



Environmental
Science &
Engineering, Inc.

TO: Alameda County Health Care Services Agency
Division of Hazardous Materials
Department of Environmental Health
80 Swan Way, Room 350
Oakland, CA 94621

DATE: June 30, 1993

ATTN: Mr. Larry Seto

JOB NUMBER: 6-92-5405

SUBJECT: Quarterly Monitoring, 800 Buchanan Street, Albany, California

WE ARE TRANSMITTING THE FOLLOWING:

One finalized copy of the Second Quarter 1993 Ground Water Monitoring Report for the subject location.

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ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

BY


Bart Miller
Senior Staff Geologist

**GROUND WATER MONITORING REPORT
SECOND QUARTER 1993**

**UNITED STATES DEPARTMENT OF AGRICULTURE
WESTERN REGIONAL RESEARCH CENTER
ALBANY, CALIFORNIA**

Submitted to:

**United States Department of Agriculture
Agricultural Research Center
Pacific West Area
800 Buchanan Street
Albany, California 94710**


Prepared By:

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**ESE Project No. 6-92-5405
June 30, 1993**

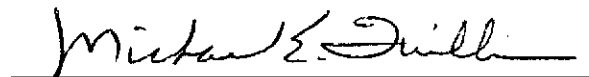
This report has been prepared by Environmental Science & Engineering, Inc. for the exclusive use of the United States Department of Agriculture as it pertains to their Western Regional Research Center located at 800 Buchanan Street in Albany, California. Our professional services have been performed using that degree of care and skill ordinarily exercised under similar circumstances by other geologists and engineers practicing in this field. No other warranty, express or implied, is made as to professional advice in this report.

REPORT PREPARED BY:


Bart S. Miller
Senior Staff Geologist

JUNE 30, 1993
DATE

UNDER THE PROFESSIONAL REVIEW AND SUPERVISION OF:


Michael E. Quillin, R.G. No. 5315
Senior Hydrogeologist

JUNE 30, 1993
DATE

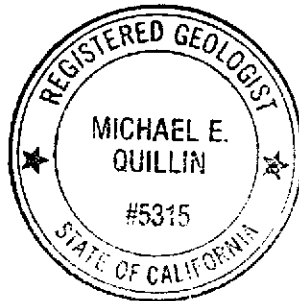


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1.0 INTRODUCTION

This report presents the findings of Second Quarter 1993 ground water monitoring conducted by Environmental Science & Engineering, Inc. (ESE) at the United States Department of Agriculture (USDA) Western Regional Research Center (site) located at 800 Buchanan Street in Albany, California (Figure 1 - Location Map). Ground water monitoring was conducted at the site in association with the environmental site closure process, as requested by the Alameda County Health Care Services Agency (ACHCSA), and is follow-up to the findings of a preliminary soil and ground water investigation conducted at the site by ESE (ESE, 1992). This monitoring event represents the third of four quarters of ground water monitoring associated with this investigation. The purpose of this ground water monitoring event was to confirm previous ESE findings that no detectable concentrations of volatile organic compounds (VOCs) occur in ground water near former solvent extraction facilities and associated underground solvent storage tanks at the site. The following report presents the procedures and methods used during this monitoring event, and the results and conclusions drawn from the monitoring.

1.1 Scope of Work

To complete the objectives for this ground water monitoring event, ESE performed the following tasks:

- Collected ground water level measurements from each monitoring well (MW-1 through MW-3; Figure 2 - Site Map),
- Collected ground water samples from each monitoring well,
- Analyzed all ground water samples for Halogenated VOCs,
- Evaluated all field and analytical data associated with the ground water monitoring event and prepared a report of findings.

2.0 BACKGROUND

2.1 Site Description

The 16-acre site is located on Buchanan Street, immediately east of Interstate 80, in Albany, California (Figure 1) and occupies a low relief area adjacent to San Francisco Bay. Original development of the site was initiated during 1939 and additional construction occurred during the mid-1960's. Site structures include the Main Laboratory which is comprised of an administration wing, a chemical laboratory wing, and an industrial laboratory wing; the West Annex and woodshop building; the word processing building; the service building; a complex of five greenhouses, two solvent extraction facilities (SEFs), numerous small sheds and enclosures, and a main parking lot. Site layout near the SEFs, which are the primary focus of this investigation, is detailed in Figure 2 - Site Map. SEF #1 is no longer active and the building is currently used for bulk materials storage. SEF #2 is still active.

2.2 Site History

Site investigation pertinent to the current work commenced during December 1990 when five underground storage tanks (USTs) were excavated and removed. Former UST locations are shown in Figure 2. The USTs are as follows: two 550-gallon solvent USTs immediately east of SEF #1 (USTs 1 and 2; Figure 2), one 1,000-gallon solvent UST immediately west of SEF #1 (UST 3; Figure 2), one 200-gallon solvent UST immediately west of SEF #2 (UST 4; Figure 2), and one 550-gallon gasoline UST near the west main entrance to the site from Buchanan Street (UST 5; Figure 2). A total of five soil samples (one sidewall sample from each excavation) and two ground water samples (one each from the 1,000-gallon and 200-gallon UST excavations) were collected and submitted for chemical analysis. Soil and ground water samples collected from the solvent UST excavations were analyzed for Halogenated Volatile Organic Compounds (HVOCs) using EPA Method 8010 and for Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX) using EPA Method 8020. The soil sample collected from the gasoline UST excavation was analyzed for Total Petroleum Hydrocarbons as Gasoline (TPH-G) and for BTEX using EPA Method 8015/8020.

Analytical results for soil samples collected from the excavations for USTs 1 and 2 indicated detectable concentrations of chloroform at 1,200 and 1,400 micrograms per kilogram ($\mu\text{g}/\text{Kg}$) or parts per billion (ppb), respectively. The soil sample collected from the excavation for UST 3 reported no detectable concentrations of HVOCs or BTEX; however, the ground water sample collected from the excavation reported concentrations of Methylene Chloride and Chloroform at 11 and 12 micrograms per liter ($\mu\text{g}/\text{L}$), or ppb, respectively. The soil sample collected from the excavation for UST 4 reported detectable concentrations of Methylene Chloride and Chloroform at 12 and 6.6 $\mu\text{g}/\text{Kg}$, respectively, and the ground water sample collected from the excavation contained Methylene Chloride and Chloroform concentrations of 480 and 360 $\mu\text{g}/\text{L}$, respectively. The soil sample collected from the excavation for UST 5 reported no detectable concentrations of TPH-G or BTEX.

During September 1992, ESE sampled three soil borings to a depth of 20 feet below ground surface (bgs) adjacent to the excavations formerly occupied by the solvent USTs at the site (ESE, 1992). Two-inch diameter ground water monitoring wells were installed in the three soil borings and subsequently developed, purged, and sampled. All soil and ground water samples collected by ESE were found not to contain detectable concentrations of VOCs.

During February 1993, ground water samples collected by ESE from the three monitoring wells at the site were reported to not contain detectable concentrations of VOCs (ESE, 1993).

3.0 PROCEDURES

3.1 Ground Water Level Monitoring

On May 17, 1993, ESE measured the depth to ground water in monitoring wells MW-1 through MW-3 with respect to the surveyed top of casing for each well. The water level measurements were collected using an electric tape. Depth to water measurements were converted to elevations relative to mean sea level for the purpose of estimating the direction and magnitude of ground water flow beneath the site.

3.2 Ground Water Sampling

On May 17, 1993 ESE collected ground water samples from wells MW-1 through MW-3. A minimum of three well casing volumes of ground water were purged from each well prior to collection of the ground water samples. During the well purging process the pH, conductivity and temperature of the ground water were periodically monitored for stabilization to ensure the collection of samples representative of the aquifer surrounding each well. Ground water was purged from the wells using a variable flow-rate submersible pump. The submersible pump was cleaned following use in each well using an Alconox® soap and tap water cleaning solution followed by a tap water rinse. Ground water sampling data forms with recorded measurements of pH, conductivity and temperature of the purged water from each well are included as Appendix A - Ground Water Sampling Data Forms. All purged ground water and equipment rinse solutions were contained on site in Department of Transportation (DOT) approved 55-gallon drums pending receipt of analytical results and proper disposal, or recycling.

Ground water samples were obtained from wells MW-1 through MW-3 with a dedicated disposable polyethylene bailer in each well. Ground water was then decanted from the bailers into laboratory supplied 40-milliliter glass vials containing hydrochloric acid (a preservative). Three vials were collected for each well. The sample vials were then sealed with a Teflon lined cap, labeled, placed under ice in a cooler and transported under

appropriate chain of custody to National Environmental Testing, Inc. (NET) of Santa Rosa, California, a State-certified analytical laboratory. A duplicate sample, collected from well MW-2, was also transported to NET with the other samples. The duplicate sample provides a Quality Assurance/Quality Control (QA/QC) check on ESE sample collection procedures and laboratory handling procedures. A travel blank sample, consisting of deionized water in a 40-milliliter glass vial, was prepared by ESE and included to provide a QA/QC check on transport and laboratory handling procedures.

All samples were analyzed for HVOCs using EPA Method 601.

4.0 RESULTS

4.1 Ground Water Elevations

Ground water elevations measured in monitoring wells MW-1 through MW-3 on May 17, 1993 are presented in Table 1 - Ground Water Elevation Data. Current ground water elevations were contoured by ESE and are presented in Figure 3 - Ground Water Elevation Map. Figure 3 shows that ground water flow beneath the site is generally toward the west with a gradient of approximately 0.004 feet per foot. These findings are generally consistent with earlier findings, and regional ground water flow toward San Francisco Bay.

| Table 1 - Ground Water Elevation Data USDA Facility, Albany, CA | | | | |
|--|-------------|----------------------------------|-------------------|---|
| Monitoring Well No. | Date | TOC Elevation (feet AMSL) | DTW (feet) | Ground Water Elevation (feet AMSL) |
| MW-1 | 09/21/92 | 7.42 | 6.03 | 1.39 |
| | 02/22/93 | 7.42 | 2.88 | 4.54 |
| | 05/17/93 | 7.42 | 4.83 | 2.59 |
| MW-2 | 09/21/92 | 7.57 | 6.63 | 0.94 |
| | 02/22/93 | 7.57 | 5.37 | 2.20 |
| | 05/17/93 | 7.57 | 5.26 | 2.31 |
| MW-3 | 09/21/92 | 13.22 | 11.01 | 2.21 |
| | 02/22/93 | 13.22 | 7.69 | 5.53 |
| | 05/17/93 | 13.22 | 9.89 | 3.33 |

- NOTES:
- TOC refers to top of casing
 - DTW refers to depth to water
 - AMSL refers to above mean sea level

4.2 Ground Water Samples

Laboratory analytical reports with chain of custody documentation are presented as Appendix B - Laboratory Analytical Report: Ground Water Samples. No HVOCs were detected in the ground water samples collected from monitoring wells MW-1, MW-2, and

MW-3. The duplicate sample collected from well MW-1 did not contain detectable HVOCs. The laboratory-supplied trip blank was reported to contain a detectable concentration of chloroform. However, because the ground water samples collected at the site were not reported to contain a detectable concentration of chloroform, the trip blank is presumed to have been contaminated during preparation by ESE or analysis by NET.

5.0 CONCLUSIONS AND COMMENTS

- This ground water monitoring event is the third of four quarterly events requested by the ACHCSA for consideration to provide environmental closure of the site. One additional quarter of monitoring for which no HVOCs are detected in ground water should be sufficient to request site closure.
- On May 17, 1993, ground water was found at a depth of 4.83 to 9.89 feet bgs at the site. Based on ground water elevations, the direction of ground water flow beneath the site was found to be generally to the west. This reported ground water flow direction is generally consistent with past findings and with regional ground water flow.
- No HVOCs were detected in ground water samples collected by ESE on May 17, 1993. These findings are identical with ground water sampling results collected by ESE on September 21, 1992, and February 22, 1993.

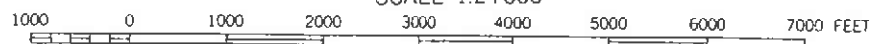
6.0 REFERENCES

Environmental Science and Engineering, Inc., (1992). Report on Soil and Ground Water Investigation; December 3 1992.

Environmental Science and Engineering, Inc., (1993) Ground Water Monitoring Report, First Quarter 1993; March 8, 1993.



SCALE 1:24 000



**Environmental
Science &
Engineering, Inc.**

4090 NELSON AVENUE, SUITE J
CONCORD, CA 94520

DATE

8/92

DRAWN BY

DWR

APPROVED BY

PROJ. NO.

6-92-5405

CAD FILE

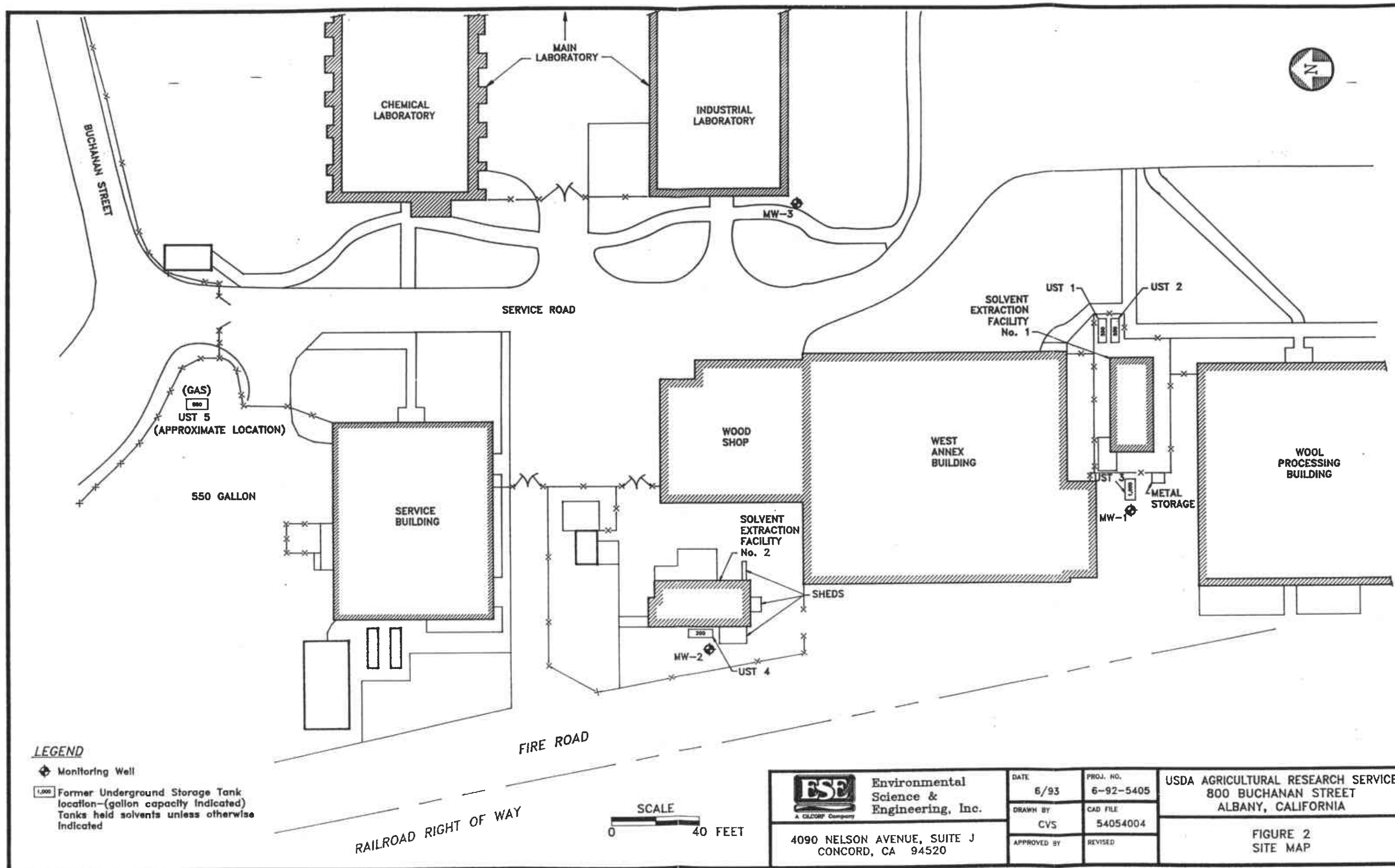
54051001

REVISED

6/93 CVS

**USDA AGRICULTURAL RESEARCH SERVICE
800 BUCHANAN STREET
ALBANY, CALIFORNIA**

**FIGURE 1
LOCATION MAP**



LEGEND

- ⊕ Monitoring Well
- ⊠ Former Underground Storage Tank location—(gallon capacity indicated) Tanks held solvents unless otherwise indicated

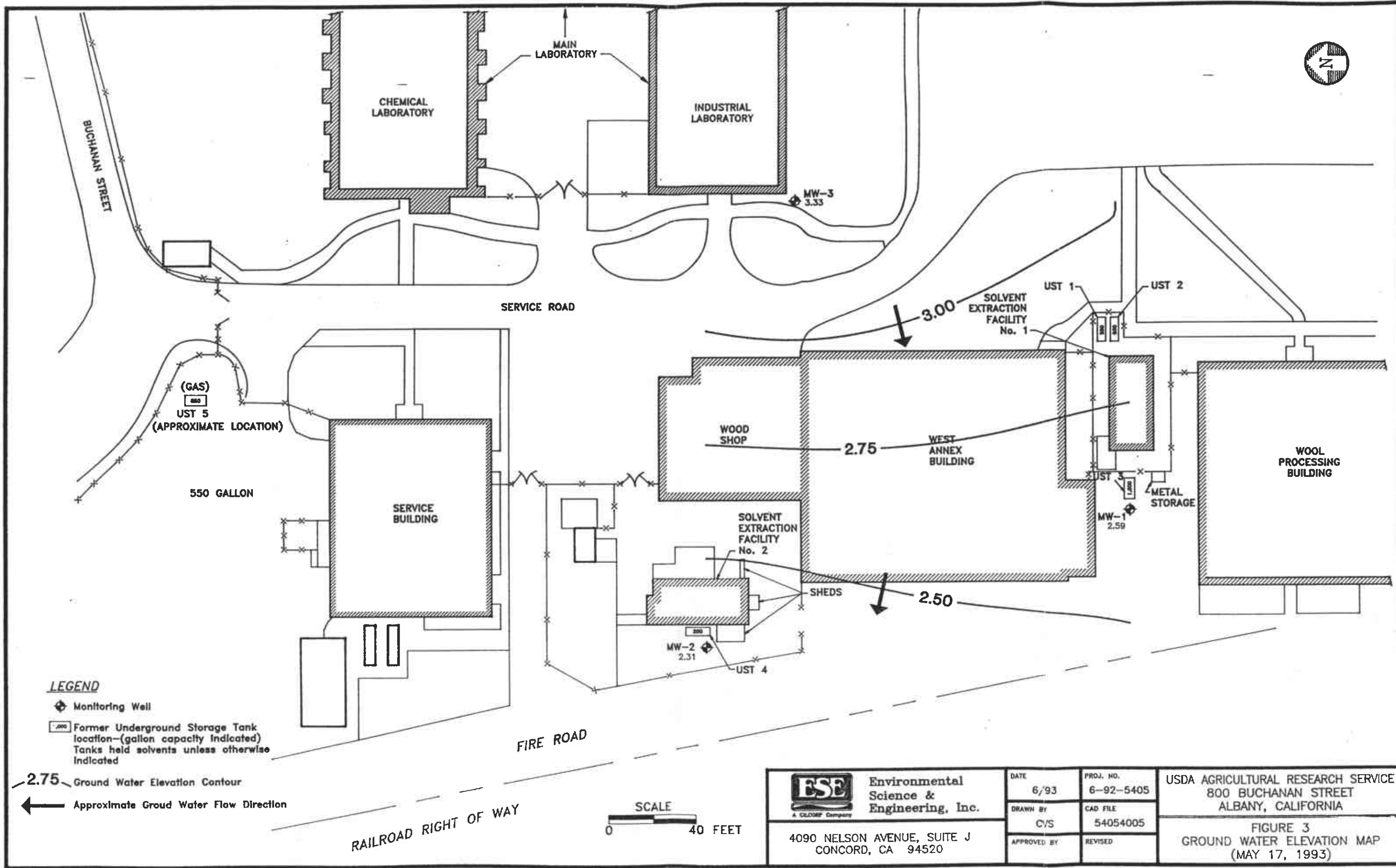


ESE Environmental Science & Engineering, Inc.
A GILCORP Company
 4090 NELSON AVENUE, SUITE J
 CONCORD, CA 94520

| | | | |
|-------------|------|-----------|-----------|
| DATE | 6/93 | PROJ. NO. | 6-92-5405 |
| DRAWN BY | CVS | CAD FILE | 54054004 |
| APPROVED BY | | REVISED | |

USDA AGRICULTURAL RESEARCH SERVICE
 800 BUCHANAN STREET
 ALBANY, CALIFORNIA

**FIGURE 2
 SITE MAP**



BUCHANAN STREET

CHEMICAL LABORATORY

MAIN LABORATORY

INDUSTRIAL LABORATORY

MW-3
3.33

SERVICE ROAD

(GAS)
UST 5
(APPROXIMATE LOCATION)

550 GALLON

SERVICE BUILDING

WOOD SHOP

2.75

WEST ANNEX BUILDING

SOLVENT EXTRACTION FACILITY No. 1

UST 1

UST 2

3.00

WOOL PROCESSING BUILDING

METAL STORAGE

MW-1
2.59

SOLVENT EXTRACTION FACILITY No. 2

SHEDS

2.50

MW-2
2.31

UST 4

FIRE ROAD

RAILROAD RIGHT OF WAY

APPENDIX A
GROUND WATER SAMPLING DATA FORMS

WELL SAMPLING FIELD LOG

PROJECT NAME: USDA DATE: 5/17/93
 PROJECT MANAGER: Michael Quillen CLIENT: USDA
 SAMPLER: Burt Miller SAMPLE LOCATION I.D.: MW-1
 GROUNDWATER: _____ OTHER: _____ START TIME: 10:05

CASING ELEVATION (FT): 7.42 DATUM: _____ CASING DIAMETER: 2" 4" _____ OTHER _____
 DEPTH TO WATER (FT): 4.83 DEPTH OF WELL (FT): 20.0 DIFFERENCE (FT): 15.17
 WATER ELEVATION (FT): 2.59 CALCULATED WELL VOLUME (GAL): 2.5
 ACTUAL PURGE VOLUME (GAL): 20 MINIMUM PURGE VOLUME (3 x WW): 7.5

FIELD MEASUREMENTS

| TIME | Volume (GAL) | pH (Units) | E.C. | Temp. | Clarity & Color | Other |
|--------------|--------------|-------------|------------|-------------|--------------------------|----------------|
| <u>10:07</u> | <u>4</u> | <u>8.90</u> | <u>198</u> | <u>67.3</u> | <u>Transparent</u> | <u>No odor</u> |
| <u>10:09</u> | <u>8</u> | <u>8.32</u> | <u>193</u> | <u>67.0</u> | <u>"</u> | <u>"</u> |
| <u>10:11</u> | <u>12</u> | <u>8.04</u> | <u>185</u> | <u>67.6</u> | <u>Brown/Translucent</u> | <u>"</u> |
| <u>10:13</u> | <u>16</u> | <u>7.87</u> | <u>176</u> | <u>67.9</u> | <u>Transparent</u> | <u>"</u> |
| <u>10:15</u> | <u>20</u> | <u>7.73</u> | <u>172</u> | <u>67.8</u> | <u>"</u> | <u>"</u> |

PURGE METHOD

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

SAMPLE METHOD

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

WELL INTEGRITY: _____

REMARKS: Well did not purge dry at 2 gpm pumping rate.

SIGNATURE: [Signature]

CHECKED BY: [Signature]

SELECTED WELL CASING DIAMETERS VOLUMES PER UNIT LENGTH

| WELL CASING I.D. (Inches) | GAL/FT | CUBIC FT/FT |
|---------------------------|--------|-------------|
| 2.0 | 0.1632 | 0.0218 |
| 4.0 | 0.6528 | 0.0873 |
| 6.0 | 1.4690 | 0.1963 |

CONVERSION FACTORS

| TO CONVERT | INTO | MULTIPLY |
|---------------|---------------|----------|
| Feet of Water | Lbs/Sq. Inch | 0.4335 |
| Lbs/Sq. Inch | Feet of Water | 2.3070 |
| Cubic Feet | Gallons | 7.4800 |
| Gallons | Liters | 3.7850 |
| Feet | Meters | 0.3048 |
| Inches | Centimeters | 2.5400 |

WELL SAMPLING FIELD LOG

PROJECT NAME: USDA DATE: 5/17/93
 PROJECT MANAGER: Michael Quillin CLIENT: USDA
 SAMPLER: Port Miller SAMPLE LOCATION I.D.: NW-2
 GROUNDWATER: _____ OTHER: _____ START TIME: 10:39

CASING ELEVATION (FT): 7.57 DATUM: _____ CASING DIAMETER: 2" 4" _____ OTHER _____

DEPTH TO WATER (FT): 5.26 DEPTH OF WELL (FT): 20 DIFFERENCE (FT): 14.74

WATER ELEVATION (FT): 2.31 CALCULATED WELL VOLUME (GAL): 2.4

ACTUAL PURGE VOLUME (GAL): 7 MINIMUM PURGE VOLUME (3 x WV): 7.2

FIELD MEASUREMENTS

| TIME | Volume (GAL) | pH (Units) | E.C. | Temp. | Clarity & Color | Other |
|--------------|--------------|-------------|-------------|-------------|--------------------------|----------------|
| <u>10:40</u> | <u>2</u> | <u>7.44</u> | <u>1113</u> | <u>83.5</u> | <u>Transparent</u> | <u>No Odor</u> |
| <u>10:42</u> | <u>4</u> | <u>7.46</u> | <u>1085</u> | <u>79.8</u> | <u>Brown Translucent</u> | <u>"</u> |
| <u>10:45</u> | <u>5</u> | <u>7.54</u> | <u>1072</u> | <u>77.4</u> | <u>"</u> | <u>"</u> |
| <u>10:53</u> | <u>7</u> | <u>7.65</u> | <u>1014</u> | <u>79.1</u> | <u>Transparent</u> | <u>"</u> |

PURGE METHOD

Pneumatic Displacement Pump Other

Bailer (Teflon/PVC/SS) Submersible Pump

SAMPLE METHOD

Bailer (Teflon/PVC/SS) Dedicated

Bailer (Disposable) Other

WELL INTEGRITY: _____

REMARKS: Well purged dry at 5 gallons volume and again at 7 gallons volume at 12 gpm pumping rate.

SIGNATURE: [Signature]

CHECKED BY: [Signature]

SELECTED WELL CASING DIAMETERS VOLUMES PER UNIT LENGTH

| WELL CASING I.D. (Inches) | CUBIC GAL/FT | CUBIC FT/FT |
|---------------------------|--------------|-------------|
| 2.0 | 0.1632 | 0.0218 |
| 4.0 | 0.6528 | 0.0873 |
| 6.0 | 1.4690 | 0.1963 |

CONVERSION FACTORS

| TO CONVERT | INTO | MULTIPLY |
|---------------|---------------|----------|
| Feet of Water | Lbs/Sq. Inch | 0.4335 |
| Lbs/Sq. Inch | Feet of Water | 2.3070 |
| Cubic Feet | Gallons | 7.4800 |
| Gallons | Liters | 3.7850 |
| Feet | Meters | 0.3048 |
| Inches | Centimeters | 2.5400 |

WELL SAMPLING FIELD LOG

PROJECT NAME: USDA DATE: 5/17/93
 PROJECT MANAGER: Michael Quillin CLIENT: USDA
 SAMPLER: Bvt Miller SAMPLE LOCATION I.D.: MW-3
 GROUNDWATER: _____ OTHER: _____ START TIME: 11:25

CASING ELEVATION (FT): 13.22 DATUM: _____ CASING DIAMETER: 2" 4" _____ OTHER _____
 DEPTH TO WATER (FT): 9.89 DEPTH OF WELL (FT): 23.0 DIFFERENCE (FT): 13.11
 WATER ELEVATION (FT): 3.33 CALCULATED WELL VOLUME (GAL): 2.1
 ACTUAL PURGE VOLUME (GAL): 13.0 MINIMUM PURGE VOLUME (3 x WV): 6.4

FIELD MEASUREMENTS

| TIME | Volume (GAL) | pH (Units) | E.C. | Temp. | Clarity & Color | Other |
|-------|--------------|------------|------|-------|-------------------|---------|
| 11:26 | 1 | 7.82 | 784 | 67.6 | Brown Translucent | No odor |
| 11:28 | 3 | 7.65 | 695 | 67.0 | Transparent | " |
| 11:30 | 5 | 7.57 | 695 | 66.8 | " | " |
| 11:32 | 7 | 7.50 | 699 | 66.5 | " | " |
| 11:34 | 9 | 7.47 | 727 | 66.5 | " | " |
| 11:36 | 11 | 7.44 | 729 | 66.2 | " | " |

PURGE METHOD

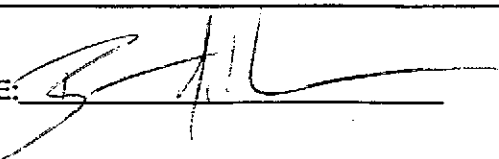
Pneumatic Displacement Pump Other
 Bailer (Teflon/PVC/SS) Submersible Pump


SAMPLE METHOD

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

WELL INTEGRITY: _____

REMARKS: Well did not purge dry at 2 gpm pumping rate.

SIGNATURE: 

CHECKED BY: 

SELECTED WELL CASING DIAMETERS VOLUMES PER UNIT LENGTH

| WELL CASING I.D. (Inches) | GAL/FT | CUBIC FT/FT |
|---------------------------|--------|-------------|
| 2.0 | 0.1632 | 0.0218 |
| 4.0 | 0.6528 | 0.0873 |
| 6.0 | 1.4690 | 0.1963 |

CONVERSION FACTORS

| TO CONVERT | INTO | MULTIPLY |
|---------------|---------------|----------|
| Feet of Water | Lbs/Sq. Inch | 0.4335 |
| Lbs/Sq. Inch | Feet of Water | 2.3070 |
| Cubic Feet | Gallons | 7.4800 |
| Gallons | Liters | 3.7850 |
| Feet | Meters | 0.3048 |
| Inches | Centimeters | 2.5400 |

APPENDIX B

LABORATORY ANALYTICAL REPORT: GROUND WATER SAMPLES



NATIONAL
ENVIRONMENTAL
TESTING, INC.

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

JUN 10 1993

Bart Miller
Env. Science & Engineering
4090 Nelson Ave., Suite J
Concord, CA 94520


Date: 06/08/1993
NET Client Acct. No: 69100
NET Pacific Job No: 93.02070
Received: 05/19/1993

Client Reference Information

U.S.D.A., 800 Buchanan St., Albany, Project No: 6-92-5405

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: 69100
Client Name: Env. Science & Engineering
NET Log No: 93.02070

Date: 06/08/1993
Page: 2

Ref: U.S.D.A., 800 Buchanan St., Albany, Project No: 6-92-5405

SAMPLE DESCRIPTION: MW-1
Date Taken: 05/17/1993
Time Taken: 13:05
LAB Job No: (-157687)

| Parameter | Results | Reporting Limit | Units | Method |
|---------------------------|----------|-----------------|--------|--------|
| METHOD 601 (GC,Liquid) | | | | |
| DATE ANALYZED | 05-25-93 | | | |
| DILUTION FACTOR* | 1 | | | |
| Bromodichloromethane | ND | 0.4 | ug/L | 601 |
| Bromoform | ND | 0.4 | ug/L | 601 |
| Bromomethane | ND | 0.4 | ug/L | 601 |
| Carbon tetrachloride | ND | 0.4 | ug/L | 601 |
| Chlorobenzene | ND | 0.4 | ug/L | 601 |
| Chloroethane | ND | 0.4 | ug/L | 601 |
| 2-Chloroethylvinyl ether | ND | 1.0 | ug/L | 601 |
| Chloroform | ND | 0.4 | ug/L | 601 |
| Chloromethane | ND | 0.4 | ug/L | 601 |
| Dibromochloromethane | ND | 0.4 | ug/L | 601 |
| 1,2-Dichlorobenzene | ND | 0.4 | ug/L | 601 |
| 1,3-Dichlorobenzene | ND | 0.4 | ug/L | 601 |
| 1,4-Dichlorobenzene | ND | 0.4 | ug/L | 601 |
| Dichlorodifluoromethane | ND | 0.4 | ug/L | 601 |
| 1,1-Dichloroethane | ND | 0.4 | ug/L | 601 |
| 1,2-Dichloroethane | ND | 0.4 | ug/L | 601 |
| 1,1-Dichloroethene | ND | 0.4 | ug/L | 601 |
| trans-1,2-Dichloroethene | ND | 0.4 | ug/L | 601 |
| 1,2-Dichloropropane | ND | 0.4 | ug/L | 601 |
| cis-1,3-Dichloropropene | ND | 0.4 | ug/L | 601 |
| trans-1,3-Dichloropropene | ND | 0.4 | ug/L | 601 |
| Methylene chloride | ND | 10 | ug/L | 601 |
| 1,1,2,2-Tetrachloroethane | ND | 0.4 | ug/L | 601 |
| Tetrachloroethene | ND | 0.4 | ug/L | 601 |
| 1,1,1-Trichloroethane | ND | 0.4 | ug/L | 601 |
| 1,1,2-Trichloroethane | ND | 0.4 | ug/L | 601 |
| Trichloroethene | ND | 0.4 | ug/L | 601 |
| Trichlorofluoromethane | ND | 0.4 | ug/L | 601 |
| Vinyl chloride | ND | 0.4 | ug/L | 601 |
| SURROGATE RESULTS | | | | |
| 1,4-Difluorobenzene | 91 | | % Rec. | 601 |
| 1,4-Dichlorobutane | 93 | | % Rec. | 601 |



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Ref: U.S.D.A., 800 Buchanan St., Albany, Project No: 6-92-5405

SAMPLE DESCRIPTION: MW-2
Date Taken: 05/17/1993
Time Taken: 13:20
LAB Job No: (-157688)

| Parameter | Results | Reporting Limit | Units | Method |
|---------------------------|----------|-----------------|--------|--------|
| METHOD 601 (GC,Liquid) | | | | |
| DATE ANALYZED | 05-25-93 | | | |
| DILUTION FACTOR* | 1 | | | |
| Bromodichloromethane | ND | 0.4 | ug/L | 601 |
| Bromoform | ND | 0.4 | ug/L | 601 |
| Bromomethane | ND | 0.4 | ug/L | 601 |
| Carbon tetrachloride | ND | 0.4 | ug/L | 601 |
| Chlorobenzene | ND | 0.4 | ug/L | 601 |
| Chloroethane | ND | 0.4 | ug/L | 601 |
| 2-Chloroethylvinyl ether | ND | 1.0 | ug/L | 601 |
| Chloroform | ND | 0.4 | ug/L | 601 |
| Chloromethane | ND | 0.4 | ug/L | 601 |
| Dibromochloromethane | ND | 0.4 | ug/L | 601 |
| 1,2-Dichlorobenzene | ND | 0.4 | ug/L | 601 |
| 1,3-Dichlorobenzene | ND | 0.4 | ug/L | 601 |
| 1,4-Dichlorobenzene | ND | 0.4 | ug/L | 601 |
| Dichlorodifluoromethane | ND | 0.4 | ug/L | 601 |
| 1,1-Dichloroethane | ND | 0.4 | ug/L | 601 |
| 1,2-Dichloroethane | ND | 0.4 | ug/L | 601 |
| 1,1-Dichloroethene | ND | 0.4 | ug/L | 601 |
| trans-1,2-Dichloroethene | ND | 0.4 | ug/L | 601 |
| 1,2-Dichloropropane | ND | 0.4 | ug/L | 601 |
| cis-1,3-Dichloropropene | ND | 0.4 | ug/L | 601 |
| trans-1,3-Dichloropropene | ND | 0.4 | ug/L | 601 |
| Methylene chloride | ND | 10 | ug/L | 601 |
| 1,1,2,2-Tetrachloroethane | ND | 0.4 | ug/L | 601 |
| Tetrachloroethene | ND | 0.4 | ug/L | 601 |
| 1,1,1-Trichloroethane | ND | 0.4 | ug/L | 601 |
| 1,1,2-Trichloroethane | ND | 0.4 | ug/L | 601 |
| Trichloroethene | ND | 0.4 | ug/L | 601 |
| Trichlorofluoromethane | ND | 0.4 | ug/L | 601 |
| Vinyl chloride | ND | 0.4 | ug/L | 601 |
| SURROGATE RESULTS | | | | |
| 1,4-Difluorobenzene | 91 | | % Rec. | 601 |
| 1,4-Dichlorobutane | 90 | | % Rec. | 601 |



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 Client Name: Env. Science & Engineering
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Ref: U.S.D.A., 800 Buchanan St., Albany, Project No: 6-92-5405

SAMPLE DESCRIPTION: MW-3
 Date Taken: 05/17/1993
 Time Taken: 13:40
 LAB Job No: (-157689)

| Parameter | Results | Reporting Limit | Units | Method |
|---------------------------|----------|-----------------|--------|--------|
| METHOD 601 (GC,Liquid) | | | | |
| DATE ANALYZED | 05-26-93 | | | |
| DILUTION FACTOR* | 1 | | | |
| Bromodichloromethane | ND | 0.4 | ug/L | 601 |
| Bromoform | ND | 0.4 | ug/L | 601 |
| Bromomethane | ND | 0.4 | ug/L | 601 |
| Carbon tetrachloride | ND | 0.4 | ug/L | 601 |
| Chlorobenzene | ND | 0.4 | ug/L | 601 |
| Chloroethane | ND | 0.4 | ug/L | 601 |
| 2-Chloroethylvinyl ether | ND | 1.0 | ug/L | 601 |
| Chloroform | ND | 0.4 | ug/L | 601 |
| Chloromethane | ND | 0.4 | ug/L | 601 |
| Dibromochloromethane | ND | 0.4 | ug/L | 601 |
| 1,2-Dichlorobenzene | ND | 0.4 | ug/L | 601 |
| 1,3-Dichlorobenzene | ND | 0.4 | ug/L | 601 |
| 1,4-Dichlorobenzene | ND | 0.4 | ug/L | 601 |
| Dichlorodifluoromethane | ND | 0.4 | ug/L | 601 |
| 1,1-Dichloroethane | ND | 0.4 | ug/L | 601 |
| 1,2-Dichloroethane | ND | 0.4 | ug/L | 601 |
| 1,1-Dichloroethene | ND | 0.4 | ug/L | 601 |
| trans-1,2-Dichloroethene | ND | 0.4 | ug/L | 601 |
| 1,2-Dichloropropane | ND | 0.4 | ug/L | 601 |
| cis-1,3-Dichloropropene | ND | 0.4 | ug/L | 601 |
| trans-1,3-Dichloropropene | ND | 0.4 | ug/L | 601 |
| Methylene chloride | ND | 10 | ug/L | 601 |
| 1,1,2,2-Tetrachloroethane | ND | 0.4 | ug/L | 601 |
| Tetrachloroethene | ND | 0.4 | ug/L | 601 |
| 1,1,1-Trichloroethane | ND | 0.4 | ug/L | 601 |
| 1,1,2-Trichloroethane | ND | 0.4 | ug/L | 601 |
| Trichloroethene | ND | 0.4 | ug/L | 601 |
| Trichlorofluoromethane | ND | 0.4 | ug/L | 601 |
| Vinyl chloride | ND | 0.4 | ug/L | 601 |
| SURROGATE RESULTS | | | | |
| 1,4-Difluorobenzene | 93 | | % Rec. | 601 |
| 1,4-Dichlorobutane | 92 | | % Rec. | 601 |



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Client Name: Env. Science & Engineering
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Ref: U.S.D.A., 800 Buchanan St., Albany, Project No: 6-92-5405

SAMPLE DESCRIPTION: Duplicate
Date Taken: 05/17/1993
Time Taken:
LAB Job No: (-157690)

| Parameter | Results | Reporting Limit | Units | Method |
|---------------------------|----------|-----------------|--------|--------|
| METHOD 601 (GC,Liquid) | | | | |
| DATE ANALYZED | 05-26-93 | | | |
| DILUTION FACTOR* | 1 | | | |
| Bromodichloromethane | ND | 0.4 | ug/L | 601 |
| Bromoform | ND | 0.4 | ug/L | 601 |
| Bromomethane | ND | 0.4 | ug/L | 601 |
| Carbon tetrachloride | ND | 0.4 | ug/L | 601 |
| Chlorobenzene | ND | 0.4 | ug/L | 601 |
| Chloroethane | ND | 0.4 | ug/L | 601 |
| 2-Chloroethylvinyl ether | ND | 1.0 | ug/L | 601 |
| Chloroform | ND | 0.4 | ug/L | 601 |
| Chloromethane | ND | 0.4 | ug/L | 601 |
| Dibromochloromethane | ND | 0.4 | ug/L | 601 |
| 1,2-Dichlorobenzene | ND | 0.4 | ug/L | 601 |
| 1,3-Dichlorobenzene | ND | 0.4 | ug/L | 601 |
| 1,4-Dichlorobenzene | ND | 0.4 | ug/L | 601 |
| Dichlorodifluoromethane | ND | 0.4 | ug/L | 601 |
| 1,1-Dichloroethane | ND | 0.4 | ug/L | 601 |
| 1,2-Dichloroethane | ND | 0.4 | ug/L | 601 |
| 1,1-Dichloroethene | ND | 0.4 | ug/L | 601 |
| trans-1,2-Dichloroethene | ND | 0.4 | ug/L | 601 |
| 1,2-Dichloropropane | ND | 0.4 | ug/L | 601 |
| cis-1,3-Dichloropropene | ND | 0.4 | ug/L | 601 |
| trans-1,3-Dichloropropene | ND | 0.4 | ug/L | 601 |
| Methylene chloride | ND | 10 | ug/L | 601 |
| 1,1,2,2-Tetrachloroethane | ND | 0.4 | ug/L | 601 |
| Tetrachloroethene | ND | 0.4 | ug/L | 601 |
| 1,1,1-Trichloroethane | ND | 0.4 | ug/L | 601 |
| 1,1,2-Trichloroethane | ND | 0.4 | ug/L | 601 |
| Trichloroethene | ND | 0.4 | ug/L | 601 |
| Trichlorofluoromethane | ND | 0.4 | ug/L | 601 |
| Vinyl chloride | ND | 0.4 | ug/L | 601 |
| SURROGATE RESULTS | | | | |
| 1,4-Difluorobenzene | 92 | | % Rec. | 601 |
| 1,4-Dichlorobutane | 86 | | % Rec. | 601 |



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SAMPLE DESCRIPTION: Trip Blank
Date Taken:
Time Taken:
LAB Job No: (-157691)

| <u>Parameter</u> | <u>Results</u> | <u>Reporting Limit</u> | <u>Units</u> | <u>Method</u> |
|---------------------------|----------------|----------------------------|--------------|---------------|
| METHOD 601 (GC,Liquid) | | | | |
| DATE ANALYZED | 05-25-93 | | | |
| DILUTION FACTOR* | 1 | | | |
| Bromodichloromethane | ND | 0.4 | ug/L | 601 |
| Bromoform | ND | 0.4 | ug/L | 601 |
| Bromomethane | ND | 0.4 | ug/L | 601 |
| Carbon tetrachloride | ND | 0.4 | ug/L | 601 |
| Chlorobenzene | ND | 0.4 | ug/L | 601 |
| Chloroethane | ND | 0.4 | ug/L | 601 |
| 2-Chloroethylvinyl ether | ND | 1.0 | ug/L | 601 |
| Chloroform | 6.5 | 0.4 | ug/L | 601 |
| Chloromethane | ND | 0.4 | ug/L | 601 |
| Dibromochloromethane | ND | 0.4 | ug/L | 601 |
| 1,2-Dichlorobenzene | ND | 0.4 | ug/L | 601 |
| 1,3-Dichlorobenzene | ND | 0.4 | ug/L | 601 |
| 1,4-Dichlorobenzene | ND | 0.4 | ug/L | 601 |
| Dichlorodifluoromethane | ND | 0.4 | ug/L | 601 |
| 1,1-Dichloroethane | ND | 0.4 | ug/L | 601 |
| 1,2-Dichloroethane | ND | 0.4 | ug/L | 601 |
| 1,1-Dichloroethene | ND | 0.4 | ug/L | 601 |
| trans-1,2-Dichloroethene | ND | 0.4 | ug/L | 601 |
| 1,2-Dichloropropane | ND | 0.4 | ug/L | 601 |
| cis-1,3-Dichloropropene | ND | 0.4 | ug/L | 601 |
| trans-1,3-Dichloropropene | ND | 0.4 | ug/L | 601 |
| Methylene chloride | ND | 10 | ug/L | 601 |
| 1,1,2,2-Tetrachloroethane | ND | 0.4 | ug/L | 601 |
| Tetrachloroethene | ND | 0.4 | ug/L | 601 |
| 1,1,1-Trichloroethane | ND | 0.4 | ug/L | 601 |
| 1,1,2-Trichloroethane | ND | 0.4 | ug/L | 601 |
| Trichloroethene | ND | 0.4 | ug/L | 601 |
| Trichlorofluoromethane | ND | 0.4 | ug/L | 601 |
| Vinyl chloride | ND | 0.4 | ug/L | 601 |
| SURROGATE RESULTS | | | | |
| 1,4-Difluorobenzene | 83 | | % Rec. | 601 |
| 1,4-Dichlorobutane | 85 | | % Rec. | 601 |



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QUALITY CONTROL DATA

| Parameter | Reporting Limits | Units | Cal Verif Stand % Recovery | Blank Data | Spike % Recovery | Duplicate Spike % Recovery | RPD |
|--------------------|------------------|-------|----------------------------|------------|------------------|----------------------------|-----|
| Chlorobenzene | 0.4 | ug/L | 83 | ND | 90 | 87 | 2.8 |
| 1,1-Dichloroethene | 0.4 | ug/L | 82 | ND | 90 | 80 | 12 |
| Trichloroethene | 0.4 | ug/L | 88 | ND | 91 | 88 | 2.8 |

COMMENT: Blank Results were ND on other analytes tested.



KEY TO ABBREVIATIONS and METHOD REFERENCES

- < : Less than; When appearing in results column indicates analyte not detected at the value following. This datum supercedes the listed Reporting Limit.
- * : Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated Reporting Limits by the dilution factor (but do not multiply reported values).
- ICVS : Initial Calibration Verification Standard (External Standard).
- mean : Average; sum of measurements divided by number of measurements.
- mg/Kg (ppm) : Concentration in units of milligrams of analyte per kilogram of sample, wet-weight basis (parts per million).
- mg/L : Concentration in units of milligrams of analyte per liter of sample.
- mL/L/hr : Milliliters per liter per hour.
- MPN/100 mL : Most probable number of bacteria per one hundred milliliters of sample.
- N/A : Not applicable.
- NA : Not analyzed.
- ND : Not detected; the analyte concentration is less than applicable listed reporting limit.
- NTU : Nephelometric turbidity units.
- RPD : Relative percent difference, $100 \text{ [Value 1 - Value 2] / mean value}$.
- SNA : Standard not available.
- ug/Kg (ppb) : Concentration in units of micrograms of analyte per kilogram of sample, wet-weight basis (parts per billion).
- ug/L : Concentration in units of micrograms of analyte per liter of sample.
- umhos/cm : Micromhos per centimeter.

Method References

Methods 100 through 493: see "Methods for Chemical Analysis of Water & Wastes", U.S. EPA, 600/4-79-020, rev. 1983.

Methods 601 through 625: see "Guidelines Establishing Test Procedures for the Analysis of Pollutants" U.S. EPA, 40 CFR, Part 136, rev. 1988.

Methods 1000 through 9999: see "Test Methods for Evaluating Solid Waste", U.S. EPA SW-846, 3rd edition, 1986.

SM: see "Standard Methods for the Examination of Water & Wastewater, 17th Edition, APHA, 1989.

