l}$) and in offsite Well MW-26 at 380 $\mu\text{g}/\text{l}$. Samples from these wells will continue to be analyzed for chlorinated hydrocarbons.

3.3.3 Groundwater OA/OC Data

The field quality control samples comprised one field blank and one duplicate sample. Analytical results are presented in Table 2, and the certified laboratory data sheets are presented in Appendix B. Well MW-26 was resampled on July 14, 1992, because the holding time expired on the original sample. The duplicate sample for Well MW-32 was reanalyzed on July 14, 1992, by the laboratory due to poor initial results. Preliminary results had an order of magnitude or greater difference between original sample and duplicate sample detections of BTEX compounds.

Field blanks consist of organic-free deionized water that is poured into sample containers under field conditions. They are prepared and analyzed to check for potential contamination during sample collection. The field blank was poured on June 23, 1992,

and transported to the laboratory with the groundwater samples. Benzene, toluene, and total xylenes were detected at 0.6, 2.5, and 2.5 $\mu\text{g}/\text{l}$, respectively, in the field blank.

The duplicate sample from Well MW-32 was collected to evaluate laboratory precision. Precision is assessed by calculating the relative percent difference (RPD) between the initial sample results (X_1) and the duplicate sample results (X_2); a low RPD indicates high precision. The equation used to calculate RPD is:

$$\text{RPD} = \frac{|X_1 - X_2|}{(X_1 + X_2)/2} \times 100$$

RPDs were calculated for five data pairs where analytes were detected above the reporting limit. None of the calculated RPDs exceeded the quality assurance goal of 100 percent specified in the QA/QC Plan (*HLA, 1991a*).

Laboratory quality control data included surrogate and blank spike recoveries. Two of the nine blank spike recoveries were 151 percent, slightly higher than the upper quality control goal of 150 percent. The laboratory has been contacted concerning these analytical data.

4.0 GROUNDWATER MONITORING PLAN

Carnation will continue to monitor groundwater elevations and free-phase petroleum product thicknesses monthly and will monitor groundwater chemistry quarterly. The nine wells on the quarterly sampling list are: Wells MW-3, MW-14, MW-25, MW-26, MW-27, MW-28, MW-29, MW-30, and MW-32. Samples from these wells will continue to be analyzed for aromatic hydrocarbons using EPA Test Method 8020. Additionally, samples from Wells MW-26 and MW-32 will continue to be analyzed for chlorinated hydrocarbons using EPA Test Method 8010. Quality assurance/quality control samples will be collected in accordance with the QA/QC Plan (HLA, 1991a).

5.0 REFERENCES

Harding Lawson Associates, 1991a. *Work Plan, Carnation Facility, Oakland, California.* May.

_____, 1991b. *Site Characterization Report, Carnation Facility, Oakland, California.* September.

_____, 1992. *Quarterly Activity Report, January through March 1992, Carnation Facility, Oakland, California.* April.

TABLES

**Table 1. Groundwater Elevations and Free-Phase Product Thicknesses
Carnation Facility
Oakland, California**

Harding Lawson Associates

Well Number and Elevation (ft MSL)	Date of Measurement	Depth to Water (ft BGS)	Depth to Product (ft BGS)	Product Thickness (ft)	Water Level Elevation* (ft MSL)
MW- 1 16.49 ft MSL	4/16/91	10.27	--	--	6.22
	5/24/91	10.66	--	--	5.83
	7/9/91	11.25	--	--	5.24
	8/15/91	11.61	--	--	4.88
	9/17/91	11.79	--	--	4.70
	10/16/91	12.00	--	--	4.49
	11/13/91	12.01	--	--	4.48
	12/17/91	12.20	--	--	4.29
	1/28/92	11.77	--	--	4.72
	2/24/92	10.18	--	--	6.31
	3/23/92	9.33	--	--	7.16
	4/23/92	9.76	--	--	6.73
	6/5/92	10.42	--	--	6.07
	6/22/92	10.89	--	--	5.60
7/20/92	11.15	--	--	5.34	
MW- 2 15.11 ft MSL	4/16/91	9.15	--	--	5.96
	5/24/91	9.48	--	--	5.63
	7/9/91	10.02	--	--	5.09
	8/15/91	10.33	--	--	4.78
	9/17/91	10.49	--	--	4.62
	10/16/91	10.67	--	--	4.44
	11/13/91	10.66	--	--	4.45
	12/17/91	10.85	--	--	4.26
	1/28/92	10.43	--	--	4.68
	2/24/92	8.95	--	--	6.16
	3/23/92	8.18	--	--	6.93
	4/23/92	8.69	--	--	6.42
	6/5/92	9.37	--	--	5.74
	6/22/92	9.80	--	--	5.31
7/20/92	10.04	--	--	5.07	
MW- 3 14.30 ft MSL	4/16/91	8.44	--	--	5.86
	5/24/91	8.75	--	--	5.55
	7/9/91	9.26	--	--	5.04
	8/15/91	9.57	--	--	4.73
	9/17/91	9.70	--	--	4.60
	10/16/91	9.84	--	--	4.46
	11/13/91	9.65	--	--	4.65
	12/17/91	10.00	--	--	4.30
	1/28/92	9.62	--	--	4.68
	2/24/92	7.84	--	--	6.46
	3/23/92	7.54	--	--	6.76
4/23/92	8.15	--	--	6.15	

**Table 1. Groundwater Elevations and Free-Phase Product Thicknesses
Carnation Facility
Oakland, California**

Harding Lawson Associates

Well Number and Elevation (ft MSL)	Date of Measurement	Depth to Water (ft BGS)	Depth to Product (ft BGS)	Product Thickness (ft)	Water Level Elevation* (ft MSL)
	6/5/92	8.73	--	--	5.57
	6/22/92	9.18	--	--	5.12
	7/20/92	9.42	--	--	4.88
MW- 4 14.42 ft MSL	4/16/91	8.46	--	--	5.96
	5/24/91	Dry	--	--	
	7/9/91	9.38	--	--	5.04
	8/15/91	9.71	--	--	4.71
	9/17/91	9.89	--	--	4.53
	10/16/91	Dry	--	--	
	11/13/91	10.04	--	--	4.38
	12/17/91	10.34	--	--	4.08
	1/28/92	9.85	--	--	4.57
	2/24/92	8.30	--	--	6.12
	3/23/92	7.58	--	--	6.84
	4/23/92	8.07	--	--	6.35
	6/5/92	8.69	--	--	5.73
	6/22/92	9.11	--	--	5.31
	7/20/92	9.36	--	--	5.06
MW- 5 14.41 ft MSL	4/16/91	8.48	--	--	5.93
	5/24/91	8.81	--	--	5.60
	7/9/91	9.32	--	--	5.09
	8/15/91	9.60	--	--	4.81
	9/17/91	9.72	--	--	4.69
	10/16/91	9.87	--	--	4.54
	11/13/91	9.83	--	--	4.58
	12/17/91	10.10	--	--	4.31
	1/28/92	9.71	--	--	4.70
	2/24/92	8.11	--	--	6.30
	3/23/92	7.48	--	--	6.93
	4/23/92	8.19	--	--	6.22
	6/5/92	8.85	--	--	5.56
	6/22/92	9.27	--	--	5.14
	7/20/92	9.48	--	--	4.93
MW- 6 14.12 ft MSL	4/16/91	8.15	--	--	5.97
	5/24/91	8.46	--	--	5.66
	7/9/91	8.95	--	--	5.17
	8/15/91	9.21	--	--	4.91
	9/17/91	9.28	--	--	4.84
	10/16/91	9.45	--	--	4.67
	11/13/91	9.41	--	--	4.71
	12/17/91	9.63	--	--	4.49

**Table 1. Groundwater Elevations and Free-Phase Product Thicknesses
Carnation Facility
Oakland, California**

Harding Lawson Associates

Well Number and Elevation (ft MSL)	Date of Measurement	Depth to Water (ft BGS)	Depth to Product (ft BGS)	Product Thickness (ft)	Water Level Elevation* (ft MSL)
	1928/92	9.27	--	--	4.85
	2/24/92	7.74	--	--	6.38
	3/23/92	7.24	--	--	6.88
	4/23/92	7.98	--	--	6.14
	6/5/92	8.60	--	--	5.52
	6/22/92	9.02	--	--	5.10
	7/20/92	9.33	--	--	4.79
MW- 7 14.29 ft MSL	4/16/91	11.22	8.32	2.90	5.39
	5/24/91	10.79	7.72	3.07	5.96
	7/9/91	10.30	8.33	1.97	5.57
	8/15/91	11.04	8.40	2.64	5.36
	9/17/91	10.45	8.45	2.00	5.44
	10/16/91	11.43 est.	8.54	2.89	5.17
	11/13/91	11.40	8.50	2.90	5.21
	12/17/91	11.77	8.84	2.93	4.86
	1/28/92	11.23	8.40	2.83	5.32
	2/24/92	10.45	6.74	3.71	6.81
	3/23/92	10.63	5.97	4.66	7.39
	4/23/92	10.62	7.25	3.37	6.37
	6/5/92	12.68	8.29	4.39	5.12
	6/22/92	9.88	8.81	1.07	5.27
	7/20/92	10.48	9.15	1.33	4.87
MW- 8 14.20 ft MSL	4/16/91	8.15	--	--	6.05
	5/24/91	8.83	8.40	0.43	5.71
	7/9/91	9.43	8.85	0.58	5.23
	8/15/91	9.68	9.12	0.56	4.97
	9/17/91	9.71	9.21	0.50	4.89
	10/16/91	9.79	9.30	0.49	4.80
	11/13/91	9.76	9.25	0.51	4.85
	12/17/91	10.96	9.44	1.52	4.46
	1/28/92	9.65	9.08	0.57	5.01
	2/24/92	8.23	7.74	0.49	6.36
	3/23/92	7.88	7.25	0.63	6.82
	4/23/92	8.65	8.03	0.62	6.05
	6/5/92	9.34	8.69	0.65	5.38
	6/22/92	9.71	9.15	0.56	4.94
	7/20/92	9.87	9.45	0.42	4.67
MW- 9 14.96 ft MSL	5/24/91	9.31	--	--	5.65
	7/9/91	9.86	--	--	5.10
	8/15/91	10.19	--	--	4.77
	9/17/91	10.36	--	--	4.60

**Table 1. Groundwater Elevations and Free-Phase Product Thicknesses
Carnation Facility
Oakland, California**

Harding Lawson Associates

Well Number and Elevation (ft MSL)	Date of Measurement	Depth to Water (ft BGS)	Depth to Product (ft BGS)	Product Thickness (ft)	Water Level Elevation* (ft MSL)
	10/16/91	10.55	--	--	4.41
	11/13/91	10.57	--	--	4.39
	12/17/91	10.76	--	--	4.20
	1/28/92	10.32	--	--	4.64
	2/24/92	8.94	--	--	6.02
	3/23/92	8.16	--	--	6.80
	4/23/92	8.47	--	--	6.49
	6/5/92	9.11	--	--	5.85
	6/22/92	9.54	--	--	5.42
	7/20/92	9.78	--	--	5.18
MW-10 15.73 ft MSL	4/16/91	9.71	--	--	6.02
	5/24/91	10.06	--	--	5.67
	7/9/91	10.62	--	--	5.11
	8/15/91	10.78	--	--	4.95
	9/17/91	11.12	--	--	4.61
	10/16/91	11.32	--	--	4.41
	11/13/91	11.20	--	--	4.53
	12/17/91	11.48	--	--	4.25
	1/28/92	11.00	--	--	4.73
	2/24/92	9.66	--	--	6.07
	3/23/92	8.88	--	--	6.85
	4/23/92	9.28	--	--	6.45
	6/5/92	9.86	--	--	5.87
	6/22/92	10.30	--	--	5.43
	7/20/92	10.56	--	--	5.17
MW-11 14.55 ft MSL	5/24/91	8.85	--	--	5.70
	7/9/91	9.43	--	--	5.12
	8/15/91	9.74	--	--	4.81
	9/17/91	9.92	--	--	4.63
	10/16/91	10.09	--	--	4.46
	11/13/91	10.09	--	--	4.46
	12/17/91	10.27	--	--	4.28
	1/28/92	9.95	--	--	4.60
	2/24/92	8.48	--	--	6.07
	3/23/92	7.60	--	--	6.95
	4/23/92	8.04	--	--	6.51
	6/5/92	8.68	--	--	5.87
	6/22/92	9.12	--	--	5.43
	7/20/92	9.38	--	--	5.17
MW-12 15.28 ft MSL	4/16/91	9.24	--	--	6.04
	5/24/91	9.59	--	--	5.69

**Table 1. Groundwater Elevations and Free-Phase Product Thicknesses
Carnation Facility
Oakland, California**

Harding Lawson Associates

Well Number and Elevation (ft MSL)	Date of Measurement	Depth to Water (ft BGS)	Depth to Product (ft BGS)	Product Thickness (ft)	Water Level Elevation* (ft MSL)
	7/9/91	10.14	--	--	5.14
	8/15/91	10.42	--	--	4.86
	9/17/91	10.61	--	--	4.67
	10/16/91	10.81	--	--	4.47
	11/13/91	10.80	--	--	4.48
	12/17/91	11.01	--	--	4.27
	1/28/92	10.58	--	--	4.70
	2/24/92	9.16	--	--	6.12
	3/23/92	8.29	--	--	6.99
	4/23/92	8.80	--	--	6.48
	6/5/92	9.44	--	--	5.84
	6/22/92	9.87	--	--	5.41
	7/20/92	10.13	--	--	5.15
MW-13	4/16/91	8.84	--	--	6.01
14.85 ft MSL	5/24/91	9.19	--	--	5.66
	7/9/91	9.73	--	--	5.12
	8/15/91	10.12	--	--	4.73
	11/13/91	10.38	--	--	4.47
	1/28/92	10.17	--	--	4.68
	2/24/92	8.70	--	--	6.15
	3/23/92	7.84	--	--	7.01
	4/23/92	8.39	--	--	6.46
	6/5/92	9.07	--	--	5.78
	6/22/92	9.50	--	--	5.35
	7/20/92	9.75	--	--	5.10
MW-14	7/9/91	9.16	--	--	4.94
14.10 ft MSL	8/15/91	9.45	--	--	4.65
	10/16/91	Dry	--	--	
	3/23/92	7.46	--	--	6.64
	6/22/92	9.07	--	--	5.03
	7/20/92	9.22	--	--	4.88
MW-15	7/9/91	9.24	--	--	4.93
14.17 ft MSL	8/15/91	9.53	--	--	4.64
	10/16/91	Dry	--	--	
	3/23/92	7.51	--	--	6.66
	6/22/92	NM	--	--	
	7/20/92	9.29	--	--	4.88
MW-16	4/16/91	8.76	--	--	5.35
14.11 ft MSL	5/24/91	8.61	--	--	5.50
	7/9/91	9.14	--	--	4.97

**Table 1. Groundwater Elevations and Free-Phase Product Thicknesses
Camation Facility
Oakland, California**

Harding Lawson Associates

Well Number and Elevation (ft MSL)	Date of Measurement	Depth to Water (ft BGS)	Depth to Product (ft BGS)	Product Thickness (ft)	Water Level Elevation* (ft MSL)
	8/15/91	9.40	--	--	4.71
	9/17/91	9.50	--	--	4.61
	10/16/91	9.67	--	--	4.44
	11/13/91	9.62	--	--	4.49
	12/17/91	9.89	--	--	4.22
	1/28/92	9.40	--	--	4.71
	2/24/92	8.00	--	--	6.11
	3/23/92	7.59	--	--	6.52
	4/23/92	8.14	--	--	5.97
	6/5/92	8.74	--	--	5.37
	6/22/92	9.15	--	--	4.96
	7/20/92	9.54	--	--	4.57
MW-22 14.44 ft MSL	4/16/91	12.58	7.52	5.06	5.91
	5/24/91	13.05	7.77	5.28	5.61
	7/9/91	13.43	8.27	5.16	5.14
	8/15/91	13.69	8.53	5.16	4.88
	9/17/91	13.77 est.	8.61	5.16	4.80
	10/16/91	13.92	8.71	5.21	4.69
	11/13/91	13.78	8.68	5.10	4.74
	12/17/91	13.98	8.86	5.12	4.56
	1/28/92	13.28	8.60	4.68	4.90
	2/24/92	11.91	7.20	4.71	6.30
	3/23/92	12.24	6.46	5.78	6.82
	4/23/92	12.73	7.39	5.34	5.98
	6/5/92	12.68	8.16	4.52	5.38
	6/22/92	12.80	8.77	4.03	4.86
	7/20/92	12.58	8.99	3.59	4.73
MW-23 14.48 ft MSL	5/24/91	9.97	8.53	1.44	5.66
	7/9/91	10.67	8.93	1.74	5.20
	8/15/91	10.91	9.26	1.65	4.89
	9/17/91	10.74	9.29	1.45	4.90
	10/16/91	10.99	9.53	1.46	4.66
	11/13/91	10.82	9.54	1.28	4.68
	12/17/91	10.93	9.79	1.14	4.46
	1/28/92	10.42	9.45	0.97	4.84
	2/24/92	8.77	8.12	0.65	6.23
	3/23/92	8.91	7.25	1.66	6.90
	4/23/92	7.62	--	--	6.86
	6/5/92	10.67	8.44	2.23	5.59
	6/22/92	10.96	8.90	2.06	5.17
	7/20/92	10.81	9.29	1.52	4.89

**Table 1. Groundwater Elevations and Free-Phase Product Thicknesses
Carnation Facility
Oakland, California**

Harding Lawson Associates

Well Number and Elevation (ft MSL)	Date of Measurement	Depth to Water (ft BGS)	Depth to Product (ft BGS)	Product Thickness (ft)	Water Level Elevation* (ft MSL)
MW-24 14.67 ft MSL	4/16/91	8.75	--	--	5.92
	5/24/91	9.76	8.83	0.93	5.65
	8/15/91	11.24	9.44	1.80	4.87
	9/17/91	11.20	9.61	1.59	4.74
	10/16/91	11.38	9.67	1.71	4.66
	11/13/91	11.23	9.71	1.52	4.66
	12/17/91	11.44	9.93	1.51	4.44
	1/28/92	10.52	9.70	0.82	4.81
	2/24/92	8.59	8.37	0.22	6.26
	3/23/92	7.95	7.75	0.20	6.88
	4/23/92	10.35	7.90	2.45	6.28
	6/5/92	11.28	8.45	2.83	5.65
	6/22/92	NM			
	7/20/92	NM			
MW-25 12.86 ft MSL	4/17/91	7.79	--	--	5.07
	5/24/91	7.70	--	--	5.16
	7/9/91	7.42	--	--	5.44
	8/15/91	7.72	--	--	5.14
	9/17/91	7.81	--	--	5.05
	10/16/91	7.81	--	--	5.05
	12/17/91	8.02	--	--	4.84
	1/28/92	7.63	--	--	5.23
	2/24/92	6.35	--	--	6.51
	3/23/92	5.88	--	--	6.98
	6/10/92	7.73	--	--	5.13
	6/22/92	7.94	--	--	4.92
	7/20/92	8.12	--	--	4.74
	MW-26 12.71 ft MSL	4/17/91	6.93	--	--
5/24/91		6.95	--	--	5.76
7/9/91		7.40	--	--	5.31
8/15/91		7.53	--	--	5.18
9/17/91		7.91	--	--	4.80
10/16/91		7.67	--	--	5.04
11/13/91		7.65	--	--	5.06
12/17/91		7.97	--	--	4.74
1/28/92		7.73	--	--	4.98
2/24/92		6.51	--	--	6.20
3/23/92		5.51	--	--	7.20
6/10/92		7.51	--	--	5.20
6/22/92		7.77	--	--	4.94
7/20/92		7.92	--	--	4.79

**Table 1. Groundwater Elevations and Free-Phase Product Thicknesses
Carnation Facility
Oakland, California**

Harding Lawson Associates

Well Number and Elevation (ft MSL)	Date of Measurement	Depth to Water (ft BGS)	Depth to Product (ft BGS)	Product Thickness (ft)	Water Level Elevation* (ft MSL)
MW-27 14.04 ft MSL	4/17/91	9.01	--	--	5.03
	5/24/91	8.23	--	--	5.81
	7/9/91	8.71	--	--	5.33
	8/15/91	8.75	--	--	5.29
	9/17/91	8.89	--	--	5.15
	10/16/91	9.03	--	--	5.01
	12/17/91	9.34	--	--	4.70
	1/28/92	8.91	--	--	5.13
	2/24/92	7.63	--	--	6.41
	3/23/92	7.21	--	--	6.83
	4/23/92	7.92	--	--	6.12
	6/5/92	8.64	--	--	5.40
	6/22/92	8.97	--	--	5.07
	7/20/92	9.17	--	--	4.87
MW-28 13.45 ft MSL	4/17/91	7.55	--	--	5.90
	5/24/91	7.67	--	--	5.78
	7/9/91	8.08	--	--	5.37
	8/15/91	8.22	--	--	5.23
	9/17/91	8.29	--	--	5.16
	10/16/91	8.35	--	--	5.10
	11/13/91	8.33	--	--	5.12
	12/17/91	8.65	--	--	4.80
	1/28/92	8.03	--	--	5.42
	2/24/92	6.71	--	--	6.74
	3/23/92	6.06	--	--	7.39
	4/23/92	7.54	--	--	5.91
	6/5/92	8.18	--	--	5.27
	6/22/92	8.52	--	--	4.93
7/20/92	8.57	--	--	4.88	
MW-29 12.60 ft MSL	4/17/91	7.04	--	--	5.56
	5/24/91	6.90	--	--	5.70
	7/9/91	7.24	--	--	5.36
	8/15/91	7.42	--	--	5.18
	9/17/91	7.53	--	--	5.07
	10/16/91	7.56	--	--	5.04
	11/13/91	7.52	--	--	5.08
	12/17/91	7.71	--	--	4.89
	1/28/92	7.29	--	--	5.31
	2/24/92	5.98	--	--	6.62
	3/23/92	5.58	--	--	7.02
	4/23/92	6.75	--	--	5.85
	6/5/92	7.35	--	--	5.25

**Table 1. Groundwater Elevations and Free-Phase Product Thicknesses
Carnation Facility
Oakland, California**

Harding Lawson Associates

Well Number and Elevation (ft MSL)	Date of Measurement	Depth to Water (ft BGS)	Depth to Product (ft BGS)	Product Thickness (ft)	Water Level Elevation* (ft MSL)
	6/22/92	7.72	--	--	4.88
	7/20/92	7.91	--	--	4.69
MW-30 14.54 ft MSL	8/15/91	9.75	--	--	4.79
	10/16/91	9.98	--	--	4.56
	11/13/91	9.90	--	--	4.64
	12/17/91	10.10	--	--	4.44
	1/28/92	9.72	--	--	4.82
	2/24/92	8.38	--	--	6.16
	3/23/92	7.87	--	--	6.67
	4/23/92	7.59	--	--	6.95
	6/5/92	9.18	--	--	5.36
	6/22/92	9.62	--	--	4.92
	7/20/92	9.97	--	--	4.57
MW-31 14.92 ft MSL	8/15/91	10.14	--	--	4.78
	9/17/91	10.29	--	--	4.63
	10/16/91	10.47	--	--	4.45
	11/13/91	10.46	--	--	4.46
	12/17/91	10.20	--	--	4.72
	1/28/92	10.29	--	--	4.63
	2/24/92	9.30	--	--	5.62
	3/23/92	7.96	--	--	6.96
	6/22/92	8.49	--	--	6.43
	7/20/92	NM			
MW-32 14.76 ft MSL	8/15/91	10.02	--	--	4.74
	9/17/91	10.08	--	--	4.68
	10/16/91	10.31	--	--	4.45
	11/13/91	10.31	--	--	4.45
	12/17/91	10.48	--	--	4.28
	1/28/92	10.11	--	--	4.65
	2/24/92	8.64	--	--	6.12
	3/23/92	7.84	--	--	6.92
	4/23/92	8.34	--	--	6.42
	6/5/92	8.98	--	--	5.78
	6/22/92	9.40	--	--	5.36
	7/20/92	9.66	--	--	5.10
MW-33 NA	9/17/91	10.17	--	--	
	10/16/91	10.33	--	--	
	11/13/91	10.33	--	--	
	1/28/92	10.15	--	--	
	2/24/92	8.65	--	--	

**Table 1. Groundwater Elevations and Free-Phase Product Thicknesses
Carnation Facility
Oakland, California**

Harding Lawson Associates

Well Number and Elevation (ft MSL)	Date of Measurement	Depth to Water (ft BGS)	Depth to Product (ft BGS)	Product Thickness (ft)	Water Level Elevation* (ft MSL)
	4/23/92	8.38	--	--	
	6/5/92	9.00	--	--	
	6/22/92	NM			
	7/20/92	NM			
PR-20 14.36 ft MSL	4/16/91	9.06	7.90	1.16	6.23
	5/24/91	9.94	8.10	1.84	5.89
	7/9/91	10.07	8.74	1.33	5.35
	8/15/91	10.32	9.03	1.29	5.07
	9/17/91	10.38	9.18	1.20	4.94
	10/16/91	10.45	9.97	0.48	4.29
	11/13/91	10.43	9.46	0.97	4.71
	12/17/91	10.69	9.82	0.87	4.37
	1/28/92	10.12	9.38	0.74	4.83
	2/24/92	9.35	8.24	1.11	5.90
	3/23/92	9.63	6.63	3.00	7.13
	4/23/92	9.99	7.12	2.87	6.67
	6/5/92	10.10	8.09	2.01	5.87
	6/22/92	10.15	8.46	1.69	5.56
	7/20/92	10.25	8.87	1.38	5.21
PR-22 14.43 ft MSL	4/16/91	9.68	8.01	1.67	6.09
	5/24/91	10.20	8.30	1.90	5.75
	7/9/91	10.44	8.83	1.61	5.28
	8/15/91	10.61	9.01	1.60	5.10
	9/17/91	10.60	9.30	1.30	4.87
	10/16/91	10.63	9.37	1.26	4.81
	11/13/91	10.58	9.35	1.23	4.83
	12/17/91	9.68	--	--	4.75
	1/28/92	10.41	9.39	1.02	4.84
	2/24/92	9.75	8.44	1.31	5.73
	3/23/92	10.00	7.01	2.99	6.82
	4/23/92	10.19	7.49	2.70	6.40
	6/5/92	10.32	8.13	2.19	5.86
	6/22/92	11.53	8.98	2.55	4.94
	7/20/92	10.37	9.08	1.29	5.09
PR-24 14.32 ft MSL	4/16/91	8.40	--	--	5.92
PR-27 NA	5/24/91	8.58	--	--	
	7/9/91	9.10	--	--	
	8/15/91	9.36	--	--	
	9/17/91	9.53	--	--	

**Table 1. Groundwater Elevations and Free-Phase Product Thicknesses
Carnation Facility
Oakland, California**

Harding Lawson Associates

Well Number and Elevation (ft MSL)	Date of Measurement	Depth to Water (ft BGS)	Depth to Product (ft BGS)	Product Thickness (ft)	Water Level Elevation* (ft MSL)
	10/16/91	9.72	--	--	
	11/13/91	9.62	--	--	
	12/17/91	9.95	--	--	
	1/28/92	9.50	--	--	
	2/24/92	8.05	--	--	
	3/23/92	7.28	--	--	
	4/23/92	7.92	--	--	
	6/5/92	8.58	--	--	
	6/22/92	8.92	--	--	
	7/20/92	9.39	--	--	
PR-31 14.08 ft MSL	4/16/91	7.92	--	--	6.16
	9/17/91	8.36	8.35	0.01	5.73
	11/13/91	8.60	--	--	5.48
	2/24/92	7.94	--	--	6.14
PR-33 14.36 ft MSL	4/16/91	7.78	--	--	6.58
	5/24/91	8.30	--	--	6.06
	7/9/91	8.78	--	--	5.58
	8/15/91	9.07	--	--	5.29
	9/17/91	9.25	--	--	5.11
	10/16/91	9.49	--	--	4.87
	11/13/91	9.44	--	--	4.92
	12/17/91	9.68	--	--	4.68
	1/28/92	9.35	--	--	5.01
	2/24/92	7.99	--	--	6.37
	3/23/92	6.93	--	--	7.43
	4/23/92	7.79	--	--	6.57
	6/5/92	8.43	--	--	5.93
	6/22/92	8.76	--	--	5.60
	7/20/92	9.11	--	--	5.25
PR-35 14.55 ft MSL	4/16/91	8.98	8.26	0.72	6.15
	9/17/91	10.80	9.31	1.49	4.94
PR-38 14.47 ft MSL	4/16/91	8.58	--	--	5.89
PR-40 NA	4/16/91	8.58	--	--	
PR-41 NA	5/24/91	7.13	6.67	0.46	
	7/9/91	7.76	7.13	0.63	
	8/15/91	9.11	7.40	1.71	

**Table 1. Groundwater Elevations and Free-Phase Product Thicknesses
Camation Facility
Oakland, California**

Harding Lawson Associates

Well Number and Elevation (ft MSL)	Date of Measurement	Depth to Water (ft BGS)	Depth to Product (ft BGS)	Product Thickness (ft)	Water Level Elevation* (ft MSL)
	9/17/91	9.54 est.	7.54	2.00	
	10/16/91	8.39	7.69	0.70	
	11/13/91	8.36	7.62	0.74	
	12/17/91	8.67	7.85	0.82	
	1/28/92	7.87	7.16	0.71	
	2/24/92	6.62	5.94	0.68	
	3/23/92	6.70	6.04	0.66	
	4/23/92	6.95	6.30	0.65	
	6/5/92	8.87	8.09	0.78	
	6/22/92	10.01	8.79	1.22	
PR-43	5/24/91	8.85	--	--	
NA	7/9/91	9.20	--	--	
	8/15/91	9.87	--	--	
	9/17/91	9.63	9.62	0.01	
	10/16/91	9.79	--	--	
	11/13/91	9.76	--	--	
	12/17/91	6.96	--	--	
	1/28/92	9.63	--	--	
	2/24/92	8.09	--	--	
	3/23/92	7.52	--	--	
	4/23/92	8.31	--	--	
	6/5/92	9.11	--	--	
	6/22/92	9.54	--	--	
	7/20/92	9.80	--	--	
PR-44	5/24/91	8.26	6.69	1.57	
NA	7/9/91	9.10	7.69	1.41	
	8/15/91	10.56	8.22	2.34	
	9/17/91	9.98	8.48	1.50	
	10/16/91	9.78	8.61	1.17	
	11/13/91	9.83	9.65	0.18	
	12/17/91	9.97	8.82	1.15	
	1/28/92	9.76	8.58	1.18	
	2/24/92	8.41	7.03	1.38	
	3/23/92	7.93	6.45	1.48	
	4/23/92	9.70	7.48	2.22	
	6/5/92	9.75	8.68	1.07	
	6/22/92	10.18	9.20	0.98	
	7/20/92	10.39	9.54	0.85	
PR-45	5/24/91	8.93	8.85	0.08	
NA	7/9/91	9.50	9.30	0.20	
	8/15/91	9.72	9.53	0.19	

**Table 1. Groundwater Elevations and Free-Phase Product Thicknesses
Carnation Facility
Oakland, California**

Harding Lawson Associates

Well Number and Elevation (ft MSL)	Date of Measurement	Depth to Water (ft BGS)	Depth to Product (ft BGS)	Product Thickness (ft)	Water Level Elevation* (ft MSL)
	9/17/91	9.83	9.68	0.15	
	10/16/91	9.92	9.85	0.07	
	11/13/91	9.94	9.88	0.06	
	12/17/91	10.11	9.83	0.28	
	1/28/92	9.81	9.66	0.15	
	2/24/92	8.61	8.45	0.16	
	3/23/92	7.89	7.59	0.30	
	4/23/92	8.48	8.21	0.27	
	6/5/92	9.14	8.88	0.26	
	6/22/92	9.52	9.22	0.30	
	7/20/92	9.83	9.59	0.24	
PR-46	7/9/91	8.60	--	--	
NA	8/15/91	8.95	--	--	
	9/17/91	9.09	--	--	
	10/16/91	9.16	--	--	
	11/13/91	9.13	--	--	
	12/17/91	9.36	--	--	
	7/20/92	9.76	9.74	0.02	
PR-47	1/28/92	9.01	--	--	
NA	2/24/92	7.16	7.15	0.01	
	3/23/92	6.58	--	--	
	4/23/92	8.42	--	--	
	6/5/92	9.15	--	--	
	6/22/92	9.42	7.32	2.10	
PR-48	4/16/91	8.75	8.65	0.10	
NA					
PR-49	5/24/91	7.62	--	--	
NA					
PR-52	5/24/91	9.26	8.76	0.50	
NA	7/9/91	9.74	9.17	0.57	
	8/15/91	10.03	9.38	0.65	
	9/17/91	10.44	9.54	0.90	
	10/16/91	10.26	9.66	0.60	
	11/13/91	10.30	9.67	0.63	
	12/17/91	10.51	9.83	0.68	
	1/28/92	10.29	9.44	0.85	
	3/23/92	9.34	6.94	2.40	
	6/5/92	10.88	8.43	2.45	
	6/22/92	11.01	8.83	2.18	

**Table 1. Groundwater Elevations and Free-Phase Product Thicknesses
Carnation Facility
Oakland, California**

Harding Lawson Associates

Well Number and Elevation (ft MSL)	Date of Measurement	Depth to Water (ft BGS)	Depth to Product (ft BGS)	Product Thickness (ft)	Water Level Elevation* (ft MSL)
	7/20/92	11.04	9.29	1.75	
PR-53	5/24/91	10.45	8.25	2.20	
NA	7/9/91	10.57	8.85	1.72	
	8/15/91	10.73	9.20	1.53	
	9/17/91	10.23	9.53	0.70	
	10/16/91	10.86	9.41	1.45	
	11/13/91	10.89	9.39	1.50	
	12/17/91	10.96	9.63	1.33	
	1/28/92	10.56	9.37	1.19	
	2/24/92	9.19	7.95	1.24	
	4/23/92	10.30	7.51	2.79	
	6/5/92	10.48	8.25	2.23	
	6/22/92	10.58	8.79	1.79	
	7/20/92	10.60	9.11	1.49	
PR-55	5/24/91	9.51	8.59	0.92	
NA	7/9/91	10.26	8.82	1.44	
	8/15/91	10.58	9.07	1.51	
	9/17/91	10.35	9.18	1.17	
	10/16/91	10.98	9.31	1.67	
	11/13/91	10.94	9.44	1.50	
	12/17/91	11.10	9.56	1.54	
	1/28/92	10.50	9.50	1.00	
	2/24/92	8.62	--	--	
	3/23/92	7.66	7.65	0.01	
	4/23/92	10.30	7.40	2.90	
	6/5/92	11.25	8.05	3.20	
	6/22/92	11.30	8.49	2.81	
	7/20/92	11.23	8.93	2.30	
PR-56	7/9/91	10.86	9.02	1.84	
NA	8/15/91	10.93	9.33	1.60	
	9/17/91	10.08	9.68	0.40	
	10/16/91	11.00	9.58	1.42	
	11/13/91	10.62	9.64	0.98	
	12/17/91	11.06	9.83	1.23	
	1/28/92	10.68	9.60	1.08	
	2/24/92	10.07	8.10	1.97	
	3/23/92	10.17	7.02	3.15	
	4/23/92	8.75	7.68	1.07	
	6/5/92	10.59	8.47	2.12	
	6/22/92	10.70	8.90	1.80	
	7/20/92	10.74	9.23	1.51	

**Table 1. Groundwater Elevations and Free-Phase Product Thicknesses
Carnation Facility
Oakland, California**

Harding Lawson Associates

Well Number and Elevation (ft MSL)	Date of Measurement	Depth to Water (ft BGS)	Depth to Product (ft BGS)	Product Thickness (ft)	Water Level Elevation* (ft MSL)
PR-57 NA	4/16/91	7.69	--	--	
PR-58 NA	4/16/91	8.99	8.03	0.96	
	5/24/91	9.39	8.39	1.00	
	7/9/91	10.03	8.86	1.17	
	8/15/91	10.37	9.13	1.24	
	9/17/91	10.59	9.36	1.23	
	10/16/91	10.69	9.48	1.21	
	11/13/91	10.68	9.51	1.17	
	12/17/91	10.85	9.75	1.10	
	1/28/92	10.43	9.37	1.06	
	2/24/92	8.94	7.96	0.98	
	3/23/92	8.03	7.10	0.93	
	4/23/92	8.98	7.59	1.39	
	6/5/92	10.11	8.18	1.93	
6/22/92	10.45	8.60	1.85		
7/20/92	10.60	8.88	1.72		
PR-59 NA	4/16/91	8.09	--	--	
	5/24/91	8.41	--	--	
	7/9/91	9.03	--	--	
	8/15/91	8.83	--	--	
	9/17/91	9.42	--	--	
	10/16/91	9.67	--	--	
	11/13/91	9.25	--	--	
	12/17/91	9.84	--	--	
	1/28/92	9.46	--	--	
	2/24/92	8.00	--	--	
	3/23/92	7.14	--	--	
	4/23/92	7.60	--	--	
	6/5/92	8.49	--	--	
6/22/92	9.85	--	--		
7/20/92	9.15	--	--		
PR-61 NA	5/24/91	9.06	8.94	0.12	
	7/9/91	9.55	9.43	0.12	
	8/15/91	9.89	9.71	0.18	
	9/17/91	10.02	9.88	0.14	
	10/16/91	10.14	9.97	0.17	
	11/13/91	10.16	9.99	0.17	
	12/17/91	10.36	10.17	0.19	
	1/28/92	10.03	9.82	0.21	

**Table 1. Groundwater Elevations and Free-Phase Product Thicknesses
Carnation Facility
Oakland, California**

Harding Lawson Associates

Well Number and Elevation (ft MSL)	Date of Measurement	Depth to Water (ft BGS)	Depth to Product (ft BGS)	Product Thickness (ft)	Water Level Elevation* (ft MSL)
	2/24/92	8.52	8.35	0.17	
	3/23/92	7.89	7.64	0.25	
	4/23/92	8.54	8.30	0.24	
	6/5/92	9.14	8.95	0.19	
	6/22/92	9.61	9.35	0.26	
	7/20/92	9.82	9.65	0.17	
PR-63	5/24/91	8.98	8.96	0.02	
NA	7/9/91	9.46	9.45	0.01	
	8/15/91	9.77	9.75	0.02	
	9/17/91	9.84	9.83	0.01	
	10/16/91	10.05	9.94	0.11	
	11/13/91	10.05	9.95	0.10	
	12/17/91	11.21	9.86	1.35	
	1/28/92	9.84	9.78	0.06	
	2/24/92	8.38	8.32	0.06	
	3/23/92	7.75	7.70	0.05	
	4/23/92	8.40	8.39	0.01	
	6/5/92	9.05	9.00	0.05	
	6/22/92	9.51	9.48	0.03	
	7/20/92	9.75	9.70	0.05	
PR-65	5/24/91	8.76	8.68	0.08	
NA					
PR-67	4/16/91	8.77	8.03	0.74	
NA					
PR-69	4/16/91	7.08	--	--	
NA	5/24/91	7.47	--	--	
	7/9/91	8.13	--	--	
	8/15/91	8.04	--	--	
	9/17/91	8.44	--	--	
	10/16/91	8.61	--	--	
	11/13/91	8.76	--	--	
	12/17/91	9.26	--	--	
	1/28/92	8.63	--	--	
	2/24/92	7.15	--	--	
	3/23/92	5.97	--	--	
	4/23/92	6.99	--	--	
	6/5/92	8.18	--	--	
	6/22/92	8.62	--	--	
	7/20/92	8.74	--	--	

**Table 1. Groundwater Elevations and Free-Phase Product Thicknesses
Carnation Facility
Oakland, California**

Harding Lawson Associates

Well Number and Elevation (ft MSL)	Date of Measurement	Depth to Water (ft BGS)	Depth to Product (ft BGS)	Product Thickness (ft)	Water Level Elevation* (ft MSL)
PR-70 NA	4/16/91	8.86	7.46	1.40	
PR-71 NA	4/16/91	8.71	--	--	
PR-72 NA	4/16/91	9.03	--	--	
PR-77 NA	5/24/91	8.65	--	--	
	7/9/91	9.18	--	--	
	8/15/91	9.38	--	--	
	9/17/91	9.54	--	--	
	10/16/91	9.74	--	--	
	11/13/91	8.99	--	--	
	12/17/91	9.91	--	--	
	1/28/92	9.41	--	--	
	2/24/92	8.07	--	--	
	3/23/92	7.40	--	--	
	4/23/92	8.09	--	--	
	6/5/92	8.70	--	--	
	6/22/92	9.14	--	--	
	7/20/92	9.38	--	--	
PR-81 NA	4/16/91	8.35	--	--	

* When product is present the equivalent water level elevation is calculated by adding 0.8 times the product thickness to the product/water interface elevation.

MSL = Elevation above Mean Sea Level.

bgs = Below ground surface.

NA = Elevation Not Available.

NM = Not Measured.

-- = No data available or no product.

est. = estimated value.

Carnation.wt

Jul-92

**Table 2. Groundwater Analytical Data
June 1992
Carnation Facility
Oakland, California**

Well Number	Sample Number	Benzene	Toluene	Ethyl-Benzene	Xylenes (Total)	Method 8010 Compounds Concentrations
MW-3	92062308	2.5	1.0	<0.6	<0.6	NT
MW-14	92062305	<0.5	<0.5	<0.6	<0.6	NT
MW-25	92062201	<0.5	<0.5	<0.6	<0.6	NT
MW-26	92072202*	20,000	21,000	2,200	10,000	380 (1,2-DCA)
MW-27	92062203	4.6	5.0	0.6	1.3	NT
MW-28	92062301	<0.5	<0.5	<0.6	<0.6	NT
MW-29	92062302	<0.5	<0.5	<0.6	<0.6	NT
MW-30	92062306	2.3	4.7	<0.6	4.2	NT
MW-32	92062303	170	250	42	200	7.9 (1,2-DCA)
MW-32 dup	92062304	130	95	22	92	6.2 (1,2-DCA)
Field Blank	92062307	0.6	2.5	<0.6	2.5	<0.4-<10

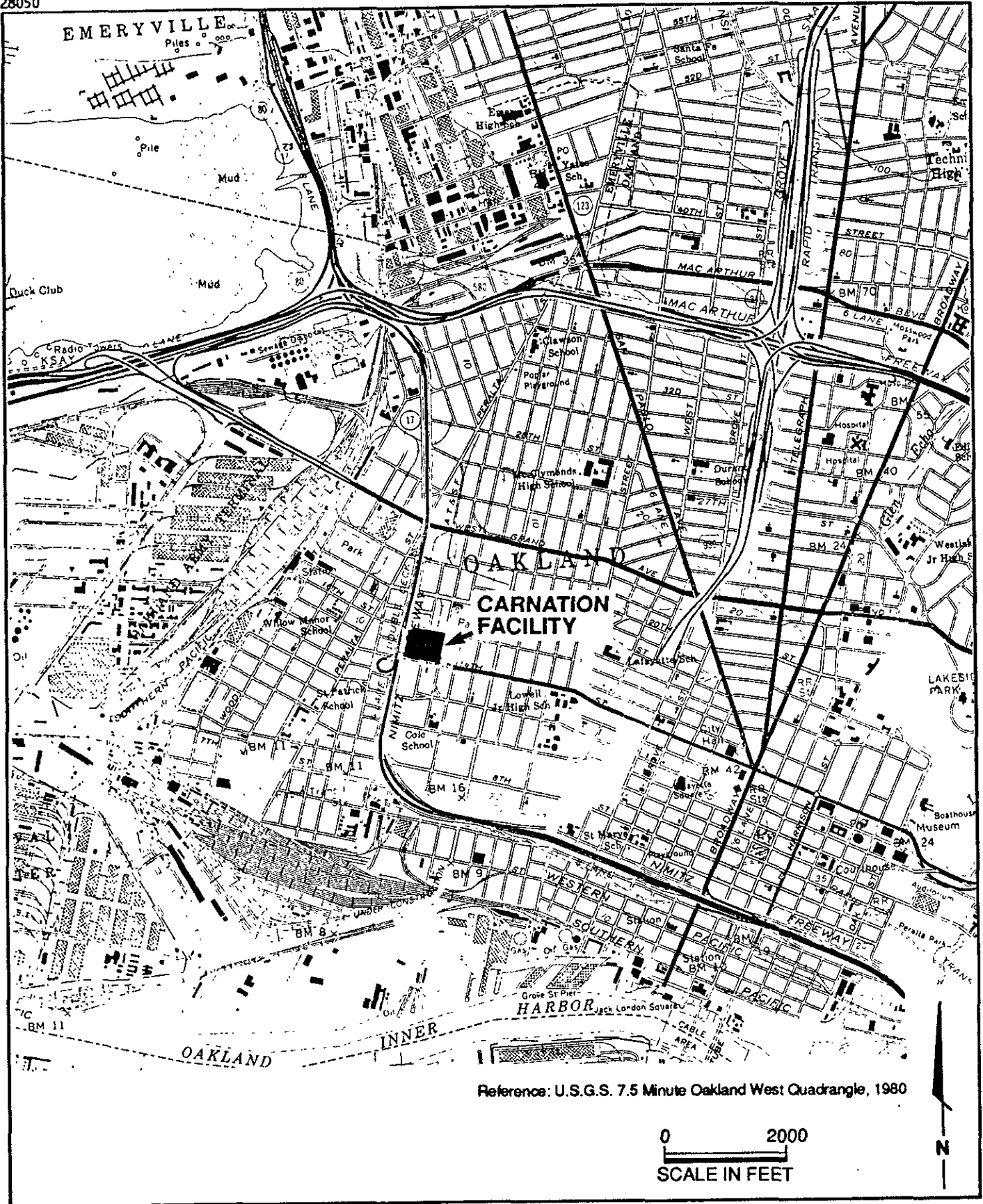
All concentrations are in micrograms per liter, equivalent to parts per billion.

<0.5 - Chemical not detected at or above indicated reporting limit

NT - Not tested

* - Resampled on 7/14/92 due to expiration of sample holding time.

ILLUSTRATIONS



PLATE

1



Harding Lawson Associates
 Engineering and
 Environmental Services

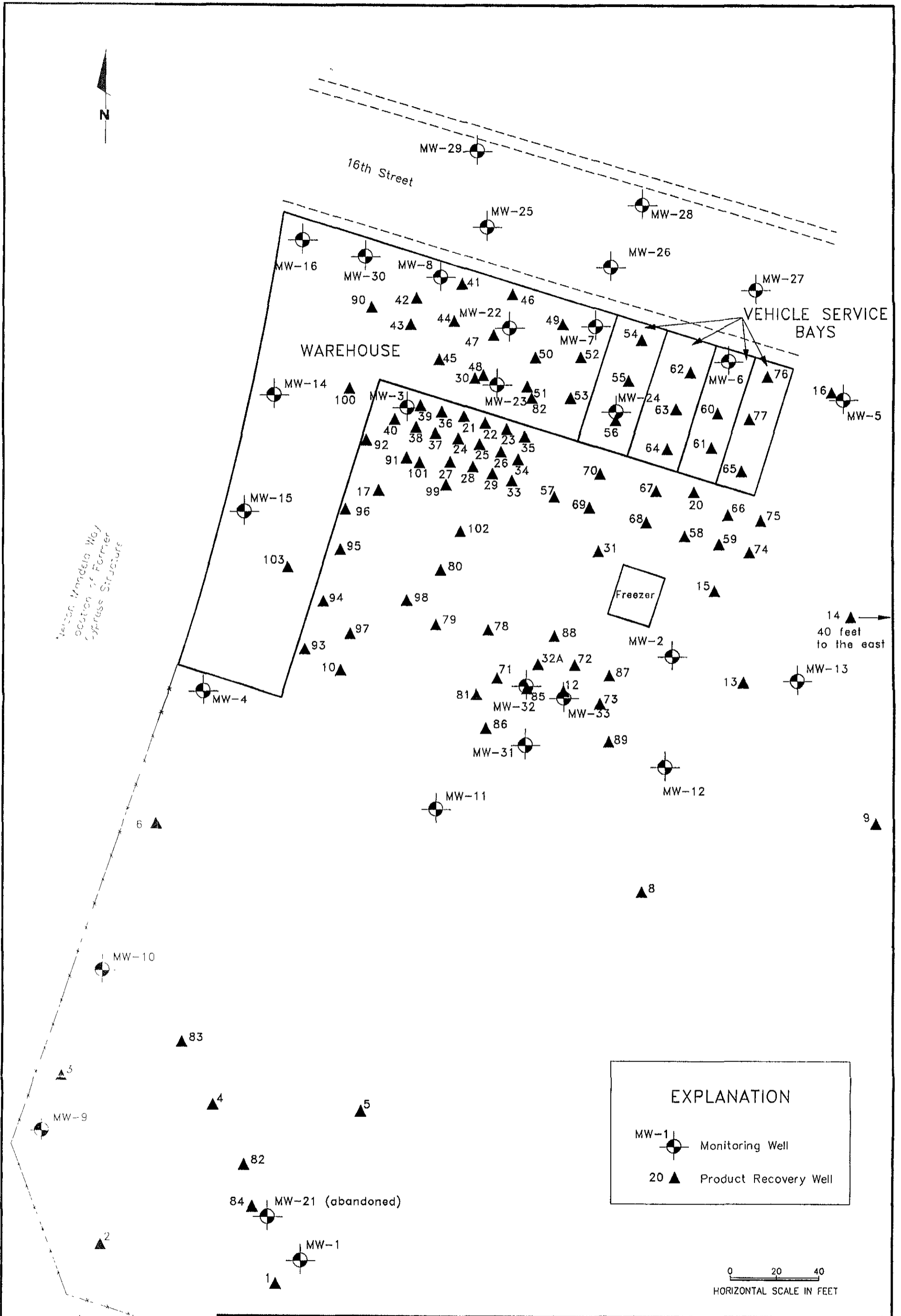
Site Location Map
Carnation Facility
Oakland, California

DRAWN JOB NUMBER
 NJB 11909 015

APPROVED
C. Amice

DATE
 8/92

REVISED DATE



EXPLANATION	
MW-1	Monitoring Well
20	Product Recovery Well

0 20 40
HORIZONTAL SCALE IN FEET



Harding Lawson Associates
Engineering and Environmental Services

Well Location Map
Carnation Facility
Oakland, California

PLATE
2

DRAWN
RMS

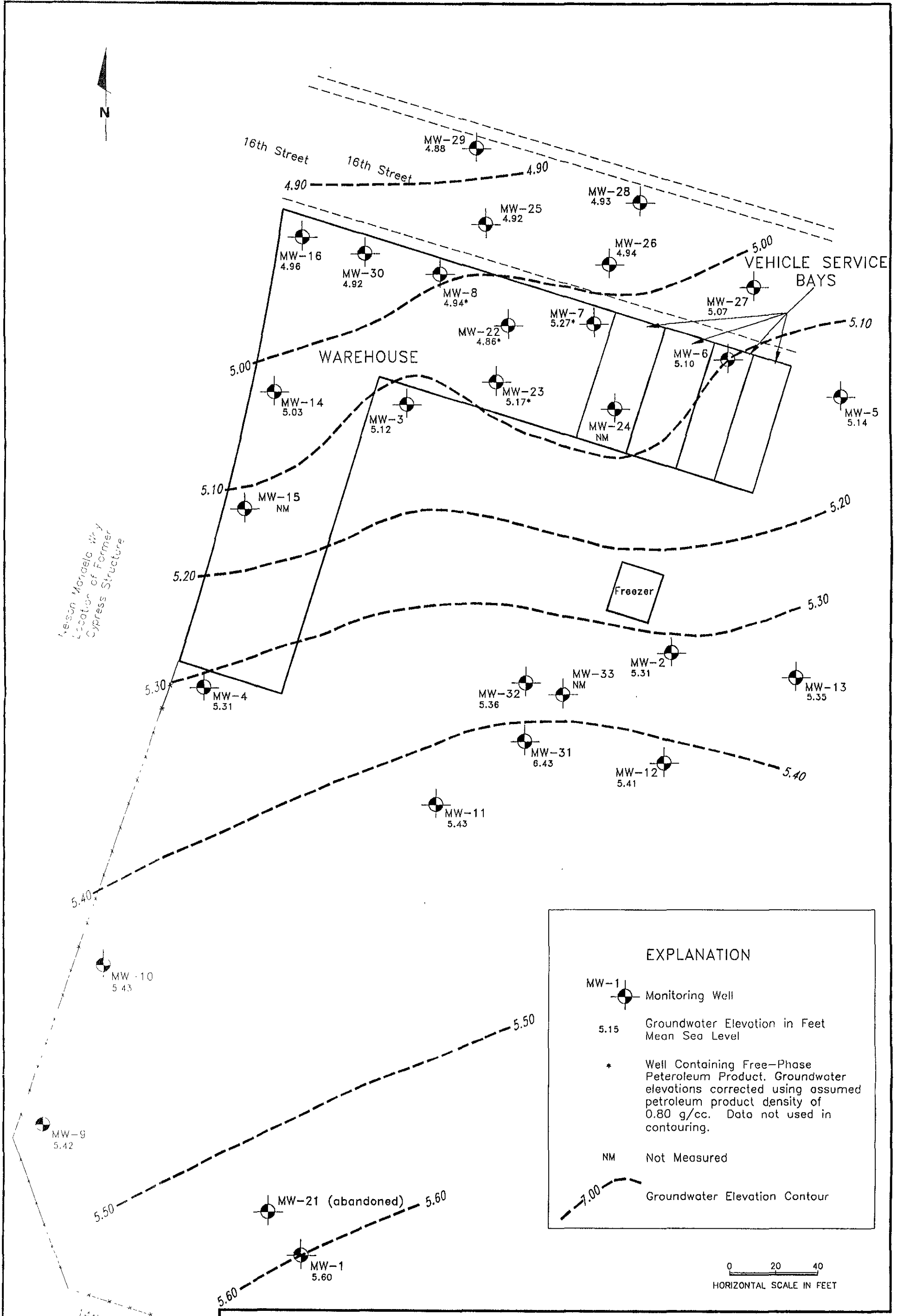
JOB NUMBER
11909 015

APPROVED
C. Arles

DATE
8/92

REVISED DATE

15-5004
000002-57



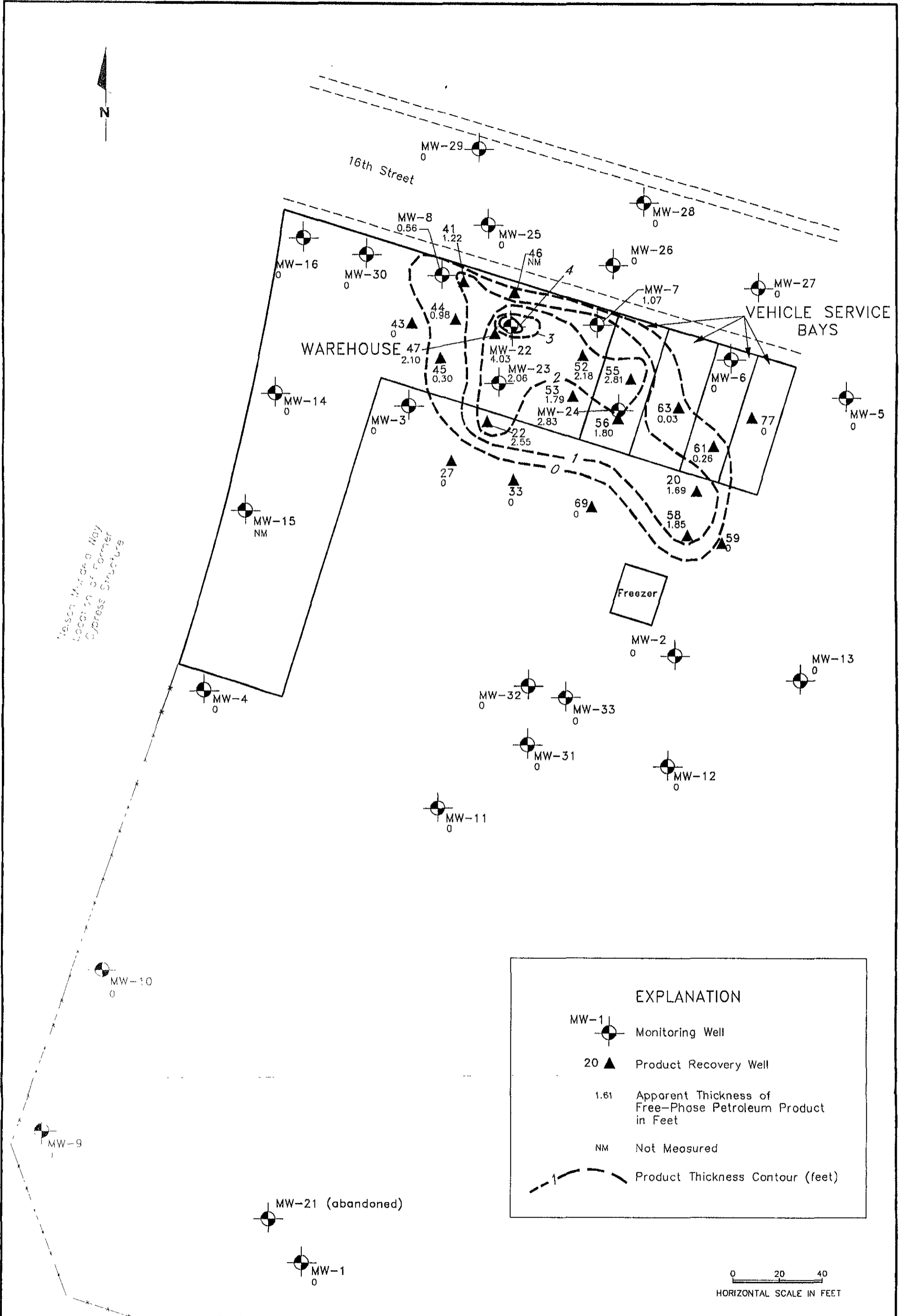
Nelson Mandela Hwy
Location of Former
Cypress Structure

EXPLANATION

- MW-1 Monitoring Well
- 5.15 Groundwater Elevation in Feet Mean Sea Level
- * Well Containing Free-Phase Petroleum Product. Groundwater elevations corrected using assumed petroleum product density of 0.80 g/cc. Data not used in contouring.
- NM Not Measured
- Groundwater Elevation Contour

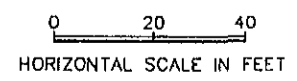
0 20 40
HORIZONTAL SCALE IN FEET

DATE: 8/92



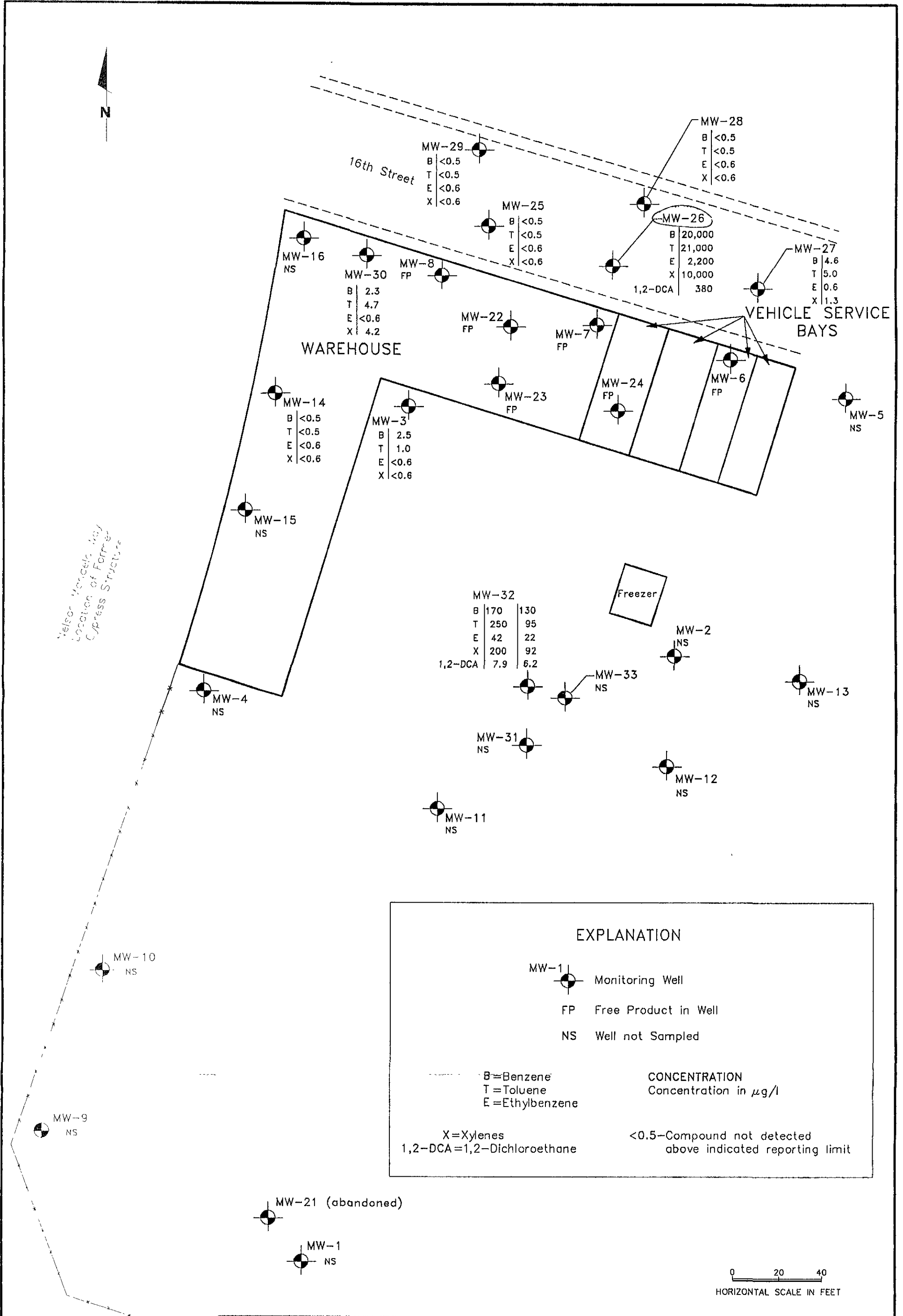
EXPLANATION

- MW-1 | Monitoring Well
- 20 ▲ Product Recovery Well
- 1.61 Apparent Thickness of Free-Phase Petroleum Product in Feet
- NM Not Measured
- - - - - Product Thickness Contour (feet)




	Harding Lawson Associates Engineering and Environmental Services	Apparent Thickness of Free-Phase Petroleum Product June 1992 Carnation Facility Oakland, California	PLATE 4
	DRAWN RMS	JOB NUMBER 11909 015	APPROVED <i>C. Aviles</i>

11/22/92
 11/22/92



Yelson Parcels May
Location of Former
Cypress Structure

152-3831 11-25

 <p>Harding Lawson Associates Engineering and Environmental Services</p>	<p>Groundwater Chemistry June 1992 Carnation Facility Oakland, California</p>	<p>PLATE 5</p>	<p>DATE 8/92</p>
<p>DRAWN RMS</p>	<p>JOB NUMBER 11909 015</p>	<p>APPROVED <i>C. Aviles</i></p>	<p>REVISED DATE</p>

Appendix A
GROUNDWATER SAMPLING FORMS



Job Name Carnation
 Job Number 11909-015
 Recorded by Rich Eckman
(Signature)

Well No. mw-3
 Well Type: Monitor Extraction Other _____
 Well Material: PVC St. Steel Other _____
 Date 6.23.97 Time 1205
 Sampled by RWE
(Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
 2-inch 4-inch 6-inch Other _____
 Total Depth of Casing (TD in feet BTOC): 22.7
 Water Level Depth (WL in feet BTOC): 9.18
 Number of Well Volumes to be purged (# Vols)
 3 4 5 10 Other _____

PURGE METHOD

Bailer - Type: _____
 Submersible Centrifugal Bladder; Pump No.: _____
 Other - Type: _____

PUMP INTAKE SETTING

Near Bottom Near Top Other _____
 Depth in feet (BTOC): _____ Screen Interval in Feet (BTOC)
 from _____ to _____

PURGE VOLUME CALCULATION:

$$\left(\frac{22.7}{\text{TD (feet)}} - \frac{9.18}{\text{WL (feet)}} \right) \times \frac{4^2}{\text{D (inches)}} \times \frac{3}{\text{\# Vols}} \times 0.0408 = \frac{26}{\text{Calculated Purge Volume}} \text{ gallons}$$

PURGE TIME

PURGE RATE

ACTUAL PURGE VOLUME

1151 Start 1200 Stop 1:45 Elapsed Initial 3 gpm Final 3 gpm 26 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T <input checked="" type="checkbox"/> °C / <input type="checkbox"/> °F	Other _____
initial	6.8	1200	70.0	
15-gals	6.7	1100	70.0	
27 " "	6.7	1100	70.0	

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T <input type="checkbox"/> °C / <input type="checkbox"/> °F	Other _____
Meter Nos.				

Observations During Purging (Well Condition, Turbidity, Color, Odor): clear H2S odor

Discharge Water Disposal: Sanitary Sewer Storm Sewer Other poly tank

WELL SAMPLING

SAMPLING METHOD

Bailer - Type: S.S.
 Submersible Centrifugal Bladder; Pump No.: _____
 Same As Above
 Grab - Type: _____
 Other - Type: _____

SAMPLING DISTRIBUTION

Sample Series: 9206

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
<u>1308</u>	<u>3 VOA</u>	<u>3020</u>	<u>NC</u>	<u>Net</u>	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.



Job Name Cornation
Job Number 11909-015
Recorded by Rick Eshman
(Signature)

Well No. mw-14
Well Type: Monitor Extraction Other _____
Well Material: PVC St. Steel Other _____
Date 6-23-92 Time 1108
Sampled by RWE
(Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
 2-inch 4-inch 6-inch Other _____
Total Depth of Casing (TD in feet BTOC): 18.5
Water Level Depth (WL in feet BTOC): 9.03
Number of Well Volumes to be purged (# Vols)
 3 4 5 10 Other _____

PURGE METHOD

Bailer - Type: bvc
 Submersible Centrifugal Bladder; Pump No.: _____
 Other - Type: _____

PUMP INTAKE SETTING

Near Bottom Near Top Other _____
Depth in feet (BTOC): _____ Screen Interval in Feet (BTOC)
from _____ to _____

PURGE VOLUME CALCULATION:

$$\left(\frac{18.5}{\text{TD (feet)}} - \frac{9.03}{\text{WL (feet)}} \right) \times \frac{2}{\text{D (inches)}}^2 \times \frac{3}{\text{\# Vols}} \times 0.0408 = \frac{4.6}{\text{Calculated Purge Volume}} \text{ gallons}$$

PURGE TIME

PURGE RATE

ACTUAL PURGE VOLUME

1050 Start 1102 Stop 12:00 Elapsed Initial _____ gpm Final _____ gpm 5 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T $\begin{matrix} \square \text{ } ^\circ\text{C} \\ \square \text{ } ^\circ\text{F} \end{matrix}$	Other _____
<u>initial</u>	<u>7.0</u>	<u>1100</u>	<u>18.0</u>	
<u>2.5-gals</u>	<u>6.9</u>	<u>1050</u>	<u>18.0</u>	
<u>5 "</u>	<u>6.9</u>	<u>1050</u>	<u>18.0</u>	

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T $\begin{matrix} \square \text{ } ^\circ\text{C} \\ \square \text{ } ^\circ\text{F} \end{matrix}$	Other _____

Meter Nos. _____

Observations During Purging (Well Condition, Turbidity, Color, Odor): silty brown

Discharge Water Disposal: Sanitary Sewer Storm Sewer Other poly tank

WELL SAMPLING

SAMPLING METHOD

Bailer - Type: S.S. Same As Above
 Submersible Centrifugal Bladder; Pump No.: _____ Grab - Type: _____
 Other - Type: _____

SAMPLING DISTRIBUTION

Sample Series: 9206

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
<u>2305</u>	<u>3 10A</u>	<u>8020</u>	<u>HCL</u>	<u>Net</u>	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.



Job Name Carnation
Job Number 11909.015
Recorded by Rich Eshel
(Signature)

Well No. MW-25
Well Type: Monitor Extraction Other
Well Material: PVC St. Steel Other
Date 6-22-92 Time 1445
Sampled by RWF
(Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
 2-inch 4-inch 6-inch Other: _____
Total Depth of Casing (TD in feet BTOC): 19.5
Water Level Depth (WL in feet BTOC): 7.94
Number of Well Volumes to be purged (# Vols)
 3 4 5 10 Other: _____

PURGE METHOD

Bailor - Type: _____
 Submersible Centrifugal Bladder; Pump No.: _____
 Other - Type: _____

PUMP INTAKE SETTING

Near Bottom Near Top Other _____
Depth in feet (BTOC): _____ Screen Interval in Feet (BTOC)
from _____ to _____

PURGE VOLUME CALCULATION:

$$\left(\frac{19.5}{\text{TD (feet)}} - \frac{7.94}{\text{WL (feet)}} \right) \times \frac{4}{\text{D (inches)}}^2 \times \frac{3}{\text{\# Vols}} \times 0.0408 = \frac{23}{\text{Calculated Purge Volume}} \text{ gallons}$$

PURGE TIME

PURGE RATE

ACTUAL PURGE VOLUME

1419 Start 1437 Stop 8:00 Elapsed Initial 1 gpm Final - gpm 23 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T <input type="checkbox"/> °C <input type="checkbox"/> °F	Other _____
Initial	6.2	290	22.0	
10-gals	6.5	290	21.0	

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T <input type="checkbox"/> °C <input type="checkbox"/> °F	Other _____
Meter Nos.				

Observations During Purging (Well Condition, Turbidity, Color, Odor): hazy grey
Discharge Water Disposal: Sanitary Sewer Storm Sewer Other poly tank

WELL SAMPLING

SAMPLING METHOD

Bailor - Type: S.S. Same As Above
 Submersible Centrifugal Bladder; Pump No.: _____ Grab - Type: _____
 Other - Type: _____

SAMPLING DISTRIBUTION

Sample Series: 9206

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
<u>2701</u>	<u>3 VOA</u>	<u>BO20</u>	<u>NOI</u>	<u>NOI</u>	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.



Harding Lawson Associates
Engineering and
Environmental Services

GROUND-WATER SAMPLING FORM

Job Name Carnation
Job Number 11909.015
Recorded by Phil Ekelman
(Signature)

Well No. MW-26
Well Type: Monitor Extraction Other _____
Well Material: PVC St. Steel Other _____
Date 6-22-97 Time 1522
Sampled by RWE
(Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
 2-inch 4-inch 6-inch Other _____
Total Depth of Casing (TD in feet BTOC): 25
Water Level Depth (WL in feet BTOC): 3.33
Number of Well Volumes to be purged (# Vols)
 3 4 5 10 Other _____

PURGE METHOD

Bailor - Type: _____
 Submersible Centrifugal Bladder; Pump No.: _____
 Other - Type: _____

PUMP INTAKE SETTING

Near Bottom Near Top Other _____
Depth in feet (BTOC): _____ Screen Interval in Feet (BTOC) from _____ to _____

PURGE VOLUME CALCULATION:

$$\left(\frac{25}{\text{TD (feet)}} - \frac{3.33}{\text{WL (feet)}} \right) \times \frac{4^2}{D \text{ (inches)}} \times 3 \text{ \# Vols} \times 0.0408 = 34 \text{ gallons}$$

Calculated Purge Volume

PURGE TIME

1504 Start 1515 Stop 1544 Elapsed

PURGE RATE

Initial 3 gpm Final 3 gpm

ACTUAL PURGE VOLUME

34 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T <input checked="" type="checkbox"/> °C / <input type="checkbox"/> °F	Other _____
initial	6.8	290	21.0	
15-gals	6.6	290	21.0	
34 - "	6.5	290	30.0	

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T <input type="checkbox"/> °C / <input type="checkbox"/> °F	Other _____

Meter Nos. _____

Observations During Purging (Well Condition, Turbidity, Color, Odor): Natural gray odor

Discharge Water Disposal: Sanitary Sewer Storm Sewer Other poly tank

WELL SAMPLING

SAMPLING METHOD

Bailor - Type: S.S.
 Submersible Centrifugal Bladder; Pump No.: _____

Same As Above
 Grab - Type: _____
 Other - Type: _____

SAMPLING DISTRIBUTION

Sample Series: 9206

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
2202	3 VOA	8010-8020	HCl	NEC	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.



Harding Lawson Associates
Engineering and
Environmental Services

GROUND-WATER SAMPLING FORM

Job Name Carnation
Job Number 11909 015
Recorded by Rick Erickson
(Signature)

Well No. mw-23
Well Type: Monitor Extraction Other
Well Material: PVC St. Steel Other
Date 6-22-92 Time 1600
Sampled by BWS
(Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
 2-inch 4-inch 6-inch Other
Total Depth of Casing (TD in feet BTOC): 23.9
Water Level Depth (WL in feet BTOC): 8.93
Number of Well Volumes to be purged (# Vols)
 3 4 5 10 Other

PURGE METHOD

Bailer - Type: _____
 Submersible Centrifugal Bladder; Pump No.: _____
 Other - Type: _____

PUMP INTAKE SETTING

Near Bottom Near Top Other
Depth in feet (BTOC): _____ Screen Interval in Feet (BTOC) from _____ to _____

PURGE VOLUME CALCULATION:

$$\left(\frac{\text{TD (feet)}}{\text{WL (feet)}} - 1 \right) \times \frac{D^2 \text{ (inches)}}{4} \times \text{\# Vols} \times 0.0408 = \text{Calculated Purge Volume (gallons)}$$

$\left(\frac{23.9}{8.93} - 1 \right) \times \frac{4}{4} \times 3 \times 0.0408 = 29$ gallons

PURGE TIME

PURGE RATE

ACTUAL PURGE VOLUME

1542 Start 1552 Stop 1602 Elapsed Initial 3 gpm Final 3 gpm 30 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T <input type="checkbox"/> °C <input type="checkbox"/> °F	Other
initial	7.3	190	20.0	
15-gals	7.0	225	20.0	
30-v	6.8	220	20.0	

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T <input type="checkbox"/> °C <input type="checkbox"/> °F	Other
Meter Nos.				

Observations During Purging (Well Condition, Turbidity, Color, Odor): turbid grey slight H/C odor
Discharge Water Disposal: Sanitary Sewer Storm Sewer Other poly tank

WELL SAMPLING

SAMPLING METHOD

Bailer - Type: S.S. Same As Above
 Submersible Centrifugal Bladder; Pump No.: _____ Grab - Type: _____
 Other - Type: _____

SAMPLING DISTRIBUTION Sample Series: 9206

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
2203	2 uoa	8020	HCl	Net	

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original Sample No.	Duplicate Sample No.	Type	Sample No.	Type	Sample No.



Job Name Caronation
Job Number 11909 015
Recorded by Piel Evaluation
(Signature)

Well No. W-28
Well Type: Monitor Extraction Other
Well Material: PVC St. Steel Other
Date 6-23-92 Time 0916
Sampled by RWE
(Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
 2-inch 4-inch 6-inch Other
Total Depth of Casing (TD in feet BTOC): 25
Water Level Depth (WL in feet BTOC): 8.52
Number of Well Volumes to be purged (# Vols)
 3 4 5 10 Other

PURGE METHOD

Bailer - Type: _____
 Submersible Centrifugal Bladder; Pump No.: _____
 Other - Type: _____

PUMP INTAKE SETTING

Near Bottom Near Top Other
Depth in feet (BTOC): _____ Screen Interval in Feet (BTOC) from _____ to _____

PURGE VOLUME CALCULATION:

$$\left(\frac{25}{\text{TD (feet)}} - \frac{8.52}{\text{WL (feet)}} \right) \times \frac{4}{\text{D (inches)}}^2 \times \frac{3}{\text{\# Vols}} \times 0.0408 = \frac{32}{\text{Calculated Purge Volume}} \text{ gallons}$$

PURGE TIME

PURGE RATE

ACTUAL PURGE VOLUME

0901 Start 0912 Stop 11:00 Elapsed Initial 3 gpm Final 3 gpm 33 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T <input type="checkbox"/> °C <input type="checkbox"/> °F	Other _____
initial	6.7	190	18.0	
15-gals	7.0	150	19.0	
33 "	7.1	150	19.5	

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T <input type="checkbox"/> °C <input type="checkbox"/> °F	Other _____
Meter Nos.				

Observations During Purging (Well Condition, Turbidity, Color, Odor): clear

Discharge Water Disposal: Sanitary Sewer Storm Sewer Other poly tank

WELL SAMPLING

SAMPLING METHOD

Bailer - Type: S.S. Same As Above
 Submersible Centrifugal Bladder; Pump No.: _____ Grab - Type: _____
 Other - Type: _____

SAMPLING DISTRIBUTION

Sample Series: 9206

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
<u>2301</u>	<u>3 UOA</u>	<u>8020</u>	<u>HEC</u>	<u>HEX</u>	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.



Job Name Carnation
Job Number 11909-015
Recorded by Piel Erlman
(Signature)

Well No. 11W-29
Well Type: Monitor Extraction Other _____
Well Material: PVC St. Steel Other _____
Date 6-23-92 Time 0941
Sampled by RWF
(Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
 2-inch 4-inch 6-inch Other _____
Total Depth of Casing (TD in feet BTOC): 23
Water Level Depth (WL in feet BTOC): 3.32
Number of Well Volumes to be purged (# Vols)
 3 4 5 10 Other _____

PURGE METHOD

Bailer - Type: _____
 Submersible Centrifugal Bladder; Pump No.: _____
 Other - Type: _____

PUMP INTAKE SETTING

Near Bottom Near Top Other _____
Depth in feet (BTOC): _____ Screen Interval in Feet (BTOC)
from _____ to _____

PURGE VOLUME CALCULATION:

$$\left(\frac{23}{\text{TD (feet)}} - \frac{3.32}{\text{WL (feet)}} \right) \times \frac{4^2}{\text{D (inches)}} \times \frac{3}{\text{\# Vols}} \times 0.0408 = 30 \text{ gallons}$$

Calculated Purge Volume

PURGE TIME

0925 Start 0935 Stop 10:00 Elapsed Initial 3 gpm Final 3 gpm 30 gallons

PURGE RATE

ACTUAL PURGE VOLUME

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T <input checked="" type="checkbox"/> °C <input type="checkbox"/> °F	Other _____
initial	7.2	125	18.0	
15:00	7.1	160	18.0	
30:00	7.0	160	18.0	

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T <input type="checkbox"/> °C <input type="checkbox"/> °F	Other _____
Meter Nos.				

Observations During Purging (Well Condition, Turbidity, Color, Odor): clear

Discharge Water Disposal: Sanitary Sewer Storm Sewer Other poly tank

WELL SAMPLING

SAMPLING METHOD

Bailer - Type: S.S. Same As Above
 Submersible Centrifugal Bladder; Pump No.: _____ Grab - Type: _____
 Other - Type: _____

SAMPLING DISTRIBUTION

Sample Series: 9206

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
7302	3 VOA	8020	HCL	NET	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.



Job Name Carnation
Job Number 11909-DIS
Recorded by Piel Eickman
(Signature)

Well No. MW-30
Well Type: Monitor Extraction Other
Well Material: PVC St. Steel Other
Date 6-23-92 Time 1138
Sampled by RWE
(Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
 2-inch 4-inch 6-inch Other
Total Depth of Casing (TD in feet BTOC): 21.1
Water Level Depth (WL in feet BTOC): 9.62
Number of Well Volumes to be purged (# Vols)
 3 4 5 10 Other

PURGE METHOD

Bailer - Type: PVC
 Submersible Centrifugal Bladder; Pump No.:
 Other - Type:

PUMP INTAKE SETTING

Near Bottom Near Top Other
Depth in feet (BTOC): from _____ to _____
Screen Interval in Feet (BTOC) from _____ to _____

PURGE VOLUME CALCULATION:

$$\left(\frac{21.1}{\text{TD (feet)}} - \frac{9.62}{\text{WL (feet)}} \right) \times \frac{4}{\text{D (inches)}}^2 \times \frac{3}{\text{\# Vols}} \times 0.0408 = \frac{22}{\text{Calculated Purge Volume}} \text{ gallons}$$

PURGE TIME

1121 Start 1131 Stop ~~1045~~ Elapsed _____

PURGE RATE

Initial _____ gpm Final _____ gpm 22 gallons

ACTUAL PURGE VOLUME

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T $\begin{matrix} \square \\ \square \end{matrix} \begin{matrix} ^\circ\text{C} \\ ^\circ\text{F} \end{matrix}$	Other _____
initial	6.7	900	17.0	
15-gals	6.8	900	18.0	
22- "	6.8	900	18.0	

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T $\begin{matrix} \square \\ \square \end{matrix} \begin{matrix} ^\circ\text{C} \\ ^\circ\text{F} \end{matrix}$	Other _____

Meter Nos. _____

Observations During Purging (Well Condition, Turbidity, Color, Odor): turbid - silty brown

Discharge Water Disposal: Sanitary Sewer Storm Sewer Other poly tank

WELL SAMPLING

SAMPLING METHOD

Bailer - Type: S.S. Same As Above
 Submersible Centrifugal Bladder; Pump No.: Grab - Type: _____
 Other - Type: _____

SAMPLING DISTRIBUTION

Sample Series: 9206

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
2306	3 vials	8020	HCL	Net	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.
FB	2307

Other Samples

Type	Sample No.



Job Name Coronation
Job Number 11909-015
Recorded by Pil Eulvan
(Signature)

Well No. MW-32
Well Type: Monitor Extraction Other
Well Material: PVC St. Steel Other
Date 6-23-92 Time 1030
Sampled by RWE
(Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
 2-inch 4-inch 6-inch Other _____
Total Depth of Casing (TD in feet BTOC): 23.1
Water Level Depth (WL in feet BTOC): 9.40
Number of Well Volumes to be purged (# Vols)
 3 4 5 10 Other _____

PURGE METHOD

Bailer - Type: _____
 Submersible Centrifugal Bladder, Pump No.: _____
 Other - Type: _____

PUMP INTAKE SETTING

Near Bottom Near Top Other _____
Depth in feet (BTOC): _____ Screen Interval in Feet (BTOC) from _____ to _____

PURGE VOLUME CALCULATION:

$$\left(\frac{23.1}{\text{TD (feet)}} - \frac{9.40}{\text{WL (feet)}} \right) \times \frac{4^2}{\text{D (inches)}} \times \frac{3}{\text{\# Vols}} \times 0.0408 = 27 \text{ gallons}$$

Calculated Purge Volume

PURGE TIME

1000 Start 1015 Stop 9:40 Elapsed

PURGE RATE

Initial 3 gpm Final 3 gpm

ACTUAL PURGE VOLUME

27 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T <input type="checkbox"/> °C <input type="checkbox"/> °F	Other _____
initial	6.9	1000	20.0	
15-gals	6.8	950	20.0	
27 "	6.8	950	20.0	

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T <input type="checkbox"/> °C <input type="checkbox"/> °F	Other _____
Meter Nos.				

Observations During Purging (Well Condition, Turbidity, Color, Odor): turbid brown color

Discharge Water Disposal: Sanitary Sewer Storm Sewer Other poly tank

WELL SAMPLING

SAMPLING METHOD

Bailer - Type: SS Same As Above
 Submersible Centrifugal Bladder; Pump No.: _____ Grab - Type: _____
 Other - Type: _____

SAMPLING DISTRIBUTION

Sample Series: 9206

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
<u>2303</u>	<u>3 uM</u>	<u>Boto - Boto</u>	<u>HCL</u>	<u>NET</u>	

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original Sample No.	Duplicate Sample No.	Type	Sample No.	Type	Sample No.
<u>2303</u>	<u>2304</u>				



Harding Lawson Associates
7655 Rockwood Boulevard
P.O. Box 578
Novato, California 94948
415/892-0821
Telecopy: General 415/892-0831
Accounting: 415/898-1052

CHAIN OF CUSTODY FORM

Lab: Net Pacific

Job Number: 11909.015
Name/Location: Carnation - Oakland
Project Manager: RRS

Samplers: Rick Erdman
Recorder: Rick Erdman
(Signature Required)

SOURCE CODE	MATRIX				#CONTAINERS & PRESERV.				SAMPLE NUMBER OR LAB NUMBER			DATE			
	Water	Sediment	Soil	Oil	Unpres.	H ₂ SO ₄	HNO ₃	HCL	Yr	Wk	Seq	Yr	Mo	Dy	Time
23	X						3		9	2	06	22	06	22	1445
23	X						3		9	2	06	22	06	22	1530
23	X						3		9	2	06	22	06	22	1600
23	X						3		9	2	06	23	06	23	0900
23	X						3		9	2	06	23	06	23	0945
23	X						3		9	2	06	23	06	23	1015
23	X						3		9	2	06	23	06	23	1030
23	X						3		9	2	06	23	06	23	1100
23	X						3		9	2	06	23	06	23	1130
23	X						3		9	2	06	23	06	23	1145

ANALYSIS REQUESTED							
EPA 601/6010	EPA 602/6020	EPA 624/8240	EPA 625/8270	ICP METALS	EPA 8015M/TPH		
X	X						
X	X						
X	X						
X	X						
X	X						
X	X						
X	X						
X	X						
X	X						
X	X						

LAB NUMBER			DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS
Yr	Wk	Seq				

CHAIN OF CUSTODY RECORD		
RELINQUISHED BY: (Signature) <u>Rick Erdman</u>	RECEIVED BY: (Signature) <u>Michael S. [Signature]</u>	DATE/TIME <u>6-23-92 1709</u>
RELINQUISHED BY: (Signature) <u>Michael S. [Signature]</u>	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
DISPATCHED BY: (Signature)	DATE/TIME	RECEIVED FOR LAB BY: (Signature) <u>Kemp [Signature]</u> <u>6/23/92 1800</u>
METHOD OF SHIPMENT		



Harding Lawson Associates
 7655 Redwood Boulevard
 P.O. Box 578
 Novato, California 94948
 415/892-0821
 Telecopy: General: 415/892-0831
 Accounting: 415/898-1052

CHAIN OF CUSTODY FORM

7179
 Lab: Net Pacific

Job Number: 11909.015
 Name/Location: Carnation - Oakland
 Project Manager: BRS

Samplers: Rick Erdman
 Recorder: Rick Erdman
 (Signature Required)

SOURCE CODE	MATRIX				#CONTAINERS & PRESERV.			SAMPLE NUMBER OR LAB NUMBER			DATE							
	Water	Sediment	Soil	Oil	Unpres.	H ₂ SO ₄	HNO ₃	HCL	Yr	Wk	Seq	Yr	Mo	Dy	Time			
23	X						3	9	20	6	23	08	9	20	6	23	12	00
23	X						3	9	20	6	23	08	9	20	6	23	12	00

STATION DESCRIPTION/NOTES

~~Do not analyze~~

ANALYSIS REQUESTED											
EPA 601/801D											
EPA 602/802D	X										
EPA 624/8240											
EPA 625/8270											
ICP METALS											
EPA 8015M/TPH											

LAB NUMBER			DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS
Yr	Wk	Seq				

CHAIN OF CUSTODY RECORD			
RELINQUISHED BY: (Signature) <u>Rick Erdman</u>	RECEIVED BY: (Signature) <u>Mike [Signature]</u>	DATE/TIME <u>6-23-02</u>	<u>1709</u>
RELINQUISHED BY: (Signature) <u>Mike [Signature]</u>	RECEIVED BY: (Signature)	DATE/TIME	
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME	
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME	
DISPATCHED BY: (Signature)	DATE/TIME	RECEIVED FOR LAB BY: (Signature) <u>[Signature]</u>	DATE/TIME <u>1800</u>
METHOD OF SHIPMENT			



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 P.O. Box 578
 Novato, California 94948
 415/892-0821
 Telecopy: General: 415/892-0831
 Accounting: 415/898-1052

CHAIN OF CUSTODY FORM

Lab: NET 7541

Job Number: 11909, 015
 Name/Location: Carnation, Oakland
 Project Manager: Bruce Scheibach

Samplers: SJK
 Recorder: Steve Korbay
(Signature Required)

SOURCE CODE	MATRIX				#CONTAINERS & PRESERV.				SAMPLE NUMBER OR LAB NUMBER			DATE				
	Water	Sediment	Soil	Oil	Unpres.	H ₂ SO ₄	HNO ₃	HCL	Yr	Wk	Seq	Yr	Mo	Dy	Time	
20	X						4	9	2	0	7	2	2	0	9	30

STATION DESCRIPTION/NOTES

date sample analyzed taken
 7/14/92
 per Rick Walker to NP
 7/20/92

ANALYSIS REQUESTED										
EPA 601/8010										
EPA 602/8020	X	X								
EPA 624/8240										
EPA 625/8270										
ICP METALS										
EPA 8015M/TPH										

LAB NUMBER			DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS
Yr	Wk	Seq				
						24 hr. TAT * Charge for regular T.A.T.
						N/C per NP to JR 7/14/92

CHAIN OF CUSTODY RECORD		
RELINQUISHED BY: (Signature) <u>Steve Korbay</u>	RECEIVED BY: (Signature) <u>Burt Dostel</u>	DATE/TIME 7-14-92 14:23
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
DISPATCHED BY: (Signature) <u>White</u>	DATE/TIME 7-14-92 1423	RECEIVED FOR LAB BY: (Signature) <u>White</u>
METHOD OF SHIPMENT		

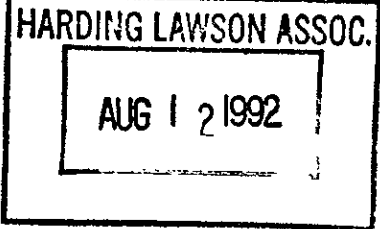
Appendix B

**GROUNDWATER CHEMISTRY LABORATORY RESULTS AND
CHAIN OF CUSTODY FORMS**



NATIONAL
ENVIRONMENTAL
TESTING, INC.

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623



Bruce Scheibach
Harding Lawson Associates
200 Rush Landing
Novato, CA 94947

Date: 07/17/1992
NET Client Acct. No: 28100
NET Pacific Job No: 92.3523
Received: 06/23/1992
Revised 08/10/1992

Client Reference Information

Carnation-Oakland, Job: 11909.015

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:


Jules Skamarack
Laboratory Manager

Enclosure(s)



Client Acct: 28100
 Client Name: Harding Lawson Associates
 NET Job No: 92.3523

Date: 07/17/1992
 Page: 2

NET Pacific, Inc

Ref: Carnation-Oakland, Job: 11909.015

SAMPLE DESCRIPTION: 92062201
 Date Taken: 06/22/1992
 Time Taken: 14:45
 LAB Job No: (-127408)

Parameter	Method	Reporting Limit	Results	Units
METHOD 8020 (GC,Liquid)				
DATE ANALYZED			07-06-92	
DILUTION FACTOR*			1	
Chlorobenzene	8020	0.4	ND	ug/L
1,2-Dichlorobenzene	8020	0.4	ND	ug/L
1,3-Dichlorobenzene	8020	0.4	ND	ug/L
1,4-Dichlorobenzene	8020	0.4	ND	ug/L
Benzene	8020	0.5	ND	ug/L
Ethylbenzene	8020	0.6	ND	ug/L
Toluene	8020	0.5	ND	ug/L
Xylenes (total)	8020	0.6	ND	ug/L
SURROGATE RESULTS				
1,4-Difluorobenzene			96	% Rec.
Bromochloromethane			79	% Rec.



Client Acct: 28100
 Client Name: Harding Lawson Associates
 NET Job No: 92.3523

Date: 07/17/1992
 Page: 3

NET Pacific, Inc

Ref: Carnation-Oakland, Job: 11909.015

SAMPLE DESCRIPTION: 92062203
 Date Taken: 06/22/1992
 Time Taken: 16:00
 LAB Job No: (-127409)

Parameter	Method	Reporting Limit	Results	Units
METHOD 8020 (GC,Liquid)				
DATE ANALYZED			07-06-92	
DILUTION FACTOR*			1	
Chlorobenzene	8020	0.4	ND	ug/L
1,2-Dichlorobenzene	8020	0.4	ND	ug/L
1,3-Dichlorobenzene	8020	0.4	ND	ug/L
1,4-Dichlorobenzene	8020	0.4	ND	ug/L
Benzene	8020	0.5	4.6	ug/L
Ethylbenzene	8020	0.6	0.6	ug/L
Toluene	8020	0.5	5.0	ug/L
Xylenes (total)	8020	0.6	1.3	ug/L
SURROGATE RESULTS				
1,4-Difluorobenzene			91	% Rec.
Bromochloromethane			79	% Rec.



NET Pacific, Inc

Client Acct: 28100
Client Name: Harding Lawson Associates
NET Job No: 92.3523

Date: 07/17/1992
Page: 4

Ref: Carnation-Oakland, Job: 11909.015

SAMPLE DESCRIPTION: 92062301
Date Taken: 06/23/1992
Time Taken: 09:00
LAB Job No: (-127410)

Parameter	Method	Reporting Limit	Results	Units
METHOD 8020 (GC,Liquid)				
DATE ANALYZED			07-06-92	
DILUTION FACTOR*			1	
Chlorobenzene	8020	0.4	ND	ug/L
1,2-Dichlorobenzene	8020	0.4	ND	ug/L
1,3-Dichlorobenzene	8020	0.4	ND	ug/L
1,4-Dichlorobenzene	8020	0.4	ND	ug/L
Benzene	8020	0.5	ND	ug/L
Ethylbenzene	8020	0.6	ND	ug/L
Toluene	8020	0.5	ND	ug/L
Xylenes (total)	8020	0.6	ND	ug/L
SURROGATE RESULTS				
1,4-Difluorobenzene			87	% Rec.
Bromochloromethane			75	% Rec.



Client Acct: 28100
 Client Name: Harding Lawson Associates
 NET Job No: 92.3523

Date: 07/17/1992
 Page: 5

NET Pacific, Inc

Ref: Carnation-Oakland, Job: 11909.015

SAMPLE DESCRIPTION: 92062302
 Date Taken: 06/23/1992
 Time Taken: 09:45
 LAB Job No: (-127411)

Parameter	Method	Reporting Limit	Results	Units
METHOD 8020 (GC,Liquid)				
DATE ANALYZED			07-06-92	
DILUTION FACTOR*			1	
Chlorobenzene	8020	0.4	ND	ug/L
1,2-Dichlorobenzene	8020	0.4	ND	ug/L
1,3-Dichlorobenzene	8020	0.4	ND	ug/L
1,4-Dichlorobenzene	8020	0.4	ND	ug/L
Benzene	8020	0.5	ND	ug/L
Ethylbenzene	8020	0.6	ND	ug/L
Toluene	8020	0.5	ND	ug/L
Xylenes (total)	8020	0.6	ND	ug/L
SURROGATE RESULTS				
1,4-Difluorobenzene			92	% Rec.
Bromochloromethane			76	% Rec.



Client Acct: 28100
 Client Name: Harding Lawson Associates
 NET Job No: 92.3523

Date: 07/17/1992
 Page: 6

NET Pacific, Inc

Ref: Carnation-Oakland, Job: 11909.015

SAMPLE DESCRIPTION: 92062305
 Date Taken: 06/23/1992
 Time Taken: 11:00
 LAB Job No: (-127412)

Parameter	Method	Reporting Limit	Results	Units
METHOD 8020 (GC,Liquid)				
DATE ANALYZED			07-06-92	
DILUTION FACTOR*			1	
Chlorobenzene	8020	0.4	ND	ug/L
1,2-Dichlorobenzene	8020	0.4	ND	ug/L
1,3-Dichlorobenzene	8020	0.4	ND	ug/L
1,4-Dichlorobenzene	8020	0.4	ND	ug/L
Benzene	8020	0.5	ND	ug/L
Ethylbenzene	8020	0.6	ND	ug/L
Toluene	8020	0.5	ND	ug/L
Xylenes (total)	8020	0.6	ND	ug/L
SURROGATE RESULTS				
1,4-Difluorobenzene			92	% Rec.
Bromochloromethane			75	% Rec.



NET Pacific, Inc

Client Acct: 28100
Client Name: Harding Lawson Associates
NET Job No: 92.3523

Date: 07/17/1992
Page: 7

Ref: Carnation-Oakland, Job: 11909.015

SAMPLE DESCRIPTION: 92062306
Date Taken: 06/23/1992
Time Taken: 11:30
LAB Job No: (-127413)

Parameter	Method	Reporting Limit	Results	Units
METHOD 8020 (GC,Liquid)				
DATE ANALYZED			07-06-92	
DILUTION FACTOR*			1	
Chlorobenzene	8020	0.4	ND	ug/L
1,2-Dichlorobenzene	8020	0.4	ND	ug/L
1,3-Dichlorobenzene	8020	0.4	ND	ug/L
1,4-Dichlorobenzene	8020	0.4	ND	ug/L
Benzene	8020	0.5	2.3	ug/L
Ethylbenzene	8020	0.6	ND	ug/L
Toluene	8020	0.5	4.7	ug/L
Xylenes (total)	8020	0.6	4.2	ug/L
SURROGATE RESULTS				
1,4-Difluorobenzene			92	% Rec.
Bromochloromethane			71	% Rec.



NET Pacific, Inc

Client Acct: 28100
Client Name: Harding Lawson Associates
NET Job No: 92.3523

Date: 07/17/1992
Page: 8

Ref: Carnation-Oakland, Job: 11909.015

SAMPLE DESCRIPTION: 92062308
Date Taken: 06/23/1992
Time Taken: 12:00
LAB Job No: (-127414)

Parameter	Method	Reporting Limit	Results	Units
METHOD 8020 (GC,Liquid)				
DATE ANALYZED			07-06-92	
DILUTION FACTOR*			1	
Chlorobenzene	8020	0.4	ND	ug/L
1,2-Dichlorobenzene	8020	0.4	ND	ug/L
1,3-Dichlorobenzene	8020	0.4	ND	ug/L
1,4-Dichlorobenzene	8020	0.4	ND	ug/L
Benzene	8020	0.5	2.5	ug/L
Ethylbenzene	8020	0.6	ND	ug/L
Toluene	8020	0.5	1.0	ug/L
Xylenes (total)	8020	0.6	ND	ug/L
SURROGATE RESULTS				
1,4-Difluorobenzene			95	% Rec.
Bromochloromethane			71	% Rec.



NET Pacific, Inc

Client Acct: 28100
 Client Name: Harding Lawson Associates
 NET Job No: 92.3523

Date: 07/17/1992
 Page: 9

Ref: Carnation-Oakland, Job: 11909.015

SAMPLE DESCRIPTION: 92062202
 Date Taken: 06/22/1992
 Time Taken: 15:30
 LAB Job No: (-127415)

Parameter	Method	Reporting Limit	Results	Units
METHOD 8010 & 8020 (GC,Liquid)				
DATE ANALYZED			07-07-92	
DILUTION FACTOR*			1	
Bromodichloromethane	8010	0.4	ND	ug/L
Bromoform	8010	0.4	ND	ug/L
Bromomethane	8010	0.4	ND	ug/L
Carbon tetrachloride	8010	0.4	ND	ug/L
Chlorobenzene	8020	0.4	ND	ug/L
Chloroethane	8010	0.4	ND	ug/L
2-Chloroethylvinyl ether	8010	1.0	ND	ug/L
Chloroform	8010	0.4	ND	ug/L
Chloromethane	8010	0.4	ND	ug/L
Dibromochloromethane	8010	0.4	ND	ug/L
1,2-Dichlorobenzene	8020	0.4	ND	ug/L
1,3-Dichlorobenzene	8020	0.4	ND	ug/L
1,4-Dichlorobenzene	8020	0.4	ND	ug/L
Dichlorodifluoromethane	8010	0.4	ND	ug/L
1,1-Dichloroethane	8010	0.4	ND	ug/L
1,2-Dichloroethane	8010	0.4	45	ug/L
1,1-Dichloroethene	8010	0.4	ND	ug/L
trans-1,2-Dichloroethene	8010	0.4	ND	ug/L
1,2-Dichloropropane	8010	0.4	ND	ug/L
cis-1,3-Dichloropropene	8010	0.4	ND	ug/L
trans-1,3-Dichloropropene	8010	0.4	ND	ug/L
Methylene chloride	8010	10	ND	ug/L
1,1,2,2-Tetrachloroethane	8010	0.4	ND	ug/L
Tetrachloroethene	8010	0.4	ND	ug/L
1,1,1-Trichloroethane	8010	0.4	ND	ug/L
1,1,2-Trichloroethane	8010	0.4	ND	ug/L
Trichloroethene	8010	0.4	ND	ug/L
Trichlorofluoromethane	8010	0.4	ND	ug/L
Vinyl chloride	8010	0.4	ND	ug/L
Benzene	8020	0.5	3,900	ug/L
Ethylbenzene	8020	0.6	530	ug/L
Toluene	8020	0.5	2,100	ug/L
Xylenes (total)	8020	0.6	1,400	ug/L
SURROGATE RESULTS			--	
Bromochloromethane			66	% Rec.



NET Pacific, Inc

Client Acct: 28100
Client Name: Harding Lawson Associates
NET Job No: 92.3523

Date: 07/17/1992
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Ref: Carnation-Oakland, Job: 11909.015

SAMPLE DESCRIPTION: 92062303
Date Taken: 06/23/1992
Time Taken: 10:15
LAB Job No: (-127416)

Parameter	Method	Reporting Limit	Results	Units
METHOD 8010 & 8020 (GC,Liquid)				
DATE ANALYZED			07-07-92	
DILUTION FACTOR*			1	
Bromodichloromethane	8010	0.4	ND	ug/L
Bromoform	8010	0.4	ND	ug/L
Bromomethane	8010	0.4	ND	ug/L
Carbon tetrachloride	8010	0.4	ND	ug/L
Chlorobenzene	8020	0.4	ND	ug/L
Chloroethane	8010	0.4	ND	ug/L
2-Chloroethylvinyl ether	8010	1.0	ND	ug/L
Chloroform	8010	0.4	ND	ug/L
Chloromethane	8010	0.4	ND	ug/L
Dibromochloromethane	8010	0.4	ND	ug/L
1,2-Dichlorobenzene	8020	0.4	ND	ug/L
1,3-Dichlorobenzene	8020	0.4	ND	ug/L
1,4-Dichlorobenzene	8020	0.4	ND	ug/L
Dichlorodifluoromethane	8010	0.4	ND	ug/L
1,1-Dichloroethane	8010	0.4	ND	ug/L
1,2-Dichloroethane	8010	0.4	7.9	ug/L
1,1-Dichloroethene	8010	0.4	ND	ug/L
trans-1,2-Dichloroethene	8010	0.4	ND	ug/L
1,2-Dichloropropane	8010	0.4	ND	ug/L
cis-1,3-Dichloropropene	8010	0.4	ND	ug/L
trans-1,3-Dichloropropene	8010	0.4	ND	ug/L
Methylene chloride	8010	10	ND	ug/L
1,1,2,2-Tetrachloroethane	8010	0.4	ND	ug/L
Tetrachloroethene	8010	0.4	ND	ug/L
1,1,1-Trichloroethane	8010	0.4	ND	ug/L
1,1,2-Trichloroethane	8010	0.4	ND	ug/L
Trichloroethene	8010	0.4	ND	ug/L
Trichlorofluoromethane	8010	0.4	ND	ug/L
Vinyl chloride	8010	0.4	ND	ug/L
Benzene	8020	0.5	170 **	ug/L
Ethylbenzene	8020	0.6	42 **	ug/L
Toluene	8020	0.5	250 **	ug/L
Xylenes (total)	8020	0.6	200 **	ug/L
SURROGATE RESULTS			--	
Bromochloromethane			69	% Rec.

** Note: These compounds were analyzed at a 1:10 dilution on 07/14/1992



Client Acct: 28100
 Client Name: Harding Lawson Associates
 NET Job No: 92.3523

Date: 07/17/1992
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NET Pacific, Inc

Ref: Carnation-Oakland, Job: 11909.015

SAMPLE DESCRIPTION: 92062304
 Date Taken: 06/23/1992
 Time Taken: 10:30
 LAB Job No: (-127417)

Parameter	Method	Reporting Limit	Results	Units
METHOD 8010 & 8020 (GC,Liquid)				
DATE ANALYZED			07-07-92	
DILUTION FACTOR*			1	
Bromodichloromethane	8010	0.4	ND	ug/L
Bromoform	8010	0.4	ND	ug/L
Bromomethane	8010	0.4	ND	ug/L
Carbon tetrachloride	8010	0.4	ND	ug/L
Chlorobenzene	8020	0.4	ND	ug/L
Chloroethane	8010	0.4	ND	ug/L
2-Chloroethylvinyl ether	8010	1.0	ND	ug/L
Chloroform	8010	0.4	ND	ug/L
Chloromethane	8010	0.4	ND	ug/L
Dibromochloromethane	8010	0.4	ND	ug/L
1,2-Dichlorobenzene	8020	0.4	ND	ug/L
1,3-Dichlorobenzene	8020	0.4	ND	ug/L
1,4-Dichlorobenzene	8020	0.4	ND	ug/L
Dichlorodifluoromethane	8010	0.4	ND	ug/L
1,1-Dichloroethane	8010	0.4	ND	ug/L
1,2-Dichloroethane	8010	0.4	6.2	ug/L
1,1-Dichloroethene	8010	0.4	ND	ug/L
trans-1,2-Dichloroethene	8010	0.4	ND	ug/L
1,2-Dichloropropane	8010	0.4	ND	ug/L
cis-1,3-Dichloropropene	8010	0.4	ND	ug/L
trans-1,3-Dichloropropene	8010	0.4	ND	ug/L
Methylene chloride	8010	10	ND	ug/L
1,1,2,2-Tetrachloroethane	8010	0.4	ND	ug/L
Tetrachloroethene	8010	0.4	ND	ug/L
1,1,1-Trichloroethane	8010	0.4	ND	ug/L
1,1,2-Trichloroethane	8010	0.4	ND	ug/L
Trichloroethene	8010	0.4	ND	ug/L
Trichlorofluoromethane	8010	0.4	ND	ug/L
Vinyl chloride	8010	0.4	ND	ug/L
Benzene	8020	0.5	130 **	ug/L
Ethylbenzene	8020	0.6	22 **	ug/L
Toluene	8020	0.5	95 **	ug/L
Xylenes (total)	8020	0.6	92 **	ug/L
SURROGATE RESULTS			--	
Bromochloromethane			64	% Rec.

** Note: These compounds were analyzed at a 1:10 dilution on 07/14/1992



Client Acct: 28100
 Client Name: Harding Lawson Associates
 NET Job No: 92.3523

Date: 07/17/1992
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NET Pacific, Inc

Ref: Carnation-Oakland, Job: 11909.015

SAMPLE DESCRIPTION: 92062307
 Date Taken: 06/23/1992
 Time Taken: 11:45
 LAB Job No: (-127418)

Parameter	Method	Reporting Limit	Results	Units
METHOD 8010 & 8020 (GC,Liquid)				
DATE ANALYZED			07-07-92	
DILUTION FACTOR*			1	
Bromodichloromethane	8010	0.4	ND	ug/L
Bromoform	8010	0.4	ND	ug/L
Bromomethane	8010	0.4	ND	ug/L
Carbon tetrachloride	8010	0.4	ND	ug/L
Chlorobenzene	8020	0.4	ND	ug/L
Chloroethane	8010	0.4	ND	ug/L
2-Chloroethylvinyl ether	8010	1.0	ND	ug/L
Chloroform	8010	0.4	ND	ug/L
Chloromethane	8010	0.4	ND	ug/L
Dibromochloromethane	8010	0.4	ND	ug/L
1,2-Dichlorobenzene	8020	0.4	ND	ug/L
1,3-Dichlorobenzene	8020	0.4	ND	ug/L
1,4-Dichlorobenzene	8020	0.4	ND	ug/L
Dichlorodifluoromethane	8010	0.4	ND	ug/L
1,1-Dichloroethane	8010	0.4	ND	ug/L
1,2-Dichloroethane	8010	0.4	ND	ug/L
1,1-Dichloroethene	8010	0.4	ND	ug/L
trans-1,2-Dichloroethene	8010	0.4	ND	ug/L
1,2-Dichloropropane	8010	0.4	ND	ug/L
cis-1,3-Dichloropropene	8010	0.4	ND	ug/L
trans-1,3-Dichloropropene	8010	0.4	ND	ug/L
Methylene chloride	8010	10	ND	ug/L
1,1,2,2-Tetrachloroethane	8010	0.4	ND	ug/L
Tetrachloroethene	8010	0.4	ND	ug/L
1,1,1-Trichloroethane	8010	0.4	ND	ug/L
1,1,2-Trichloroethane	8010	0.4	ND	ug/L
Trichloroethene	8010	0.4	ND	ug/L
Trichlorofluoromethane	8010	0.4	ND	ug/L
Vinyl chloride	8010	0.4	ND	ug/L
Benzene	8020	0.5	0.6	ug/L
Ethylbenzene	8020	0.6	ND	ug/L
Toluene	8020	0.5	2.5 **	ug/L
Xylenes (total)	8020	0.6	2.5	ug/L
SURROGATE RESULTS				
1,4-Difluorobenzene			96	% Rec.
Bromochloromethane			79	% Rec.

** Note: Blank was ND on other analytes except 0.6 ug/L Toluene.



NET Pacific, Inc

Client Acct: 28100
Client Name: Harding Lawson Associates
NET Job No: 92.3523

Date: 07/17/1992
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SAMPLE DESCRIPTION: 92072202
Date Taken: 07/14/1992
Time Taken: 09:30
LAB Job No: (-129428)

Table with 5 columns: Parameter, Method, Reporting Limit, Results, Units. Contains a list of chemical compounds and their detection results, including Bromodichloromethane, Bromoform, and Benzene.



NET Pacific, Inc

Client Acct: 28100
Client Name: Harding Lawson Associates
NET Job No: 92.3523

Date: 07/17/1992
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Ref: Carnation-Oakland, Job: 11909.015

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
1,1-Dichloroethene	0.4	ug/L	80	ND	76	65	15
Trichloroethene	0.4	ug/L	105	ND	89	78	13
Chlorobenzene	0.4	ug/L	119	ND	108	97	11

COMMENT: Blank Results were ND on other analytes tested.

1,1-Dichloroethene	0.4	ug/L	100	ND	151	146	3.4
Trichloroethene	0.4	ug/L	100	ND	151	149	1.3
Chlorobenzene	0.4	ug/L	100	ND	N/A	N/A	3.5

COMMENT: Blank Results were ND on other analytes tested.

1,1-Dichloroethene	0.4	ug/L	84	ND	93	96	5.2
Trichloroethene	0.4	ug/L	100	ND	110	113	2.7
Chlorobenzene	0.4	ug/L	117	ND	132	138	4.4

COMMENT: Blank Results were ND on other analytes tested.

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APRIL THROUGH JUNE 1992
CARNATION FACILITY
OAKLAND, CALIFORNIA
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QUALITY CONTROL REVIEWER



David F. Leland, P.E.
Associate Engineer