THE MEMPHIS DEPOT
TENNESSEE

ADMINISTRATIVE RECORD
COVER SHEET

AR File Number 775

File: 541.460.0007
C.H.

QUARTERLY GROUNDWATER QUALITY REPORT 775
(YEAR TWO, QUARTER ONE)
GROUNDWATER INTERIM REMEDIAL ACTION

DUNN FIELD
MEMPHIS DEFENSE DEPOT, TENNESSEE

Submitted to:

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May 2000

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1.0 INTRODUCTION

This Quarterly Groundwater Quality Report presents results IT Corporation's (IT) implementation of the year two, quarter one monitoring for the Groundwater Interim Remedial Action (IRA) extraction system at the Dunn Field area of the Memphis Depot, Memphis, Tennessee (Depot). This work was performed for Sverdrup Civil, Inc. under the Subcontract No. C5X51101S200.

1.1 Scope of Work

This quarterly report covers the period from November 1999 through February 2000. The monitoring of the system was performed in accordance with the *Groundwater Interim Remedial Action Defense Depot Memphis, Tennessee Operation and Maintenance Plan* (O&M Plan) prepared by CH2MHill in May 1998. This plan contained an overview of the recovery system and described how the system functions. Start-up, operation, and shutdown procedures were discussed for the extraction system. Requirements for sampling, monitoring and reporting were also included.

1.2 Site Description and Background

The Depot covers 642 acres in Shelby County, Memphis, Tennessee. The facility is approximately four miles southeast of the central business district and one mile northwest of Memphis International Airport. *Figure 1* presents the location of the Depot. Operations began in 1942 with the mission to inventory and supply materials for the United States Army. In 1964, its mission was expanded to serve as one of the principle distribution centers for a complete range of military commodities. Past activities at the Depot included a wide range of storage, distribution, and maintenance practices. The Depot has been closed (since 1997) and is maintained by the Memphis Depot Caretaker Division, under the control of the Defense Depot Susquehanna, Pennsylvania/Defense Logistics Agency (DLA). The Depot is currently undergoing Base Realignment and Closure (BRAC) activities.

Dunn Field, also called OU-1, consists of 68 acres of land area that is located north of the main installation, across Dunn Road as in *Figure 1*. The northwestern quadrant of Dunn Field was used as a landfill area. The southwestern and southeastern quadrants were used as a storage area for mineral stockpiles. The northeastern portion was used as a pistol range and later as a pesticide storage area. Until 1970, Army supplies, including hazardous and non-hazardous materials were burned or buried primarily in the northwest portion of Dunn Field. These materials potentially included oil and grease, paint, paint thinner, methyl bromide,

pesticides, herbicides, and food supplies. Disposal operations at Dunn Field have created a plume of contaminated groundwater, in the shallow fluvial aquifer, along the western and northern portion of Dunn Field. Groundwater monitoring performed during the 1989 and 1990 remedial investigation/feasibility study (RI/FS) identified concentrations of dissolved volatile organic compounds (VOCs) and heavy metals above regulatory limits. Identified VOCs included, but were not limited to, tetrachloroethene, trichloroethene, dichloroethene, carbon tetrachloride, chloroform and 1,1,2,2 -trichloroethane.

The Depot facility is classified as a Superfund site under the Comprehensive Environmental Response, Compensation, and Liability Act of 1990 (CERCLA) Section 120 (Federal Facilities).

1.3 Hydrogeology

The Depot is underlain by a layer of wind blown deposits (loess) about 20 to 30 feet thick. Underlying the loess, to a depth of generally 70 to 95 feet below land surface (bls), is a series of terrace deposits consisting primarily of silty to gravely sands with some thin clay interbeds. The lower saturated portion of the terrace deposits is referred to as a fluvial aquifer, which is the uppermost aquifer beneath the Depot. The Jackson Formation/Upper Claiborne Group, which generally consists of high plasticity clay of variable thickness (5 to 75 feet), composes the base of the fluvial aquifer. The saturated thickness of the fluvial aquifer varies from 2 to 20 feet and is controlled, in part, by the topography of the Jackson Formation/Upper Claiborne Group.

Beneath the Jackson Formation/Upper Claiborne Group lies the Memphis Sand Aquifer, which is the primary source of drinking water for the City of Memphis. The Jackson Formation/Upper Claiborne Group clays serve as both the confining units for the Memphis Sand Aquifer and the base of the fluvial aquifer.

1.4 Remedial Objective

The Depot facility, including Dunn Field, was placed on the National Priority List (NPL) in 1992 primarily because of the EPA's final Hazard Ranking System (HRS) Scoring Package for the Depot score of 58.06. In August 1995, CH2MHill submitted a Record of Decision (ROD) for a Groundwater IRA at Dunn Field to the regulatory agencies for approval. The ROD provided the basis of design for the components associated with the IRA for Dunn Field. The following remedial objectives were identified in the O&M Plan:

- Install recovery wells along the leading edge of the groundwater plume.
- Operate the system of recovery wells until contaminant concentrations are reduced to acceptable levels or until the final remedy is in place.
- Perform chemical analysis to monitor the quality of the discharge in accordance with city discharge permit requirements.

1.5 System Description

The USACE contracted OHM/IT to install seven groundwater extraction wells, one pre-cast concrete building, underground conveyance system, flow measurement and control systems, and associated civil, electrical, and instrumentation/controls components. The Technical Specifications prepared by CH2MHill (including Addendum No. 1, dated August 29, 1997) defined the Groundwater IRA's equipment, process controls, operational requirements, recovery wells sizes and depths, pumping rates and construction drawings. OHM provided As-Built Drawings for the Dunn Field groundwater extraction system under a separate submittal in April 1999. The location of the system is identified in *Figure 1*.

2.0 SYSTEM MONITORING METHODOLOGY

2.1 Groundwater Level Measurements

Baseline water level measurements were collected prior to system startup in accordance with the O&M Plan. Water level measurements were recorded twice a month during this four-month operational period from a select number of monitoring wells located both on and off Dunn Field. The following table lists the monitoring wells:

MW-02	MW-15	MW-37 [b]	MW-55
MW-03	MW-18	MW-38	MW-56
MW-04	MW-19 [a]	MW-40	MW-57 [a]
MW-05	MW-27	MW-41	MW-58 [a]
MW-06	MW-28	MW-42	MW-59 [a]
MW-07	MW-29	MW-43	MW-60 [a]
MW-08	MW-30	MW-44	MW-62
MW-09	MW-31	MW-45	MW-62
MW-10	MW-32 [b]	MW-46	MW-63
MW-11	MW-33	MW-49	MW-65
MW-12	MW-34 [b]	MW-51	MW-67
MW-13	MW-35	MW-53	MW-69
MW-14	MW-36	MW-54	MW-70
			MW-71

[a] The monitoring of these wells was added in quarter three and quarter four.

[b] IT continued monitoring these wells manually once the continuous recording instruments were removed by the USGS

IT continued monitoring three formerly electronically monitored wells; MW-32, MW-34 and MW-37. These well were incorporated into the bi-monthly gauging events soon after USGS removed the electronic water level transducers. Four newly installed wells; MW-68, MW-69, MW-70 and MW-71 also required bi-monthly measurements for the second year O&M period. All, except MW-68, were available for bi-monthly measurements in January 2000. Eight existing, primarily off-site wells; MW-19, MW-27, MW-56, MW-62, MW-63, MW-65, MW-67 and PZ-02 were also added to the bi-monthly gauging events for the second year O&M period. The first year of measurement data was submitted to USACE, DLA, TDEC and USEPA separately. A complete set of the quarterly measurements is available in *Appendix A*.

In addition to the above monitoring wells, recovery well water levels were recorded continuously during system operation. This data was recorded with electronic water level transducers at one-hour intervals. Data was retrieved remotely on a routine basis from an electronic data logging system.

2.2 Groundwater Sample Collection and Analyses

Groundwater samples were collected once in Feb-00. Samples were collected from nineteen (19) monitoring wells and each of the seven (7) operating recovery wells, plus four (4) recently installed recovery wells as identified in the following table:

Well Type	Well No.	Analyses/Method at Each Well	Date Performed
Downgradient Groundwater Monitoring Wells	MW-14 MW-15 MW-30 MW-31 MW-32 MW-33 MW-34 MW-40 MW-44 MW-51 MW-54 MW-56 MW-57 MW-58 MM-59 MW-67 MW-69 MW-70 MW-71	Quarterly Analyses: PH/Field Probe Conductivity/Field Probe Volatile Organics/SW8260	Feb-00
Groundwater Recovery Wells	RW-1A RW-1B RW-01 RW-02 RW-03 RW-04 RW-05 RW-06 RW-07 RW-08 RW-09	Quarterly Analyses: PH/Field Probe Conductivity/Field Probe Volatile Organics/SW8260	Feb-00

Cumulative analytical results for sampled monitoring wells presented in *Table 1* include five quarters of data since system start-up. Cumulative analytical results for system recovery wells presented in *Table 2* also includes data since system start-up. Laboratory analytical reports are provided in *Appendix B* and *Appendix C*. A discussion of the results is presented in section three of this report.

2.3 System Discharge Sample Collection and Analyses

Monthly effluent samples were collected from the groundwater extraction system at a location approximately 200 feet upstream from the final discharge point. The discharge point is a manhole located on Kyle Street at the west property line of the Depot.

Effluent samples have been collected on a monthly basis from November 1999 through February 2000. The samples were analyzed in accordance with Section F.1 of the Industrial Wastewater Discharge Agreement for Volatile Organic Compounds (VOCs) by Method SW846 8260B.

Analysis of the monthly samples was performed to evaluate compliance with the City of Memphis Industrial Wastewater Discharge Agreement and subsequent revisions. A copy of this agreement was provided in the year one operations and maintenance report. Analytical results for each effluent sample are presented in *Table 1*. Laboratory analytical reports are provided in *Appendix C*. A discussion of the results is presented in section three of this report.

2.4 Field and Laboratory QA/AC Samples

As part of the Quality Assurance/Quality Control (QA/QC) Program, a variety of field and laboratory QA/QC samples were collected and analyzed during each sampling event. Groundwater was the only matrix analyzed; however, samples were collected from three different sources: groundwater monitoring wells, groundwater extraction (recovery) wells, and groundwater extraction discharge.

2.4.1 Quarterly Groundwater Sampling Event

QA/QC samples collected in the field during each quarterly sampling event included three equipment blanks, two double blind duplicates, one field blank, temperature blanks, and trip blanks. A trip blank and temperature blank was typically included in every cooler delivered to the lab. One equipment blank and/or double blind duplicate was collected for every ten samples. Laboratory QA/QC included surrogate spikes to show control of organic analyses, a method blank and laboratory control sample, and matrix spike and matrix spike duplicate (MS/MSD) samples. The quality control samples and results are presented in *Table 4*. A data evaluation was conducted for the quarterly sampling event. A copy of the complete data evaluation summary is presented in *Appendix D*.

2.4.2 Monthly Effluent Sampling Events

QA/QC samples collected in the field during each monthly effluent sampling event included temperature blanks, trip blanks, and equipment blanks or double blind duplicates. Throughout the quarter, three double blind duplicates were collected in Nov-99, Dec-99, and Feb-99. Laboratory QA/QC included method blanks and MS/MSDs. A laboratory control duplicate sample was analyzed for batches that did not include MS/MSDs. A data evaluation was conducted for each monthly sampling event. A copy of the complete data evaluation summary is presented in *Appendix D.*

2.5 Sample Packaging and Handling

Upon collection, samples and associated field QA/QC samples were immediately placed on ice in a cooler. Stored samples were checked periodically and ice was replaced as needed to maintain a 4-degree Celsius temperature. Samples were segregated by sealed plastic bubble-wrap bags and placed in a cooler with chain of custody forms. Samples were typically hand delivered the same day of collection to the local laboratory: Environmental Testing and Consulting, INC. (ETC) in Memphis, TN.

3.0 MONITORING RESULTS

This section discusses results of the Year Two, Quarter One (Y2Q1) remedial action groundwater monitoring at the Memphis Defense Depot. *Figure 3* shows the locations of monitoring and recovery wells at the site.

3.1 Groundwater Elevation and Hydraulic Gradient

Groundwater level measurements at the site have been collected bimonthly at 53 fluvial aquifer monitoring wells since the remedial system was started in Nov-98. Calculated groundwater elevations during this monitoring period ranged from 249.33 feet mean sea level (msl) in MW-65 to 160.39 feet msl in MW-34. *Figure 4* presents a Y2Q1 (Feb-00) groundwater elevation contour map. *Figure 3* provides baseline groundwater elevations for comparison.

Groundwater elevations in recovery wells are maintained at a constant level above the pump intake to prevent damage due to pump cavitation. The column of groundwater maintained above each pump inlet is as follows: RW-03, 4.0 feet; RW-04, 4.0 feet; RW-05, 1.6 feet; RW-06, 5.2 feet; RW-07, 4.2 feet; RW-08, 6.7 feet; and RW-09, 7.7 feet.

The groundwater flow direction during the Y2Q1 (Feb-00) groundwater measurement event was to the west with minor flow components to the southwest and northwest due to low groundwater elevations observed in MW-34 and MW-40. In general, the baseline calculated hydraulic gradient was approximately 0.039 ft/ft. Following startup of the recovery wells, the overall flow direction has remained unchanged. During this monitoring period the hydraulic gradient across the middle of the site decreased slightly to 0.02 ft/ft.

In general, groundwater elevations decreased approximately 0.5 feet from the previous quarter in monitoring wells sampled with the exception of MW-33, MW-34 and MW-40. These wells displayed an increase in groundwater elevation of 7.44 ft, 5.92 ft, and 2.05 ft respectively. Quarterly groundwater level measurements are provided in *Table 5*. Groundwater level measurements and precipitation data are provided in *Appendix A*.

3.2 Groundwater Analytical Results

This section includes analytical results of effluent samples to the Publicly Owned Treatment Works (POTW) as well as groundwater samples collected from recovery wells and select monitoring wells. Groundwater analytical results from the Y2Q1 sampling and analysis

event are presented in *Figure 2*. Copies of the laboratory analytical reports, including field logs and chain of custody documentation, are provided in *Appendix B* with the quarterly monitoring well samples and *Appendix C* with the monthly effluent samples.

3.2.1 Effluent Analytical Results Summary

During the Y2Q1 monitoring period (Nov-99 through Feb-00), monthly effluent discharge samples were collected from the groundwater recovery system in compliance with the City of Memphis Discharge Permit. The samples were analyzed for pH (Method 150.1), TAL Metals (EPA 200 Series), TCL Volatile Organics (Method 8260B) and TCL Semi-Volatile Organics (Method 8270C). Monthly effluent analytical reports are provided in *Appendix C.*

There were no exceedances of the City of Memphis Industrial Wastewater Discharge Maximum Levels during the Y2Q1 period. *Table 1* presents effluent sample analytical results from system startup through Feb-00.

3.2.2 Recovery Well Analytical Results Summary

Y2Q1 groundwater samples were collected from the recovery wells on 14-Feb-00. The groundwater samples were analyzed for TCL Volatile Organics (Method 8260B). Results are provided in *Table 3*. Y2Q1 recovery well laboratory analytical reports are provided in *Appendix B.*

Only compounds that have been detected are reported. Of the compounds detected, trichloroethene (TCE) is the only compound detected above Drinking Water Maximum Contaminant Levels (MCLs) in all recovery wells during each sampling event.

RW-01 This was the first time the recovery well was sampled since being installed in November 1999. Two compounds (carbon tetrachloride [CT] at 42.2 ug/l; and trichloroethene [TCE] at 35.2 ug/l) were detected at concentrations exceeding MCLs.

RW-1A This was the first time the recovery well was sampled since being installed in November 1999. Two compounds (CT at 15.2 ug/l; and TCE at 119 ug/l) were detected at concentrations exceeding MCLs.

RW-1B This was the first time the recovery well was sampled since being installed in November 1999. Two compounds (CT at 20.6 ug/l; and TCE at 21.9 ug/l) were detected at concentrations exceeding MCLs.

RW-02 This was the first time the recovery well was sampled since being installed in November 1999. Two compounds (CT at 15.7 ug/l; and TCE at 21.4 ug/l) were detected at concentrations exceeding MCLs.

RW-03 Three compounds (CT, Cis 1,2-dichloroethene [Cis-DCE], and TCE) were detected at concentrations exceeding MCLs during the first year of system operation. CT and TCE have exceeded MCLs during each of the five quarterly sampling events. During the Y2Q1 sampling event CT (10.9 ug/l), Cis-DCE (101 ug/l) and TCE (57.8 ug/l) exceeded MCLs. CT demonstrated a slight decrease in concentration from the previous quarter (13.2 to 10.9 ug/l) and TCE demonstrated a slight increase (55.0 to 57.8 ug/l). Cis-DCE increased from 44.0 ug/l (Y1Q4) to 101 ug/l (Y2Q1).

RW-04 One compound (TCE) was detected at concentrations exceeding MCLs during the first year of system operation. TCE has exceeded MCLs in each of the five sampling events. During the Y2Q1 sampling event, TCE (252 ug/l) and CT (6.97 ug/l) exceeded MCLs. TCE demonstrated a decrease in concentration from 649 ug/l (Y1Q4) to 252 ug/l (Y2Q1). CT was detected at a concentration above MCLs (6.97 ug/l) for the first time during this sampling event.

RW-05 Two compounds were detected at concentrations exceeding MCLs during the first year of system operation. Tetrachloroethene (PCE) and TCE have exceeded MCLs during each of the five quarterly sampling events. During the Y2Q1 sampling event, PCE (10.8 ug/l) and TCE (1,170 ug/l) exceeded MCLs. The PCE concentration demonstrated a decrease from Y1Q4 (45.1 ug/l) to Y2Q1 (10.8 ug/l). TCE also demonstrated a decrease from Y1Q4 (1,290 ug/l)to Y2Q1 (1,170 ug/l).

RW-06 Two compounds were detected at concentrations exceeding MCLs during the first year of system operation. PCE has exceeded MCLs during four quarterly sampling events. TCE has exceeded MCLs during each of the five quarterly sampling events. PCE concentrations remained essentially the same from the previous quarter (Y1Q4, 5.8 ug/l: to Y1Q2, 6.48 ug/l) and TCE demonstrated a slight decrease (Y1Q4, 24.2 ug/l; to Y2Q1 17.0 ug/l).

RW-07 Three compounds were detected at concentrations exceeding MCLs during the first year of system operation. Cis-DCE (74.7 ug/l) exceeded the MCL during the Y1Q4 sampling event and decreased slightly to 70.3 ug/l during the Y2Q1 sampling event. PCE and TCE have exceeded MCLs during each of the five quarterly sampling events. The PCE

concentration decreased slightly from Y1Q4 (12.2 ug/l) to Y2Q1 (9.33 ug/l. The TCE concentration decreased from Y1Q4 (145 ug/l) to Y2Q1 (102 ug/l).

RW-08 Five compounds were detected at concentrations exceeding MCLs during the first year of system operation. 1,2-dichloroethane (DCA) exceeded MCLs during Y1Q4 (27.8 ug/l) then decreased to <1 ug/l during the Y2Q1 sampling event. The 1,1-dichloroethene (DCE) concentration increased from <1 ug/l (Y1Q4) to 6.82 ug/l during the Y2Q1 sampling event. Cis-DCE exceeded the MCL during the Y1Q2, Y1Q3 and Y1Q4 sampling events. Cis-DCE was detected at a concentration of 89.1 ug/l (Y1Q4) and increased to 115 ug/l during the Y2Q1 sampling event. PCE has exceeded MCLs during all five quarterly sampling events. The PCE concentration decreased from Y1Q4 (39.1 ug/l) to Y2Q1 (6.67 ug/l). TCE has exceeded MCLs during all five quarterly sampling events. The TCE concentration decreased from Y1Q4 (261 ug/l) to Y2Q1 (190 ug/l).

RW-09 Three compounds were detected at concentrations exceeding MCLs during the first year of system operation. Cis-DCE, PCE and TCE have exceeded MCLs during all five quarterly sampling events. Cis-DCE (44.7 ug/l) exceeded the MCL during the Y1Q4 sampling event and increased to 52.9 ug/l during the Y2Q1 sampling event. The PCE concentration decreased slightly from Y1Q4 (12.2 ug/l) to Y2Q1 (9.33 ug/l). The TCE concentration decreased from Y1Q4 (145 ug/l) to Y2Q1 (102 ug/l).

3.2.3 Monitoring Well Analytical Results Summary

Y2Q1 (Feb-00) groundwater samples were collected from select monitoring wells at the site. The samples were analyzed for TCL Volatile Organics (Method 8260B). Y2Q1 monitoring well laboratory analytical reports are provided in *Appendix B.*

Table 2 (p. 1-10) present TCL Volatile Organics analytical results from monitoring wells MW-14, MW-15, MW-30, MW-31, MW-32, MW-33, MW-34, MW-40, MW-44, MW-51 and MW-54 from Feb-99 through Feb-00. *Table 3 (p. 11)* presents initial TCL Volatile Organics analytical results from monitoring wells MW-56, MW-57, MW-58, MW-59, MW-67, MW-69, MW-70 and MW-71 collected Feb-00. Only compounds detected during any sampling event have been reported in the tables.

MW-14 This was the first time the monitoring well has been sampled. No volatile organic compounds were detected at concentrations exceeding MCLs.

MW-15 Four volatile organic compounds were detected at concentrations exceeding MCLs during the first year of system operation. CT and TCE have exceeded MCLs during all five quarterly sampling events. PCE has exceeded MCLs during the past four quarterly sampling events, and 1,1,2-Trichloroethane (TCA) has exceeded MCLs during the last two quarterly sampling events. CT (35.2 to 29.0 ug/l) and PCE (8.46 to 6.91 ug/l) concentrations decreased slightly from the previous monitoring period. The TCA (5.72 to 10.2 ug/l) increased slightly from the previous quarter. The TCE (299 ug/l) remained unchanged from the previous quarter.

MW-30 No volatile organic compounds have been detected at concentrations exceeding MCLs during all five quarterly sampling events.

MW-31 Three volatile organic compounds have been detected at concentrations exceeding MCLs during the first year of system operation. DCE exceeded MCLs during the first three sampling events. DCE concentrations increased from 5.98 ug/l (Y1Q4) to 9.89 ug/l (Y2Q1). PCE exceeded the MCL during the Y1Q2 (7.55 ug/l) sampling event and has steadily decreased to <1.0 ug/l (Y1Q4 & Y2Q1). TCE has exceeded MCLs during all five quarterly sampling events. The TCE concentration increased from 18.0 ug/l (Y1Q4) to 25.6 ug/l (Y2Q1) from the previous quarter.

MW-32 Two volatile organic compounds were detected at concentrations exceeding MCLs during the first year of system operation. Both CT and TCE have exceeded MCLs during all five quarterly sampling events. CT concentrations remained relatively unchanged from the Y1Q4 (25.2 ug/l) to the Y2Q1 (25.5 ug/l) sampling event. The TCE concentration increased slightly from Y1Q4 (36.8 ug/l) to the Y2Q1 (41.8 ug/l) sampling event.

MW-33 No volatile organic compounds have been detected at concentrations exceeding MCLs during all five quarterly sampling events.

MW-34 No volatile organic compounds have been detected at concentrations exceeding MCLs during all five quarterly sampling events.

MW-40 No volatile organic compounds have been detected at concentrations exceeding MCLs during all five quarterly sampling events.

MW-44 No volatile organic compounds have been detected at concentrations exceeding MCLs during all five quarterly sampling events.

MW-51 Two volatile organic compounds have been detected at concentrations exceeding MCLs during the first year of system operation. DCE exceeded MCLs during the first four sampling events. The DCE concentration decreased from Y1Q4 (8.91 ug/l) to the Y2Q1 (1.08 ug/l) sampling event. TCE exceeded MCLs during the Y1Q1 sampling event. TCE concentrations have since remained <5.0 ug/l, and decreased from Y1Q4 (2.99 ug/l) to the Y2Q1 (0.7 ug/l) sampling event.

MW-54 Two volatile organic compounds have been detected at concentrations exceeding MCLs during the first year of system operation. CT exceeded MCLs during the Y1Q3 and Y1Q4 sampling events. CT concentrations increased from Y1Q4 (5.02 ug/l) to the Y2Q1 (14.7 ug/l) sampling event. The TCE concentration has exceeded MCLs during all five quarterly sampling events. The TCE concentration increased from Y1Q4 (30.6 ug/l) to the Y2Q1 (43.3 ug/l) sampling event.

MW-56 This was the first time the monitoring well has been sampled. No volatile organic compounds were detected at concentrations exceeding MCLs.

MW-57 This was the first time the monitoring well has been sampled. Three volatile organic compounds CT (39.3 ug/l), PCE (5.38 ug/l) and TCE (50.8 ug/l) were detected at concentrations exceeding MCLs during the Y2Q1 quarterly sampling event.

MW-58 This was the first time the monitoring well has been sampled. No volatile organic compounds were detected at concentrations exceeding MCLs.

MW-59 This was the first time the monitoring well has been sampled. One volatile organic compound PCE (35.0 ug/l) was detected at a concentration exceeding MCLs during the Y2Q1 quarterly sampling event.

MW-67 This was the first time the monitoring well has been sampled. No volatile organic compounds were detected at concentrations exceeding MCLs.

MW-69 This was the first time the monitoring well has been sampled. One volatile organic compound TCE (99.2 ug/l) was detected at a concentration exceeding MCLs during the Y2Q1 quarterly sampling event.

MW-70 This was the first time the monitoring well has been sampled. Six volatile organic compounds, Trans-1,2-DCE (149 ug/l), Cis-1,2-DCE (522 ug/l), PCE (89.7 ug/l), 1,1,2-TCA (39.7 ug/l), TCE (11,700 ug/l) and vinyl chloride (1.88 ug/l) were detected at concentrations exceeding MCLs during the Y2Q1 quarterly sampling event.

MW-71 This was the first time the monitoring well has been sampled. Three volatile organic compounds, CT (53.9 ug/l), PCE (10.0 ug/l) and TCE (330 ug/l) were detected at concentrations exceeding MCLs during the Y2Q1 quarterly sampling event.

4.0 CONCLUSIONS

Conclusions to this quarterly groundwater quality report have been developed from the review of groundwater monitoring efforts and results throughout the quarter. The two major system monitoring methods included analytical sample results and groundwater level measurements.

4.1 Summary of Monitoring Results

- In general, groundwater elevations decreased approximately 0.5 feet from the previous quarter. The large increase in groundwater elevations at MW-33, MW-34 and MW-40 is thought to be a result of inaccurate measurements reported during the Y1Q4 sampling event. This will be evaluated during the Y2Q2 sampling event to be completed mid-May 2000.

- At this time, development of a hydraulic barrier to offsite contaminant migration cannot be confirmed. Additional monitoring wells and/or groundwater modeling is required to confirm that a hydraulic barrier has been established.

- The groundwater flow direction at the site is to the west with minor flow components to the southwest and northwest due to low groundwater elevations observed in MW-34 and MW-40.

- Since system startup, the overall flow direction has remained unchanged. The hydraulic gradient across the middle of the site decreased slightly from 0.045 ft/ft in Nov-99 to 0.02 ft/ft in Feb-00.

- Effluent discharge limits to the POTW were not exceeded during this monitoring period.

- This monitoring period collected groundwater samples from nine additional monitoring wells (MW-14, MW-56, MW-57, MW-58, MW-59, MW-67, MW-69, MW-70 and MW-81) and four recently installed recovery wells (RW-01, RW-1A, RW-1B and RW-02). Monitoring wells MW-57 (south of RW-01), MW-59 (upgradient from RW-06), MW-70 (between RW-04 and RW-05), MW-71 (downgradient from RW-02) and all four recovery wells demonstrated the presence of at least one VOC in excess of MCLs.

5.0 RECOMMENDATIONS FOR FUTURE SAMPLING

This scope should be continued for year two, quarter two. One well (MW-68) was not available for sampling during the Y2Q1 event; therefore, IT recommends adding this well to the Y2Q2 sampling event.

TABLE .
Summary of Analytical Results for Total Effluent
of the Groundwater Extraction System
through Feb-00, Y2Q1

Sample Identification Number			ST-EFF-01	ST-EFF-02*	ST-EFF-03	ST-EFF-04	ST-EFF-04A (Duplicate)	ST-EFF-05	ST-EFF-06	City of Memphis
Laboratory ID No.			9810617-01	9810619-01	9811283-01	9811479-01	9811479-04	9811705-01	9812045-01	Industrial Wastewater
Total System Effluent Sample Description			Week 1 of System Startup Testing	Week 2 of System Startup Testing	Week 1 of System Operation (O&M)	Week 2 of System Operation (O&M)		Week 3 of System Operation (O&M)	Week 4 of System Operation (O&M)	Discharge Max. Levels
Date Effluent Sample Collected			19-Oct-98	26-Oct-98	09-Nov-98	16-Nov-98		23-Nov-98	30-Nov-98	–
Instantaneous Flow Rate			230 GPM/331,200 GPD	155^ GPM/223,200 GPD	199 GPM/286,560 GPD	169.8 GPM/244,512 GPD		158.8 GPM/228,672 GPD	145.0 GPM / 208,800 GPD	581,600 GPD
Totalized Flow			1,382,400 GAL	3,405,480 GAL	5,976,549 GAL	7,748,690 GAL		9,343,370 GAL	10,969,840 GAL	–
LABORATORY ANALYSES	DL	Units								*Monthly Ave / One Day Max.*
pH (Method 150.1)	–	SU	5.6	5.9	5.8	5.6	5.9	5.6	5.8	5.5 to 10.0
TAL Metals (EPA 200 Series)										*mg/L*
Aluminum (Method 200.7)	0.06	mg/L	ND	ND	ND	ND	ND	ND	ND	1 / 2
Arsenic (Method 206.2)	0.003	mg/L	ND	ND	ND	ND	ND	ND	ND	0.04 / 0.1
Barium (Method 200.7)	0.003	mg/L	0.104	0.107	0.109	0.118	0.117	0.112	0.124	NS
Cadmium (Method 200.7)	0.005	mg/L	ND	ND	ND	ND	ND	ND	ND	0.01 / 0.02
Calcium (Method 200.7)	0.015	mg/L	23	21.6	24.7	25.3	25	24.8	26.5	NS
Chromium (Method 200.7)	0.009	mg/L	ND	ND	ND	ND	ND	ND	ND	0.2 / 0.4
Copper (Method 200.7)	0.008	mg/L	ND	ND	ND	ND	ND	ND	ND	0.2 / 0.4
Iron (Method 200.7)	0.009	mg/L	0.07	0.046	0.022	0.019	0.019	0.036	0.01	10 / 20
Lead (Method 200.7)	0.08	mg/L	ND	ND	ND	ND	ND	ND	ND	0.15 / 0.3
Magnesium (Method 200.7)	0.04	mg/L	11.7	11.3	12.6	13	12.8	12.5	13	NS
Manganese (Method 200.7)	0.003	mg/L	ND	ND	ND	0.015	0.015	0.014	0.048	NS
Mercury (Method 245.1)	0.0002	mg/L	ND	ND	ND	ND	ND	ND	ND	0.001 / 0.002
Nickel (Method 200.7)	0.02	mg/L	ND	ND	ND	ND	ND	ND	ND	0.1 / 0.3
Potassium (Method 200.7)	0.25	mg/L	0.916	0.781	0.883	0.975	1.15	0.9	0.703	NS
Sodium (Method 200.7)	0.05	mg/L	27.8	28.3	27.7	27.9	28.7	28.6	28.1	NS
Zinc (Method 200.7)	0.01	mg/L	0.047	0.129	0.095	0.098	0.095	0.063	0.062	0.3 / 1.0
TCL Volatile Organics (Method 8260B)										*ug/L*
Carbon Tetrachloride	1	ug/L	2.9	4.3	3.06	3.27	3.38	4.07	3.22	20 / 40
Chloroform	1	ug/L	13.6	12.9	14.9	18.1	20.9	20.6	16.4	20 / 40
1,1-Dichloroethane	1	ug/L	ND	ND	ND	ND	ND	ND	ND	NS
1,1-Dichloroethene	1	ug/L	11.6	5.42	9.99	13.9	15.6	20.3	14.6	50 / 100
Cis 1,2-Dichlorothene	1	ug/L	29.2	43.6	30	33.3	36.8	37.3	32.6	50 / 100
Trans 1,2-Dichloroethene	1	ug/L	5.96	9.27	6.68	7.47	7.92	8.42	7.47	50 / 100
Methylene Chloride	5	ug/L	ND	ND	ND	ND	ND	ND	ND	10 / 20
1,1,2,2-Tetrachloroethane	1/50/100	ug/L	87.1	159	234	234	257	272	178	500 / 1000
Tetrachloroethene	1	ug/L	25.7	22.6	28.9	30	29.7	34.4	25.6	60 / 120
Toluene	1	ug/L	ND	ND	ND	ND	ND	ND	ND	20 / 40
1,1,1-Trichloroethane	1	ug/L	ND	ND	ND	ND	ND	1	ND	10 / 20
1,1,2-Trichloroethane	1	ug/L	1.61	2.82	1.59	1.46	1.5	1.3	1.1	50 / 100
Trichloroethene	1/50/100	ug/L	108	226	195	225	220	217	180	400 / 800
TCL Semi-Volatile Organics (Method 8270C)										*ug/L*
Bis(2-ethylhexyl)phthalate	10	ug/L	ND	23.6B	ND	ND	ND	26B	ND	10 / 20
Di-n-butyl Phthalate	5	ug/L	91.2	2.5J	ND	ND	ND	ND	ND	30 / 60
Naphthalene	2	ug/L	ND	ND	ND	ND	ND	ND	ND	10 / 20
Phenol	5	ug/L	ND	ND	ND	ND	ND	ND	ND	10 / 20

NOTE. Compounds included in this table are those listed in Section D.3 and detected as part of the analytical methods conducted per Section F.1 of Industrial Wastewater Discharge Agreement.
All analyses performed by Environmental Testing & Consulting, Inc., Memphis, TN
* = Recovery well RW-08 was not in operation at the time of sample collection
** = Recovery well RW-08 was not in operation at the time of sample collection
^ = Recovery well RW-03 was not in operation at the time of sample collection.
NS = no standard listed in the Industrial Wastewater Discharge Agreement
J = estimated value - presence of the compound was confirmed but less than the reported DL
J* = estimated value, quality control recoveries outside acceptance ranges
ND = not detected
B = analyte detected in associated method and/or equipment blank
mg/L = milligrams per liter
ug/L = micrograms per liter
DL = detection limit
GPM = gallons per minute
GPD = gallons per day
91.2 = bold number indicates that value exceeds Discharge Max. Levels
A=Effluent meter zeroed out 03-Nov-98

TABLE .
Summary of Analytical Results for Total Effluent
of the Groundwater Extraction System
through Feb-00, Y2Q1

Sample Identification Number			ST-EFF-07*	ST-EFF-07A* (Duplicate)	ST-EFF-08	ST-EFF-09	ST-EFF-HG-09A	ST-EFF-HG-05 (Duplicate)	ST-EFF-HG-09B	ST-EFF-HG-09C	City of Memphis
Laboratory ID No.			9812764-01	9812764-02	9901688-01	9902664-01	9902702-01	9902702-02	9902758-01	9902775-01	Industrial Wastewater
Total System Effluent Sample Description			Week 7 of System Operation (O&M)		Week 13 of System Operation (O&M)	Week 17 of System Operation (O&M)					Discharge Max. Levels
Date Effluent Sample Collected			18-Dec-98		26-Jan-99	22-Feb-99	23-Feb-99		24-Feb-99	25-Feb-99	--
Instantaneous Flow Rate			98.4* GPM/141,696 GPD		116.7 GPM/168,048 GPD	108.1 GPM/155,664 GPD	80.7 GPM**/116,208 GPD		79.2 GPM** / 114,048 GPD	104.2 GPM/150,048 GPD	561,600 GPD
Totalized Flow			14,448,100 GAL		20,527,972 GAL	24,668,250 GAL	24,817,070 GAL		24,924,750 GAL	25,017,630 GAL	--
LABORATORY ANALYSES	DL	Units									*Monthly Ave / One Day Max.*
pH (Method 150.1)	--	SU	5.8	5.8	6.5	6.1	--	--	--	--	5.5 to 10.0
TAL Metals (EPA 200 Series)											mg/L
Aluminum (Method 200.7)	0.06	mg/L	ND	ND	ND	ND	--	--	--	--	1 / 2
Arsenic (Method 206.2)	0.003	mg/L	ND	ND	ND	ND	--	--	--	--	0.04 / 0.1
Barium (Method 200.7)	0.003	mg/L	0.114	0.118	0.119	0.109	--	--	--	--	NS
Cadmium (Method 200.7)	0.005	mg/L	ND	ND	ND	ND	--	--	--	--	0.01 / 0.02
Calcium (Method 200.7)	0.015	mg/L	25.2	26.3	27.1	23.1	--	--	--	--	NS
Chromium (Method 200.7)	0.009	mg/L	ND	ND	ND	ND	--	--	--	--	0.2 / 0.4
Copper (Method 200.7)	0.008	mg/L	ND	ND	ND	ND	--	--	--	--	0.2 / 0.4
Iron (Method 200.7)	0.009	mg/L	0.020	0.014	0.044	0.151	--	--	--	--	10 / 20
Lead (Method 200.7)	0.06	mg/L	ND	ND	ND	ND	--	--	--	--	0.15 / 0.3
Magnesium (Method 200.7)	0.04	mg/L	11.9	12.4	12.5	11.3	--	--	--	--	NS
Manganese (Method 200.7)	0.003	mg/L	0.097	0.101	0.175	0.049	--	--	--	--	NS
Mercury (Method 245.1)	0.0002	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	0.001 / 0.002
Nickel (Method 200.7)	0.02	mg/L	ND	ND	ND	ND	--	--	--	--	0.1 / 0.3
Potassium (Method 200.7)	0.25	mg/L	0.808	0.818	0.927	0.951	--	--	--	--	NS
Sodium (Method 200.7)	0.05	mg/L	25.3	26.8	26.5	24.1	--	--	--	--	NS
Zinc (Method 200.7)	0.01	mg/L	0.115	0.061	0.048	0.065	--	--	--	--	0.3 / 1.0
TCL Volatile Organics (Method 8260B)											ug/L
Carbon Tetrachloride	1	ug/L	4.50	4.72	2.32	2.53	--	--	--	--	20 / 40
Chloroform	1	ug/L	10.1	10.3	9.95	6.64	--	--	--	--	20 / 40
1,1-Dichloroethane	1	ug/L	ND	ND	ND	ND	--	--	--	--	NS
1,1-Dichloroethene	1	ug/L	4.8	5.36	13.3	19.5	--	--	--	--	50 / 100
Cis 1,2-Dichlorothene	1	ug/L	43.4	46.7	34	36.2	--	--	--	--	50 / 100
Trans 1,2-Dichloroethene	1	ug/L	9.78	10.4	7.85	11	--	--	--	--	50 / 100
Methylene Chloride	5	ug/L	ND	ND	ND	ND	--	--	--	--	10 / 20
1,1,2,2-Tetrachloroethane	1/50/100	ug/L	175	189	80.1	46.8	--	--	--	--	500 / 1000
Tetrachloroethene	1	ug/L	11.8	13.4	17.9	16.5	--	--	--	--	80 / 120
Toluene	1	ug/L	ND	ND	ND	ND	--	--	--	--	20 / 40
1,1,1-Trichloroethane	1	ug/L	ND	ND	ND	ND	--	--	--	--	10 / 20
1,1,2-Trichloroethane	1	ug/L	ND	1.06	ND	ND	--	--	--	--	50 / 100
Trichloroethene	1/50/100	ug/L	183	196	116	144	--	--	--	--	400 / 800
TCL Semi-Volatile Organics (Method 8270C)											ug/L
Bis(2-ethylhexyl)phthalate	10	ug/L	11.9	11.6	ND	ND	--	--	--	--	10 / 20
Di-n-butyl Phthalate	5	ug/L	ND	ND	ND	ND	--	--	--	--	30 / 60
Naphthalene	2	ug/L	ND	ND	ND	ND	--	--	--	--	10 / 20
Phenol	5	ug/L	ND	ND	ND	ND	--	--	--	--	10 / 20

NOTE. Compounds included in this table are those listed in Section D.3 and detected as part of the analytical methods conducted per Section F.1 of Industrial Wastewater Discharge Agreement.

All analyses performed by Environmental Testing & Consulting, Inc., Memphis, TN

* = Recovery well RW-09 was not in operation at the time of sample collection

** = Recovery well RW-08 was not in operation at the time of sample collection

A = Recovery well RW-03 was not in operation at the time of sample collection.

NS = no standard listed in the Industrial Wastewater Discharge Agreement

J = estimated value - presence of the compound was confirmed but less than the reported DL

J* = estimated value, quality control recoveries outside acceptance ranges

ND = not detected

mg/L = milligrams per liter

DL = detection limit

GPD = gallons per day

A=Effluent meter zeroed out 03-Nov-99

B = analyte detected in associated method and/or equipment blank

ug/L = micrograms per liter

GPM = gallons per minute

91.2 = bold number indicates that value exceeds Discharge Max. Levels

TABLE .
Summary of Analytical Results for Total Effluent
of the Groundwater Extraction System
through Feb-00, Y2Q1

Sample Identification Number			ST-EFF-10	ST-EFF-11	ST-INF-11 (Duplicate)	ST-EFF-12	ST-EFF-13	ST-EFF-14	ST-INF-14 (Duplicate)	City of Memphis
Laboratory ID No.				9904750-01	9904750-02	9905639-01	9907002-01	9907539-01	9907539-02	Industrial Wastewater
Total System Effluent Sample Description			Week 21 of System Operation (O&M)	Week 26 of System Operation (O&M)		Week 30 of System Operation (O&M)	Week 35 of System Operation (O&M)	Week 38 of System Operation (O&M)		Discharge Max. Levels
Date Effluent Sample Collected			26-Mar-99	27-Apr-99		24-May-99	30-Jun-99	21-Jul-99		–
Instantaneous Flow Rate			94.3 GPM/135,792 GPD	105.3 GPM/151,632 GPD		87.9 GPM/126,576 GPD	81.3 GPM/117,072 GPD	80.9 GPM / 116,496 GPD		561,600 GPD
Totalized Flow			28,964,822 GAL	32,187,260 GAL		36,220,118 GAL	40,550,662 GAL	42,647,212 GAL		–
LABORATORY ANALYSES	DL	Units								*Monthly Ave / One Day Max.*
pH (Method 150.1)	–	SU	5.7	6.6	6.2	6.0	5.9	5.8	5.9	5.5 to 10.0
TAL Metals (EPA 200 Series)										mg/L
Aluminum (Method 200.7)	0.06	mg/L	ND	ND	ND	ND	ND	ND	ND	1 / 2
Arsenic (Method 206.2)	0.003	mg/L	ND	ND	ND	ND	ND	ND	ND	0.04 / 0.1
Barium (Method 200.7)	0.003	mg/L	0.106	0.108	0.114	0.11	0.107	0.101	0.099	NS
Cadmium (Method 200.7)	0.005	mg/L	ND	ND	ND	ND	ND	ND	ND	0.01 / 0.02
Calcium (Method 200.7)	0.015	mg/L	22.7	23	22.8	23.1	21.4	21	21.2	NS
Chromium (Method 200.7)	0.009	mg/L	ND	ND	ND	ND	ND	ND	ND	0.2 / 0.4
Copper (Method 200.7)	0.008	mg/L	ND	ND	ND	ND	ND	ND	ND	0.2 / 0.4
Iron (Method 200.7)	0.009	mg/L	0.034	0.025	0.034	0.012	0.016	0.016	0.011	10 / 20
Lead (Method 200.7)	0.06	mg/L	ND	ND	ND	ND	ND	ND	ND	0.15 / 0.3
Magnesium (Method 200.7)	0.04	mg/L	11.3	11.6	11.7	11.4	10.5	10.6	10.6	NS
Manganese (Method 200.7)	0.003	mg/L	0.04	0.029	0.03	0.031	0.027	0.014	0.059	NS
Mercury (Method 245.1)	0.0002	mg/L	ND	ND	ND	ND	ND	ND	ND	0.001 / 0.002
Nickel (Method 200.7)	0.02	mg/L	ND	ND	ND	ND	ND	ND	ND	0.1 / 0.3
Potassium (Method 200.7)	0.25	mg/L	0.861	0.728	0.859	0.844	0.767	0.835	0.806	NS
Sodium (Method 200.7)	0.05	mg/L	23.8	22.9	24.1	24.2	23.8	22.8	22.4	NS
Zinc (Method 200.7)	0.01	mg/L	0.069	0.04	0.045	0.047	0.026	0.028	0.03	0.3 / 1.0
TCL Volatile Organics (Method 8260B)										ug/L
Carbon Tetrachloride	1	ug/L	2.17	1.47	1.61	2.25	2.29	1.48	1.29	20 / 40
Chloroform	1	ug/L	5.59	6.83	7.15	4.54	9.3	8.46	7.93	20 / 40
1,1-Dichloroethane	1	ug/L	ND	ND	ND	ND	ND	ND	ND	NS
1,1-Dichloroethene	1	ug/L	13.9	11.8	11.8	16.2	17.8	14.2	13.4	50 / 100
Cis 1,2-Dichlorothene	1	ug/L	37	37	37.2	42.8	48.3	34.1	32.5	50 / 100
Trans 1,2-Dichloroethene	1	ug/L	10.8	9.77	9.7	12.0	13.7	10.1	9.66	50 / 100
Methylene Chloride	5	ug/L	ND	ND	ND	ND	ND	ND	ND	10 / 20
1,1,2,2-Tetrachloroethane	1/50/100	ug/L	29.3	38.9	39.2	56.1	76.4	65.1	59.8	500 / 1000
Tetrachloroethene	1	ug/L	18.7	12.9	13.6	16.1	17	14.6	13.3	60 / 120
Toluene	1	ug/L	ND	ND	ND	ND	1.5B	1	ND	20 / 40
1,1,1-Trichloroethane	1	ug/L	ND	ND	ND	ND	ND	ND	ND	10 / 20
1,1,2-Trichloroethane	1	ug/L	ND	ND	ND	ND	ND	ND	ND	50 / 100
Trichloroethene	1/50/100	ug/L	116	116	117	150	163	117	110	400 / 800
TCL Semi-Volatile Organics (Method 8270C)										ug/L
Bis(2-ethylhexyl)phthalate	10	ug/L	24.4B	ND	14.1B	13.6B	ND	ND	ND	10 / 20
Di-n-butyl Phthalate	5	ug/L	ND	ND	ND	ND	ND	ND	ND	30 / 60
Naphthalene	2	ug/L	ND	ND	ND	ND	ND	ND	ND	10 / 20
Phenol	5	ug/L	ND	ND	ND	ND	ND	ND	ND	10 / 20

NOTE. Compounds included in this table are those listed in Section D.3 and detected as part of the analytical methods conducted per Section F.1 of Industrial Wastewater Discharge Agreement.
All analyses performed by Environmental Testing & Consulting, Inc., Memphis, TN
* = Recovery well RW-08 was not in operation at the time of sample collection
** = Recovery well RW-08 was not in operation at the time of sample collection
A = Recovery well RW-03 was not in operation at the time of sample collection.
NS = no standard listed in the Industrial Wastewater Discharge Agreement
J = estimated value - presence of the compound was confirmed but less than the reported DL
J* = estimated value, quality control recoveries outside acceptance ranges
ND = not detected
mg/L = milligrams per liter
DL = detection limit
GPD = gallons per day
A=Effluent meter zeroed out 03-Nov-99
B = analyte detected in associated method and/or equipment blank
ug/L = micrograms per liter
GPM = gallons per minute
81.2 = bold number indicates that value exceeds Discharge Max. Levels

TABLE .
Summary of Analytical Results for Total Effluent
of the Groundwater Extraction System
through Feb-00, Y2Q1

Sample Identification Number			ST-EFF-15	ST-INF-15 (Duplicate)	ST-EFF-16	ST-EFF-17	ST-EFF-018	ST-EFF-118 (Duplicate)	ST-EFF-019	ST-EFF-117 (Duplicate)	City of Memphis
Laboratory ID No.			9908593-02	9908593-01	9909814-01	9910519-01	9911451-01	9911451-02	9912495-01	9912495-02	Industrial Wastewater
Total System Effluent Sample Description			Week 43 of System Operation (O&M)		Week 47 of System Operation (O&M)	Week 51 of System Operation (O&M)	Week 55 of System Operation (O&M)		Week 59 of System Operation (O&M)		
Date Effluent Sample Collected			23-Aug-99		22-Sep-99	21-Oct-99	16-Nov-99		15-Dec-99		--
Instantaneous Flow Rate			74.7 GPM / 107,578 GPD		72.2 GPM/104,112 GPD	72.3 GPM/104,112 GPD	76.2 GPM/109,728 GPD		71.5 GPM/102,960 GPD		561,600 GPD
Totalized Flow			48,332,590 GAL		49,474,353 GAL	52,388,107 GAL	55,040,162 GAL		57,672,540 GAL		--
LABORATORY ANALYSES	DL	Units									*Monthly Ave / One Day Max*
pH (Method 150.1)	--	SU	5.7	5.7	6.0	5.7	6.1		5.9	5.7	5.5 to 10.0
TAL Metals (EPA 200 Series)											*mg/L*
Aluminum (Method 200.7)	0.06	mg/L	0.07	ND	ND	ND	ND	ND	ND	ND	1 / 2
Arsenic (Method 206.2)	0.003	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	0.04 / 0.1
Barium (Method 200.7)	0.003	mg/L	0.099	0.1	0.098	0.099	0.1	0.101	0.099	0.097	NS
Cadmium (Method 200.7)	0.005	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	0.01 / 0.02
Calcium (Method 200.7)	0.015	mg/L	21.1	20.7	20.6	20.6	21.1	21.3	20.1	19.8	NS
Chromium (Method 200.7)	0.009	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	0.2 / 0.4
Copper (Method 200.7)	0.008	mg/L	ND	ND	ND	ND	0.011	ND	ND	ND	0.2 / 0.4
Iron (Method 200.7)	0.009	mg/L	0.1	0.093	0.068	0.018	0.025	0.034	0.019	0.015	10 / 20
Lead (Method 200.7)	0.06	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	0.15 / 0.3
Magnesium (Method 200.7)	0.04	mg/L	10.6	10.6	10.3	10.7	10.5	10.6	10.3	10.2	NS
Manganese (Method 200.7)	0.003	mg/L	0.028	0.026	0.018	0.020	0.022	0.022	0.007	0.007	NS
Mercury (Method 245.1)	0.0002	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	0.001 / 0.002
Nickel (Method 200.7)	0.02	mg/L	ND	ND	ND	ND	0.066	ND	ND	ND	0.1 / 0.3
Potassium (Method 200.7)	0.25	mg/L	0.798	0.79	0.852	0.926	1.16	0.82	0.84	0.764	NS
Sodium (Method 200.7)	0.05	mg/L	24.6	25.3	22.2	23.0	22.8	22.4	23.1	21.8	NS
Zinc (Method 200.7)	0.01	mg/L	0.033	ND	0.043	0.028	0.07	0.055	0.047	0.045	0.3 / 1.0
TCL Volatile Organics (Method 8260B)											*ug/L*
Carbon Tetrachloride	1	ug/L	1.21	1.18	2.05	2.22	1.77	1.69	1.18	0.18J	20 / 40
Chloroform	1	ug/L	9.38	9.78	9.88	8.30	7.41	7.49	8.81	8.4	20 / 40
1,1-Dichloroethane	1	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	NS
1,1-Dichloroethene	1	ug/L	17	18	19.3	16.6	16.6	16.7	15.7	10.2	50 / 100
Cis 1,2-Dichlorothene	1	ug/L	47.1	50.2	49.8	44.1	48.9	49.4	47	32.5	50 / 100
Trans 1,2-Dichloroethene	1	ug/L	14.8	14.9	14.5	13.0	12.7	13.0	12.6	8.4	50 / 100
Methylene Chloride	5	ug/L	11.9B	12.8B	ND	ND	ND	ND	ND	ND	10 / 20
1,1,2,2-Tetrachloroethane	1/50/100	ug/L	137	131	148	183	120	118	137	144	500 / 1000
Tetrachloroethene	1	ug/L	19.8	19.8	21.8	19.2	17.9	17.8	19.1	14.2	60 / 120
Toluene	1	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	20 / 40
1,1,1-Trichloroethane	1	ug/L	ND	ND	ND	ND	ND	ND	0.61J	0.43J	10 / 20
1,1,2-Trichloroethane	1	ug/L	ND	ND	ND	ND	ND	ND	0.89J	ND	50 / 100
Trichloroethene	1/50/100	ug/L	207	216	214	208	177	181	174	134	400 / 800
TCL Semi-Volatile Organics (Method 8270C)											*ug/L*
Bis(2-ethylhexyl)phthalate	10	ug/L	ND	ND	10.6B	ND	ND	ND	ND	13.7B	10 / 20
Di-n-butyl Phthalate	5	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	30 / 60
Naphthalene	2	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	10 / 20
Phenol	5	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	10 / 20

NOTE: Compounds included in this table are those listed in Section D.3 and detected as part of the analytical methods conducted per Section F.1 of Industrial Wastewater Discharge Agreement.
All analyses performed by Environmental Testing & Consulting, Inc., Memphis, TN
* = Recovery well RW-08 was not in operation at the time of sample collection
** = Recovery well RW-06 was not in operation at the time of sample collection
A = Recovery well RW-03 was not in operation at the time of sample collection.
NS = no standard listed in the Industrial Wastewater Discharge Agreement
J = estimated value - presence of the compound was confirmed but less than the reported DL
J* = estimated value, quality control recoveries outside acceptance ranges
ND = not detected
mg/L = milligrams per liter
DL = detection limit
GPD = gallons per day
A=Effluent meter zeroed out 03-Nov-99
B = analyte detected in associated method and/or equipment blank
ug/L = micrograms per liter
GPM = gallons per minute
81.2 = bold number indicates that value exceeds Discharge Max. Levels

TABLE .
Summary of Analytical Results for Total Effluent
of the Groundwater Extraction System
through Feb-00, Y2Q1

Sample Identification Number			ST-EFF-020	ST-EFF-021	ST-EFF-121 (Duplicate)	City of Memphis
Laboratory ID No.			0001169-01	0002422-01	0002422-02	Industrial Wastewater
Total System Effluent Sample Description			Week 63 of System Operation (O&M)	Week 68 of System Operation (O&M)		
Date Effluent Sample Collected			10-Jan-00	15-Feb-00		--
Instantaneous Flow Rate			^64.9 GPM/93,456 GPD	70.6 GPM/101,664 GPD		581,600 GPD
Totalized Flow			59,949,612 GAL	62,926,034 GAL		--
LABORATORY ANALYSES	DL	Units				Monthly Ave / One Day Max.
pH (Method 150.1)	--	SU	7.0	6.1	5.4	5.5 to 10.0
TAL Metals (EPA 200 Series)						mg/L
Aluminum (Method 200.7)	0.06	mg/L	ND	ND	ND	1 / 2
Arsenic (Method 206.2)	0.003	mg/L	ND	ND	ND	0.04 / 0.1
Barium (Method 200.7)	0.003	mg/L	0.099	0.106	0.108	NS
Cadmium (Method 200.7)	0.005	mg/L	ND	ND	ND	0.01 / 0.02
Calcium (Method 200.7)	0.015	mg/L	19.9	21.0	21.6	NS
Chromium (Method 200.7)	0.009	mg/L	ND	ND	ND	0.2 / 0.4
Copper (Method 200.7)	0.008	mg/L	ND	ND	ND	0.2 / 0.4
Iron (Method 200.7)	0.009	mg/L	0.021	0.114	0.036	10 / 20
Lead (Method 200.7)	0.06	mg/L	ND	ND	ND	0.15 / 0.3
Magnesium (Method 200.7)	0.04	mg/L	10.6	10.8	11.3	NS
Manganese (Method 200.7)	0.003	mg/L	ND	0.025	0.025	NS
Mercury (Method 245.1)	0.0002	mg/L	ND	ND	ND	0.001 / 0.002
Nickel (Method 200.7)	0.02	mg/L	ND	ND	ND	0.1 / 0.3
Potassium (Method 200.7)	0.25	mg/L	0.752	0.816	0.874	NS
Sodium (Method 200.7)	0.05	mg/L	22.6	22.7	23.5	NS
Zinc (Method 200.7)	0.01	mg/L	0.038	0.305	0.053	0.3 / 1.0
TCL Volatile Organics (Method 8260B)						ug/L
Carbon Tetrachloride	1	ug/L	1.14	1.71	1.67	20 / 40
Chloroform	1	ug/L	6.34	6.51	6.58	20 / 40
1,1-Dichloroethane	1	ug/L	ND	ND	ND	NS
1,1-Dichloroethene	1	ug/L	ND	13.8	14.1	50 / 100
Cis 1,2-Dichlorothene	1	ug/L	46	43.8	43.7	50 / 100
Trans 1,2-Dichloroethene	1	ug/L	13.4	12.3	12.0	50 / 100
Methylene Chloride	5	ug/L	ND	ND	ND	10 / 20
1,1,2,2-Tetrachloroethane	1/50/100	ug/L	218	177	189	500 / 1000
Tetrachloroethene	1	ug/L	17.7	14.9J*	15.3J*	60 / 120
Toluene	1	ug/L	ND	ND	ND	20 / 40
1,1,1-Trichloroethane	1	ug/L	ND	0.48J	0.48J	10 / 20
1,1,2-Trichloroethane	1	ug/L	ND	0.80J	0.75J	50 / 100
Trichloroethene	1/50/100	ug/L	189	177	179	400 / 800
TCL Semi-Volatile Organics (Method 8270C)						ug/L
Bis(2-ethylhexyl)phthalate	10	ug/L	ND	ND	ND	10 / 20
Di-n-butyl Phthalate	5	ug/L	ND	ND	ND	30 / 60
Naphthalene	2	ug/L	ND	ND	ND	10 / 20
Phenol	5	ug/L	ND	ND	ND	10 / 20

NOTE: Compounds included in this table are those listed in Section D.3 and detected as part of the analytical methods conducted per Section F
All analyses performed by Environmental Testing & Consulting, Inc., Memphis, TN
^ = Recovery well RW-09 was not in operation at the time of sample collection
** = Recovery well RW-08 was not in operation at the time of sample collection
^ = Recovery well RW-03 was not in operation at the time of sample collection.
NS = no standard listed in the Industrial Wastewater Discharge Agreement
J = estimated value - presence of the compound was confirmed but less than the reported DL
J* = estimated value, quality control recoveries outside acceptance ranges
ND = not detected
mg/L = milligrams per liter
DL = detection limit
GPD = gallons per day
A=Effluent meter zeroed out 03-Nov-99

TABLE 2
Quarterly Analytical Results for TCL Volatile Organics on Sampled Monitoring Wells

Sample Identification Number			MW-14-Y2Q1	MW-15-Y1Q1	MW-15-Y1Q2	MW-15-Y1Q3	MW-15-Y1Q4	MW-15-Y2Q1	*Maximum Contaminant Level (MCL)-Primary Drinking Water Standards*	*USEPA Region III RBCs - Tap Water (October 7, 1999)*
Laboratory & Lab Sample ID No.			0002480-08	9902125-12	9905638-01	9908741-10	9911147-12	0002423-015		
Date Sample Collected			16-Feb-00	03-Feb-99	24-May-99	27-Aug-99	03-Nov-99	15-Feb-00		
pH			5.7	4.6	4.6	7.6	5.8	5.8		
Conductivity (umhos)			218	208	196	157	204	240		
Temperature (°C)			17.6	NA	17.9	20	17.1	17.8		
Turbidity (ntu)			184	NA	10	221	8.71	16.3		
LABORATORY ANALYSES	**DL**	**Units**								
TCL Volatile Organics (Method 8260B)										
Bromodichloromethane	1/100	ug/L	ND	ND	1.35	1.12	ND	1.42	NS	0.17
Carbon Tetrachloride	1/100	ug/L	ND	27.9	79.6	39.2	35 2	29	5	0.16
Chlorobenzene	1/100	ug/L	ND	ND	ND	ND	ND	ND	100	110
Chloroform	1/100	ug/L	ND	308	1610	1270	1,020	1,060	NS	0 15
1,1-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	ND	NS	800
1,2-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	ND	5	0.12
1,1-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	ND	7	0 044
Trans-1,2-Dichloroethene	1/100	ug/L	ND	2.13	8.26	4.29	4.08	4 54	100	120
Cis-1,2-Dichloroethene	1/100	ug/L	ND	5.96	22.6	12 4	10.8	14.3	70	61
1,1,2,2-Tetrachloroethane	1/100	ug/L	ND	ND	31.5	187	291	522	NS	0.053
Tetrachloroethene	1/100	ug/L	ND	4.75	20.6	10.0	8.46	6.91	5	1 1
Toluene	1/100	ug/L	ND	ND	ND	ND	ND	ND	1000	750
1,1,1-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	ND	200	540
1,1,2-Trichloroethane	1/100	ug/L	ND	ND	2.66	4.18	5 72	10.2	5	0.19
Trichloroethene	1/100	ug/L	ND	115	518	331	299	299	5	1.6
Vinyl Chloride	1/100	ug/L	ND	ND	ND	ND	ND	ND	2	0.019

Only compounds detected are listed.
ug/L = milligrams per liter
DL = detection limit
TCL = Target Compound List
BDL = below detection limit
MCL = Maximum Contaminant Level - Primary Drinking Water Standards
RBCs = Risk Based Contaminants
NS = no standard
NA = not available
B = analyte detected in associated method and/or equipment blank
J = estimated value - presence of the compound was confirmed but less than the reported DL
J* = estimated value - quality control recoveries outside acceptance ranges.

TABLE 2
Quarterly Analytical Results for TCL Volatile Organics on Sampled Monitoring Wells

Sample Identification Number			MW-30-Y1Q1	MW-30-Y1Q2	MW-30-Y1Q3	MW-30-Y1Q4	MW-30-Y2Q1	*Maximum Contaminant Level (MCL)-Primary Drinking Water Standards*	*USEPA Region III RBCs - Tap Water (October 7,1999)*
Laboratory & Lab Sample ID No.			9902125-04	9905638-10	9908741-02	9911147-02	0002423-02		
Date Sample Collected			02-Feb-99	24-May-99	26-Aug-99	02-Nov-99	15-Feb-00		
pH			6.1	5.4	7.4	5.7	6.3		
Conductivity (umhos)			NA	174	228	300	325		
Temperature (°C)			15.1	19.6	21.3	16.4	14.8		
Turbidity (ntu)			NA	>999	>999	8.52	>999		
LABORATORY ANALYSES	**DL**	**Units**							
TCL Volatile Organics (Method 8260B)									
Bromodichloromethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.17
Carbon Tetrachloride	1/100	ug/L	ND	ND	ND	ND	ND	5	0.16
Chlorobenzene	1/100	ug/L	ND	ND	ND	ND	ND	100	110
Chloroform	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.15
1,1-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	800
1,2-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0.12
1,1-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	7	0.044
Trans-1,2-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	100	120
Cis-1,2-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	70	61
1,1,2,2-Tetrachloroethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.053
Tetrachloroethene	1/100	ug/L	ND	ND	ND	ND	ND	5	1.1
Toluene	1/100	ug/L	ND	ND	ND	ND	ND	1000	750
1,1,1-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	200	540
1,1,2-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0.19
Trichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	5	1.6
Vinyl Chloride	1/100	ug/L	ND	ND	ND	ND	ND	2	0.019

Only compounds detected are listed.
ug/L = milligrams per liter
DL = detection limit
TCL = Target Compound List
BDL = below detection limit
MCL = Maximum Contaminant Level - Primary Drinking Water Standards
RBCs = Risk Based Contaminants
NS = no standard
NA = not available
B = analyte detected in associated method and/or equipment blank
J = estimated value - presence of the compound was confirmed but less than the reported DL
J* = estimated value - quality control recoveries outside acceptance ranges

TABLE 2
Quarterly Analytical Results for TCL Volatile Organics on Sampled Monitoring Wells

Sample Identification Number			MW-31-Y1Q1	MW-31-Y1Q2	MW-31-Y1Q3	MW-31-Y1Q4	MW-31-Y2Q1	*Maximum Contaminant Level (MCL)-Primary Drinking Water Standards*	*USEPA Region III RBCs - Tap Water (October 7,1999)*
Laboratory & Lab Sample ID No.			9902125-11	9905638-16	9908741-08	9911147-09	002423-02		
Date Sample Collected			03-Feb-99	25-May-99	27-Aug-99	03-Nov-99	15-Feb-00		
pH			4.7	6.4	7.2	5.9	6.0		
Conductivity (umhos)			376	262	275	256	236		
Temperature (°C)			NA	18.1	19.2	17.9	17.5		
Turbidity (ntu)			NA	7	244	9.74	182		
LABORATORY ANALYSES	**DL**	**Units**							
TCL Volatile Organics (Method 8260B)									
Bromodichloromethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.17
Carbon Tetrachloride	1/100	ug/L	1.51	ND	0.59J	ND	ND	5	0.16
Chlorobenzene	1/100	ug/L	ND	ND	ND	ND	ND	100	110
Chloroform	1/100	ug/L	7.22	ND	1.66	0.92J	1.19	NS	0.15
1,1-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	800
1,2-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0.12
1,1-Dichloroethene	1/100	ug/L	7.86	33.3	7.90	5.98	9.89	7	0.044
Trans-1,2-Dichloroethene	1/100	ug/L	22.2	2.14	4.66	2.52	3.37	100	120
Cis-1,2-Dichloroethene	1/100	ug/L	58.9	4.78	4.34	5.09	6.89	70	61
1,1,2,2-Tetrachloroethane	1/100	ug/L	3.22	ND	ND	ND	ND	NS	0.053
Tetrachloroethene	1/100	ug/L	4.25	7.55	1.31	0.90J	0.64J	5	1.1
Toluene	1/100	ug/L	ND	ND	ND	ND	ND	1000	750
1,1,1-Trichloroethane	1/100	ug/L	1.26	ND	ND	ND	ND	200	540
1,1,2-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0.19
Trichloroethene	1/100	ug/L	140	23.9	33.7	18.0	25.6	5	1.6
Vinyl Chloride	1/100	ug/L	ND	ND	ND	ND	ND	2	0.019

Only compounds detected are listed
ug/L = milligrams per liter
DL = detection limit
TCL = Target Compound List
BDL = below detection limit
MCL = Maximum Contaminant Level - Primary Drinking Water Standards
RBCs = Risk Based Contaminants
NS = no standard
NA = not available
B = analyte detected in associated method and/or equipment blank
J = estimated value - presence of the compound was confirmed but less than the reported DL
J* = estimated value - quality control recoveries outside acceptance ranges

TABLE 2
Quarterly Analytical Results for TCL Volatile Organics on Sampled Monitoring Wells

Sample Identification Number			MW-32-Y1Q1	MW-32-Y1Q2	MW-32-Y1Q3	MW-32-Y1Q4	MW-32-Y2Q1	*Maximum Contaminant Level (MCL)-Primary Drinking Water Standards*	*USEPA Region III RBCs - Tap Water (October 7,1999)*
Laboratory & Lab Sample ID No.			9902125-09	9905638-14	9908741-06	9911147-10	0002423-07		
Date Sample Collected			03-Feb-99	25-May-99	26-Aug-99	03-Nov-99	15-Feb-00		
pH			5.8	6.2	7.4	6.0	6.5		
Conductivity (umhos)			432	283	224	NA	278		
Temperature (°C)			NA	18.2	20.5	16.8	17.1		
Turbidity (ntu)			NA	0	>999	9.75	>999		
LABORATORY ANALYSES	**DL**	**Units**							
TCL Volatile Organics (Method 8260B)									
Bromodichloromethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.17
Carbon Tetrachloride	1/100	ug/L	25.2	14.2	17.3	25.2	25.5	5	0.16
Chlorobenzene	1/100	ug/L	ND	ND	ND	ND	ND	100	110
Chloroform	1/100	ug/L	7.89	32.2	76.9	73.0	77.2	NS	0.15
1,1-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	800
1,2-Dichloroethane	1/100	ug/L	ND	ND	ND	N	ND	5	0.12
1,1-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	7	0.044
Trans-1,2-Dichloroethene	1/100	ug/L	3.82	1.76	0.99J	1.01	1.12	100	120
Cis-1,2-Dichloroethene	1/100	ug/L	30.5	16.7	4.64	4.59	5.07	70	61
1,1,2,2-Tetrachloroethane	1/100	ug/L	5.67	4.42	0.92J	ND	ND	NS	0.053
Tetrachloroethene	1/100	ug/L	1.16	1.28	2.22	2.63	2.34	5	1.1
Toluene	1/100	ug/L	ND	ND	ND	ND	ND	1000	750
1,1,1-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	200	540
1,1,2-Trichloroethane	1/100	ug/L	1 54	ND	ND	ND	ND	5	0.19
Trichloroethene	1/100	ug/L	31.9	28.1	34.6	36.8	41.8	5	1.6
Vinyl Chloride	1/100	ug/L	ND	ND	ND	N	ND	2	0.019

Only compounds detected are listed
ug/L = milligrams per liter
DL = detection limit
TCL = Target Compound List
BDL = below detection limit
MCL = Maximum Contaminant Level - Primary Drinking Water Standards
RBCs = Risk Based Contaminants
NS = no standard
NA = not available
B = analyte detected in associated method and/or equipment blank
J = estimated value - presence of the compound
was confirmed but less than the reported DL
J* = estimated value - quality control recoveries outside
acceptance ranges.

TABLE 2
Quarterly Analytical Results for TCL Volatile Organics on Sampled Monitoring Wells

Sample Identification Number			MW-33-Y1Q1	MW-33-Y1Q2	MW-33-Y1Q3	MW-33-Y1Q4	MW-33-Y2Q1	*Maximum Contaminant Level (MCL)-Primary Drinking Water Standards*	*USEPA Region III RBCs - Tap Water (October 7,1999)*
Laboratory & Lab Sample ID No.			9902125-07	9905638-13	9908741-05	9911147-04	0002423-05		
Date Sample Collected			02-Feb-99	25-May-99	26-Aug-99	02-Nov-99	15-Feb-00		
pH			5.7	6.2	7.4	5.3	5.8		
Conductivity (umhos)			181	181	146	190	191		
Temperature (°C)			NA	18.6	20	16.2	17.6		
Turbidity (ntu)			NA	5	>999	8.77	224		
LABORATORY ANALYSES	**DL**	**Units**							
TCL Volatile Organics (Method 8260B)									
Bromodichloromethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.17
Carbon Tetrachloride	1/100	ug/L	ND	ND	ND	ND	ND	5	0 16
Chlorobenzene	1/100	ug/L	ND	ND	ND	ND	ND	100	110
Chloroform	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.15
1,1-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	800
1,2-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0 12
1,1-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	7	0.044
Trans-1,2-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	100	120
Cis-1,2-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	70	61
1,1,2,2-Tetrachloroethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.053
Tetrachloroethene	1/100	ug/L	ND	ND	ND	ND	ND	5	1.1
Toluene	1/100	ug/L	ND	ND	ND	ND	ND	1000	750
1,1,1-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	200	540
1,1,2-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0.19
Trichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	5	1.6
Vinyl Chloride	1/100	ug/L	ND	ND	ND	ND	ND	2	0 019

Only compounds detected are listed
ug/L = milligrams per liter
DL = detection limit
TCL = Target Compound List
BDL = below detection limit
MCL = Maximum Contaminant Level - Primary Drinking Water Standards
RBCs = Risk Based Contaminants
NS = no standard
NA = not available
B = analyte detected in associated method and/or equipment blank
J = estimated value - presence of the compound
was confirmed but less than the reported DL
J* = estimated value - quality control recoveries outside
acceptance ranges

TABLE 2
Quarterly Analytical Results for TCL Volatile Organics on Sampled Monitoring Wells

Sample Identification Number			MW-34-Y1Q1	MW-34-Y1Q2	MW-34-Y1Q3	MW-34-Y1Q4	MW-34-Y2Q1	*Maximum Contaminant Level (MCL)-Primary Drinking Water Standards*	*USEPA Region III RBCs - Tap Water (October 7,1999)*
Laboratory & Lab Sample ID No.			9902168-01	9905638-17	9908741-09	9911147-07	0002480-09		
Date Sample Collected			04-Feb-99	25-May-99	27-Aug-99	03-Nov-99	16-Feb-00		
pH			5.2	5.7	7.4	5.9	NA		
Conductivity (umhos)			184	185	148	169	NA		
Temperature (°C)			NA	18 8	20.1	17.6	NA		
Turbidity (ntu)			NA	4	451	7.48	NA		
LABORATORY ANALYSES	**DL**	**Units**							
TCL Volatile Organics (Method 8260B)									
Bromodichloromethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.17
Carbon Tetrachloride	1/100	ug/L	1.01	1.23	0.51J	ND	1.04	5	0.16
Chlorobenzene	1/100	ug/L	ND	ND	ND	ND	ND	100	110
Chloroform	1/100	ug/L	4.34	ND	0.66J	ND	1.98	NS	0.15
1,1-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	800
1,2-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0.12
1,1-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	7	0.044
Trans-1,2-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	100	120
Cis-1,2-Dichloroethene	1/100	ug/L	1.03	ND	ND	ND	ND	70	61
1,1,2,2-Tetrachloroethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.053
Tetrachloroethene	1/100	ug/L	ND	ND	ND	ND	ND	5	1.1
Toluene	1/100	ug/L	ND	ND	0.53J	ND	ND	1000	750
1,1,1-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	200	540
1,1,2-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0.19
Trichloroethene	1/100	ug/L	4.39	ND	0.64J	ND	0.85J	5	1.6
Vinyl Chloride	1/100	ug/L	ND	ND	ND	ND	ND	2	0.019

Only compounds detected are listed.
ug/L = milligrams per liter
DL = detection limit
TCL = Target Compound List
BDL = below detection limit
MCL = Maximum Contaminant Level - Primary Drinking Water Standards
RBCs = Risk Based Contaminants
NS = no standard
NA = not available
B = analyte detected in associated method and/or equipment blank
J = estimated value - presence of the compound was confirmed but less than the reported DL
J* = estimated value - quality control recoveries outside acceptance ranges.

TABLE 2
Quarterly Analytical Results for TCL Volatile Organics on Sampled Monitoring Wells

Sample Identification Number			MW-40-Y1Q1	MW-40-Y1Q2	MW-40-Y1Q3	MW-40-Y1Q4	MW-40-Y2Q1	*Maximum Contaminant Level (MCL)-Primary Drinking Water Standards*	*USEPA Region III RBCs - Tap Water (October 7,1999)*
Laboratory & Lab Sample ID No.			9902125-03	9905638-09	9908741-01	9911147-01	0002423-01		
Date Sample Collected			02-Feb-99	24-May-99	26-Aug-99	02-Nov-99	15-Feb-00		
pH			8.4	6.0	7.4	6.3	6.5		
Conductivity (umhos)			<1,000	413	641	775	857		
Temperature (°C)			15.9	21.2	24.2	22.2	16.3		
Turbidity (ntu)			NA	51	78	9.17	8.57		
LABORATORY ANALYSES	**DL**	**Units**							
TCL Volatile Organics (Method 8260B)									
Bromodichloromethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.17
Carbon Tetrachloride	1/100	ug/L	ND	ND	ND	ND	ND	5	0.16
Chlorobenzene	1/100	ug/L	ND	ND	0.94J	1.06	ND	100	110
Chloroform	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.15
1,1-Dichloroethane	1/100	ug/L	1.48	1.23	ND	ND	ND	NS	800
1,2-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0.12
1,1-Dichloroethene	1/100	ug/L	1.06	1 07	ND	ND	ND	7	0 044
Trans-1,2-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	100	120
Cis-1,2-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	70	61
1,1,2,2-Tetrachloroethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.053
Tetrachloroethene	1/100	ug/L	ND J*	ND	ND	ND	ND	5	1.1
Toluene	1/100	ug/L	ND	ND	ND	ND	ND	1000	750
1,1,1-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	200	540
1,1,2-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0.19
Trichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	5	1.6
Vinyl Chloride	1/100	ug/L	ND	ND	ND	ND	ND	2	0.019

Only compounds detected are listed.
ug/L = milligrams per liter
DL = detection limit
TCL = Target Compound List
BDL = below detection limit
MCL = Maximum Contaminant Level - Primary Drinking Water Standards
RBCs = Risk Based Contaminants
NS = no standard
NA = not available
B = analyte detected in associated method and/or equipment blank
J = estimated value - presence of the compound was confirmed but less than the reported DL
J* = estimated value - quality control recoveries outside acceptance ranges.

TABLE 2
Quarterly Analytical Results for TCL Volatile Organics on Sampled Monitoring Wells

Sample Identification Number			MW-44-Y1Q1	MW-44-Y1Q2	MW-44-Y1Q3	MW-44-Y1Q4	MW-44-Y2Q1	*Maximum Contaminant Level (MCL)-Primary Drinking Water Standards*	*USEPA Region III RBCs - Tap Water (October 7,1999)*
Laboratory & Lab Sample ID No.			9902125-06	9905638-12	9908741-04	9911147-03	0002423-04		
Date Sample Collected			02-Feb-99	25-May-99	26-Aug-99	02-Nov-99	15-Feb-00		
pH			6.1	6.3	7.1	5.8	6.1		
Conductivity (umhos)			292	289	247	294	307		
Temperature (°C)			NA	18.3	20.4	18.0	17.2		
Turbidity (ntu)			NA	10	391	6.76	13.4		
LABORATORY ANALYSES	**DL**	**Units**							
TCL Volatile Organics (Method 8260B)									
Bromodichloromethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.17
Carbon Tetrachloride	1/100	ug/L	ND	ND	ND	ND	ND	5	0.16
Chlorobenzene	1/100	ug/L	ND	ND	ND	ND	ND	100	110
Chloroform	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.15
1,1-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	800
1,2-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.12
1,1-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	7	0.044
Trans-1,2-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	100	120
Cis-1,2-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	70	61
1,1,2,2-Tetrachloroethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.053
Tetrachloroethene	1/100	ug/L	ND	ND	ND	ND	ND	5	1.1
Toluene	1/100	ug/L	ND	ND	ND	ND	ND	1000	750
1,1,1-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	200	540
1,1,2-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0.19
Trichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	5	1.6
Vinyl Chloride	1/100	ug/L	ND	ND	ND	ND	ND	2	0.019

Only compounds detected are listed.
ug/L = milligrams per liter
DL = detection limit
TCL = Target Compound List
BDL = below detection limit
MCL = Maximum Contaminant Level - Primary Drinking Water Standards
RBCs = Risk Based Contaminants
NS = no standard
NA = not available
B = analyte detected in associated method and/or equipment blank
J = estimated value - presence of the compound was confirmed but less than the reported DL
J* = estimated value - quality control recoveries outside acceptance ranges.

TABLE 2
Quarterly Analytical Results for TCL Volatile Organics on Sampled Monitoring Wells

Sample Identification Number			MW-51-Y1Q1	MW-51-Y1Q2	MW-51-Y1Q3	MW-51-Y1Q4	MW-51-Y2Q1	*Maximum Contaminant Level (MCL)-Primary Drinking Water Standards*	*USEPA Region III RBCs - Tap Water (October 7,1999)*
Laboratory & Lab Sample ID No.			9902125-05	9905638-11	9908741-03	9911147-08	0002423-03		
Date Sample Collected			02-Feb-99	24-May-99	26-Aug-99	03-Nov-99	15-Feb-00		
pH			5.9	4.8	7.3	5.9	5.9		
Conductivity (umhos)			295	186	249	256	309		
Temperature (°C)			NA	19.3	20.8	18.0	16.8		
Turbidity (ntu)			NA	15	330	9.2	17.5		
LABORATORY ANALYSES	**DL**	**Units**							
TCL Volatile Organics (Method 8260B)									
Bromodichloromethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.17
Carbon Tetrachloride	1/100	ug/L	ND	ND	ND	ND	ND	5	0.16
Chlorobenzene	1/100	ug/L	ND	ND	ND	ND	ND	100	110
Chloroform	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.15
1,1-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	800
1,2-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0.12
1,1-Dichloroethene	1/100	ug/L	23.4	16.9	15.2	8.19	1.08	7	0.044
Trans-1,2-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	100	120
Cis-1,2-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	70	61
1,1,2,2-Tetrachloroethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.053
Tetrachloroethene	1/100	ug/L	1.5	ND	0.54J	0.83J	ND	5	1.1
Toluene	1/100	ug/L	ND	ND	ND	ND	ND	1000	750
1,1,1-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	200	540
1,1,2-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0.19
Trichloroethene	1/100	ug/L	8.44	4.64	3.71	2.93	0.70J	5	1.6
Vinyl Chloride	1/100	ug/L	ND	ND	ND	ND	ND	2	0.019

Only compounds detected are listed.
ug/L = milligrams per liter
DL = detection limit
TCL = Target Compound List
BDL = below detection limit
MCL = Maximum Contaminant Level - Primary Drinking Water Standards
RBCs = Risk Based Contaminants
NS = no standard
NA = not available
B = analyte detected in associated method and/or equipment blank
J = estimated value - presence of the compound was confirmed but less than the reported DL
J* = estimated value - quality control recoveries outside acceptance ranges

TABLE 2
Quarterly Analytical Results for TCL Volatile Organics on Sampled Monitoring Wells

Sample Identification Number			MW-54-Y1Q1	MW-54-Y1Q2	MW-54-Y1Q3	MW-54-Y1Q4	MW-54-Y2Q1	*Maximum Contaminant Level (MCL)- Primary Drinking Water Standards*	*USEPA Region III RBCs - Tap Water (October 7,1999)*
Laboratory & Lab Sample ID No.			9902125-10	9905638-15	9908741-07	991147-11	0002423-10		
Date Sample Collected			03-Feb-99	25-May-99	26-Aug-99	03-Nov-99	05-Feb-00		
pH			5.6	6.4	7.4	5.7	5.9		
Conductivity (umhos)			213	253	216	366	385		
Temperature (°C)			NA	18 2	19.7	17.2	17.7		
Turbidity (ntu)			NA	0	149	9.93	16.6		
LABORATORY ANALYSES	**DL**	**Units**							
TCL Volatile Organics (Method 8260B)									
Bromodichloromethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.17
Carbon Tetrachloride	1/100	ug/L	ND	3.53	12.8	5.02	14.7	5	0.16
Chlorobenzene	1/100	ug/L	ND	ND	ND	ND	ND	100	110
Chloroform	1/100	ug/L	ND	ND	5.04	2 54	12.4	NS	0 15
1,1-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	800
1,2-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0 12
1,1-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	7	0.044
Trans-1,2-Dichloroethene	1/100	ug/L	ND	ND	ND	1.40	2.01	100	120
Cis-1,2-Dichloroethene	1/100	ug/L	3.60	3.90	10.3	24.1	22.5	70	61
1,1,2,2-Tetrachloroethane	1/100	ug/L	ND	ND	ND	40.1	23.6	NS	0.053
Tetrachloroethene	1/100	ug/L	ND	ND	ND	0.68J	0.94J	5	1.1
Toluene	1/100	ug/L	ND	ND	ND	ND	ND	1000	750
1,1,1-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	200	540
1,1,2-Trichloroethane	1/100	ug/L	ND	ND	ND	1.15	0.90J	5	0.19
Trichloroethene	1/100	ug/L	60.6	61.0	50.0	30.6	43.3	5	1.6
Vinyl Chloride	1/100	ug/L	ND	ND	ND	ND	ND	2	0.019

Only compounds detected are listed.
ug/L = milligrams per liter
DL = detection limit
TCL = Target Compound List
BDL = below detection limit
MCL = Maximum Contaminant Level - Primary Drinking Water Standards
RBCs = Risk Based Contaminants
NS = no standard
NA = not available
B = analyte detected in associated method and/or equipment blank
J = estimated value - presence of the compound was confirmed but less than the reported DL
J* = estimated value - quality control recoveries outside acceptance ranges.

TABLE 2
Quarterly Analytical Results for TCL Volatile Organics on Sampled Monitoring Wells

Sample Identification Number			MW-56-Y2Q1	MW-57-Y2Q1	MW-58-Y2Q1	MW-59-Y2Q1	MW-67-Y2Q1	MW-69-Y2Q1	MW-70-Y2Q1	MW-71-Y2Q2	*Maximum Contaminant Level (MCL)- Primary Drinking Water Standards*	*USEPA Region III RBCs - Tap Water (October 7,1999)*
Laboratory & Lab Sample ID No.			0002480-11	0002480-05	0002480-12	0002480-06	0002480-10	0002480-01	0002423-08	0002423-09		
Date Sample Collected			16-Feb-00	16-Feb-00	16-Feb-00	16-Feb-00	16-Feb-00	16-Feb-00	15-Feb-00	15-Feb-00		
pH			6.1	5.7	6.0	5.8	6.0	5.8	5.8	5.9		
Conductivity (umhos)			238	189	222	227	189	251	233	226		
Temperature (°C)			16.2	19.2	17.7	18.8	17.7	16.9	18.5	18.1		
Turbidity (ntu)			NA	>999	>999	362	0	>999	>999	>999		
LABORATORY ANALYSES	**DL**	**Units**										
TCL Volatile Organics (Method 8260B)												
Bromodichloromethane	1/100	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	NS	0.17
Carbon Tetrachloride	1/100	ug/L	0.57J	39.9	ND	ND	ND	ND	3.48	53 9	5	0.16
Chlorobenzene	1/100	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	100	110
Chloroform	1/100	ug/L	38.2	13 2	3.68	ND	ND	ND	18.2	996	NS	0 15
1,1-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	NS	800
1,2-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	ND	1.77	ND	5	0.12
1,1-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	ND	0.61J	ND	7	0.044
Trans-1,2-Dichloroethene	1/100	ug/L	ND	1.55	ND	ND	ND	2.26	149	4.7	100	120
Cis-1,2-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	4.11	522	11.5	70	61
1,1,2,2-Tetrachloroethane	1/100	ug/L	ND	ND	ND	ND	ND	ND	4,830	97.7	NS	0.053
Tetrachloroethene	1/100	ug/L	ND	5.38	ND	35	ND	1.76	89.7	10	5	1.1
Toluene	1/100	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	1000	750
1,1,1-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	200	540
1,1,2-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	ND	39.7	3.21	5	0.19
Trichloroethene	1/100	ug/L	1.7	50.8	4.4	1.49	1 26	99.2	11,700	330	5	1.6
Vinyl Chloride	1/100	ug/L	ND	ND	ND	ND	ND	ND	1.88	ND	2	0.019

Only compounds detected are listed.
ug/L = milligrams per liter
DL = detection limit
TCL = Target Compound List
BDL = below detection limit
MCL = Maximum Contaminant Level - Primary Drinking Water Standards
RBCs = Risk Based Contaminants
NS = no standard
NA = not available
B = analyte detected in associated method and/or equipment blank
J = estimated value - presence of the compound was confirmed but less than the reported DL
J* = estimated value - quality control recoveries outside acceptance ranges

TABLE 3
Quarterly Analytical Results for TCL Volatile Organics on System Recovery Wells

Sample Identification Number			RW-1A-Y2Q1	RW-1B-Y2Q1	RW-01-Y2Q1	RW-02-Y2Q1	*Maximum Contaminant Level (MCL) - Primary Drinking Water Standards*	*USEPA Region III RBCs - Tap Water (October 7, 1999)*
Laboratory & Lab Sample ID No.			0002423-16	0002480-03	0002480-04	0002840-02		
Date Sample Collected			15-Feb-00	16-Feb-00	16-Feb-00	15-Feb-00		
pH			5.8	6.0	6.1	5.8		
Conductivity (umhos)			254	300	358	296		
Temperature (^{o}C)			17.4	17.2	18.2	17.4		
Turbidity (ntu)			12.7	35.5	101	168		
	DL	Units						
TCL Volatile Organics (Method 8260B)								
Carbon Tetrachloride	1/100	ug/L	15.2	20.6	42.4	15.7	5	0.16
Chloroform	1/100	ug/L	397	20.7	15.7	14.2	NS	0.15
1,1-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	NS	800
1,2-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	5	0.12
1,1-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	7	0.044
Trans-1,2-Dichloroethene	1/100	ug/L	1.40	1.23	0.93J	1.69	100	120
Cis-1,2-Dichloroethene	1/100	ug/L	3.63	3.32	ND	17.4	70	61
1,1,2,2-Tetrachloroethane	1/100	ug/L	49.8	ND	ND	4.04	NS	0.053
Tetrachloroethene	1/100	ug/L	3.14	2.37	4.66	1.25	5	1 1
1,1,1-Trichloroethane	1/100	ug/L	ND	ND	0.95J	ND	200	540
1,1,2-Trichloroethane	1/100	ug/L	1.54	ND	ND	0.61J	5	0.19
Trichloroethene	1/100	ug/L	119	21 9	35.2	21.4	5	1.6

Only compounds detected are listed.

ug/L = milligrams per liter

DL = detection limit

BDL = below detection limit

TCL = Target Compound List

MCL = Maximum Contaminant Level - Primary Drinking Water Standards

RBCs = Risk Based Concentrations

NS = no standard

NA = not analyzed for

J = estimated value - presence of the compound was confirmed but less than the reported DL

J* = estimated value - quality control recoveries outside acceptance ranges.

TABLE 3
Quarterly Analytical Results for TCL Volatile Organics on System Recovery Wells

Sample Identification Number			RW-03P-Y1Q1	RW-03-Y1Q2	RW-03-Y1Q3	RW-03-Y1Q4	RW-03-Y2Q1	*Maximum Contaminant Level (MCL) - Primary Drinking Water Standards*	*USEPA Region III RBCs - Tap Water (October 7, 1999)*
Laboratory & Lab Sample ID No.			9902206-01	9905638-01	9908741-15	9911028-01	0002385-01		
Date Sample Collected			05-Feb-99	24-May-99	27-Aug-99	01-Nov-99	14-Feb-00		
pH			NA	5.9	7.4	6.0	5.8		
Conductivity (umhos)			NA	231	272	313	258		
Temperature (^{o}C)			NA	18.6	19.8	18.3	16.3		
Turbidity (ntu)			NA	10.0	6.0	0.1	0.2		
	DL	**Units**							
TCL Volatile Organics (Method 8260B)									
Carbon Tetrachloride	1/100	ug/L	16.4	13.3	10 5	13.2	10.9	5	0.16
Chloroform	1/100	ug/L	5.89	1.36	5.66	5.24	4.57	NS	0.15
1,1-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	800
1,2-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0 12
1,1-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	7	0.044
Trans-1,2-Dichloroethene	1/100	ug/L	5.51	3.94	2.97	3 31	4.52	100	120
Cis-1,2-Dichloroethene	1/100	ug/L	79.3	56.0	47.0	44.0	101	70	61
1,1,2,2-Tetrachloroethane	1/100	ug/L	80.0	42.5	40.8	42.3	61.9	NS	0 053
Tetrachloroethene	1/100	ug/L	ND	ND	0.73J	1.01	0.65J	5	1 1
1,1,1-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	200	540
1,1,2-Trichloroethane	1/100	ug/L	3.23	2.73	1.98	1.85	2.80	5	0.19
Trichloroethene	1/100	ug/L	78.2	54.3	42.1	55.0	57.8	5	1.6

Only compounds detected are listed.

ug/L = milligrams per liter

DL = detection limit

BDL = below detection limit

TCL = Target Compound List

MCL = Maximum Contaminant Level - Primary Drinking Water Standards

RBCs = Risk Based Concentrations

NS = no standard

NA = not analyzed for

J = estimated value - presence of the compound was confirmed but less than the reported DL

J* = estimated value - quality control recoveries outside acceptance ranges.

TABLE 3
Quarterly Analytical Results for TCL Volatile Organics on System Recovery Wells

Sample Identification Number			RW-04P-Y1Q1	RW-04-Y1Q2	RW-04-Y1Q3	RW-04-Y1Q4	RW-04-Y2Q1	*Maximum Contaminant Level (MCL) - Primary Drinking Water Standards*	*USEPA Region III RBCs - Tap Water (October 7, 1999)*
Laboratory & Lab Sample ID No.			9902206-02	9905638-02	9908740-16	9911028-02	0002385-02		
Date Sample Collected			05-Feb-99	24-May-99	27-Aug-99	01-Nov-99	14-Feb-00		
pH			NA	6.0	7.3	6.1	6.0		
Conductivity (umhos)			NA	145	7	214	237		
Temperature (°C)			NA	19.3	20.6	18.6	17.1		
Turbidity (ntu)			NA	5.0	5.0	0.2	0.6		
	DL	**Units**							
TCL Volatile Organics (Method 8260B)									
Carbon Tetrachloride	1/100	ug/L	3.04	3.51	3.23	<100	6.97	5	0.16
Chloroform	1/100	ug/L	1.84	ND	2.30B	<100	2.80	NS	0.15
1,1-Dichloroethane	1/100	ug/L	ND	ND	ND	<100	ND	NS	800
1,2-Dichloroethane	1/100	ug/L	ND	ND	ND	<100	ND	5	0.12
1,1-Dichloroethene	1/100	ug/L	ND	ND	ND	<100	ND	7	0.044
Trans-1,2-Dichloroethene	1/100	ug/L	3.58	2.74	3.03	<100	2.15	100	120
Cis-1,2-Dichloroethene	1/100	ug/L	18.2	15 4	17.6	26.6J	15.0	70	61
1,1,2,2-Tetrachloroethane	1/100	ug/L	219	21.9	19.2	<100	12.3	NS	0.053
Tetrachloroethene	1/100	ug/L	2.43	2.40	2.92	<100	2.03	5	1.1
1,1,1-Trichloroethane	1/100	ug/L	ND	ND	ND	<100	ND	200	540
1,1,2-Trichloroethane	1/100	ug/L	1.32	1.50	1.40	<100	0.76J	5	0 19
Trichloroethene	1/100	ug/L	382	294	368	649	252	5	1.6

Only compounds detected are listed

ug/L = milligrams per liter

DL = detection limit

BDL = below detection limit

TCL = Target Compound List

MCL = Maximum Contaminant Level - Primary Drinking Water Standards

RBCs = Risk Based Concentrations

NS = no standard

NA = not analyzed for

J = estimated value - presence of the compound was confirmed but less than the reported DL

J* = estimated value - quality control recoveries outside acceptance ranges

TABLE 3
Quarterly Analytical Results for TCL Volatile Organics on System Recovery Wells

Sample Identification Number			RW-05P-Y1Q1	RW-05-Y1Q2	RW-05-Y1Q3	RW-05-Y1Q4	RW-05-Y2Q1	*Maximum Contaminant Level (MCL) - Primary Drinking Water Standards*	*USEPA Region III RBCs - Tap Water (October 7, 1999)*
Laboratory & Lab Sample ID No.			9902206-05	9905638-03	9908741-17	9911028-03	0002385-03		
Date Sample Collected			05-Feb-99	24-May-99	27-Aug-99	01-Nov-99	14-Feb-00		
pH			NA	5.9	7.4	6.0	5.9		
Conductivity (umhos)			NA	151	190	220	220		
Temperature (°C)			NA	18.0	19.7	17.8	16.4		
Turbidity (ntu)			NA	6.0	17.0	0.1	0.6		
	DL	Units							
TCL Volatile Organics (Method 8260B)									
Carbon Tetrachloride	1/100	ug/L	ND	ND	ND	<100	ND	5	0.16
Chloroform	1/100	ug/L	ND	ND	1.62	<100	1.36	NS	0 15
1,1-Dichloroethane	1/100	ug/L	ND	ND	ND	<100	ND	NS	800
1,2-Dichloroethane	1/100	ug/L	ND	ND	ND	<100	ND	5	0.12
1,1-Dichloroethene	1/100	ug/L	ND	ND	ND	<100	ND	7	0.044
Trans-1,2-Dichloroethene	1/100	ug/L	6.45	15.7	14.3	<100	12.3	100	120
Cis-1,2-Dichloroethene	1/100	ug/L	17.9	50.1	49.6	48.4J	50.2	70	61
1,1,2,2-Tetrachloroethane	1/100	ug/L	11.4	582	1380	2260	3120	NS	0 053
Tetrachloroethene	1/100	ug/L	5.87	12.9	12 2	45.1J	10.8	5	1.1
1,1,1-Trichloroethane	1/100	ug/L	ND	ND	ND	<100	ND	200	540
1,1,2-Trichloroethane	1/100	ug/L	ND	ND	1.15	<100	1.93	5	0.19
Trichloroethene	1/100	ug/L	433	1180	1270	1290	1170	5	1 6

Only compounds detected are listed.

ug/L = milligrams per liter

DL = detection limit

BDL = below detection limit

TCL = Target Compound List

MCL = Maximum Contaminant Level - Primary Drinking Water Standards

RBCs = Risk Based Concentrations

NS = no standard

NA = not analyzed for

J = estimated value - presence of the compound was confirmed but less than the reported DL

J* = estimated value - quality control recoveries outside acceptance ranges.

TABLE 3
Quarterly Analytical Results for TCL Volatile Organics on System Recovery Wells

Sample Identification Number			RW-06P-Y1Q1	RW-06-Y1Q2	RW-06-Y1Q3	RW-06-Y1Q4	RW-06-Y2Q1	*Maximum Contaminant Level (MCL) - Primary Drinking Water Standards*	*USEPA Region III RBCs - Tap Water (October 7, 1999)*
Laboratory & Lab Sample ID No.			9902206-05	9905638-04	9908741-18	9911028-04	0002385-04		
Date Sample Collected			05-Feb-99	24-May-99	27-Aug-99	01-Nov-99	14-Feb-00		
pH			NA	4.6	7.4	6.2	5.9		
Conductivity (umhos)			NA	168	208	250	268		
Temperature (^{o}C)			NA	19.0	20.0	17.8	16.6		
Turbidity (ntu)			NA	6.0	31.0	0.5	0.2		
	DL	Units							
TCL Volatile Organics (Method 8260B)									
Carbon Tetrachloride	1/100	ug/L	ND	ND	ND	ND	ND	5	0.16
Chloroform	1/100	ug/L	2.11	ND	3.09	2.48	3.20	NS	0.15
1,1-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	800
1,2-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0.12
1,1-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	7	0.044
Trans-1,2-Dichloroethene	1/100	ug/L	1.39	1.49	1.89	1.59	0 69J	100	120
Cis-1,2-Dichloroethene	1/100	ug/L	3.67	4.53	5.10	2.34	1.18	70	61
1,1,2,2-Tetrachloroethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.053
Tetrachloroethene	1/100	ug/L	24.2	4.93	10.1	5.80	6.48	5	1.1
1,1,1-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	200	540
1,1,2-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0.19
Trichloroethene	1/100	ug/L	27.6	22.0	32.7	24.2	17.0	5	1.6

Only compounds detected are listed.

ug/L = milligrams per liter

DL = detection limit

BDL = below detection limit

TCL = Target Compound List

MCL = Maximum Contaminant Level - Primary Drinking Water Standards

RBCs = Risk Based Concentrations

NS = no standard

NA = not analyzed for

J = estimated value - presence of the compound was confirmed but less than the reported DL

J* = estimated value - quality control recoveries outside acceptance ranges.

TABLE 3
Quarterly Analytical Results for TCL Volatile Organics on System Recovery Wells

Sample Identification Number			RW-07P-Y1Q1	RW-07-Y1Q2	RW-07-Y1Q3	RW-07-Y1Q4	RW-07-Y2Q1	*Maximum Contaminant Level (MCL) - Primary Drinking Water Standards*	*USEPA Region III RBCs - Tap Water (October 7, 1999)*
Laboratory & Lab Sample ID No.			9902206-05	9905638-05	9908741-19	9911028-05	0002385-05		
Date Sample Collected			05-Feb-99	24-May-99	27-Aug-99	01-Nov-99	14-Feb-00		
pH			NA	5.9	7 4	5.9	5.9		
Conductivity (umhos)			NA	162	211	250	268		
Temperature (°C)			NA	18.0	20.0	18.2	16.6		
Turbidity (ntu)			NA	3.0	5.0	0.1	0.2		
	DL	**Units**							
TCL Volatile Organics (Method 8260B)									
Carbon Tetrachloride	1/100	ug/L	ND	ND	0.54J	ND	ND	5	0.16
Chloroform	1/100	ug/L	1.91	ND	3.39	2 28	1 84	NS	0.15
1,1-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	800
1,2-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0 12
1,1-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	7	0.044
Trans-1,2-Dichloroethene	1/100	ug/L	15.6	17.1	17.3	23.6	19.2	100	120
Cis-1,2-Dichloroethene	1/100	ug/L	45.3	54.6	59.1	74.7	70.3	70	61
1,1,2,2-Tetrachloroethane	1/100	ug/L	19.5	28.8	43.2	60.7	49.9	NS	0 053
Tetrachloroethene	1/100	ug/L	11.2	7.94	9.81	12.2	9.33	5	1.1
1,1,1-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	200	540
1,1,2-Trichloroethane	1/100	ug/L	ND	ND	0.85J	1.08	1.03	5	0.19
Trichloroethene	1/100	ug/L	86.6	89.5	94.0	145	102	5	1.6

Only compounds detected are listed.
ug/L = milligrams per liter
DL = detection limit
BDL = below detection limit
TCL = Target Compound List
MCL = Maximum Contaminant Level - Primary Drinking Water Standards
RBCs = Risk Based Concentrations
NS = no standard
NA = not analyzed for
J = estimated value - presence of the compound was confirmed but less than the reported DL
J* = estimated value - quality control recoveries outside acceptance ranges.

TABLE 3
Quarterly Analytical Results for TCL Volatile Organics on System Recovery Wells

Sample Identification Number			RW-08P-Y1Q1	RW-08-Y1Q2	RW-08-Y1Q3	RW-08-Y1Q4	RW-08-Y2Q1	*Maximum Contaminant Level (MCL) - Primary Drinking Water Standards*	*USEPA Region III RBCs - Tap Water (October 7, 1999)*
Laboratory & Lab Sample ID No.			9902206-06	9905638-06	9908741-20	9911028-06	0002385-05		
Date Sample Collected			05-Feb-99	24-May-99	27-Aug-99	01-Nov-99	14-Feb-00		
pH			NA	5.8	7.5	6.1	5.8		
Conductivity (umhos)			NA	195	252	316	323		
Temperature (^{o}C)			NA	17.7	19.1	18.4	15.7		
Turbidity (ntu)			NA	3.0	0.0	0.3	0.2		
	DL	**Units**							
TCL Volatile Organics (Method 8260B)									
Carbon Tetrachloride	1/100	ug/L	1.21	1.38	1.30	1.11	1.03	5	0.16
Chloroform	1/100	ug/L	13.1	10 3	14.1	10.3	10.5	NS	0.15
1,1-Dichloroethane	1/100	ug/L	ND	ND	ND	7.84	ND	NS	800
1,2-Dichloroethane	1/100	ug/L	ND	ND	ND	27.8	ND	5	0 12
1,1-Dichloroethene	1/100	ug/L	16.0	15.2	9.79	ND	6.82	7	0.044
Trans-1,2-Dichloroethene	1/100	ug/L	20.1	42.1	27.0	ND	30.8	100	120
Cis-1,2-Dichloroethene	1/100	ug/L	64.7	126	93.0	89.1	115	70	61
1,1,2,2-Tetrachloroethane	1/100	ug/L	45.9	88.0	108	119	121	NS	0.053
Tetrachloroethene	1/100	ug/L	5.35	5.96	5.50	6.14	6 67	5	1.1
1,1,1-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	200	540
1,1,2-Trichloroethane	1/100	ug/L	ND	1.66	1.32	1.28	1.58	5	0.19
Trichloroethene	1/100	ug/L	140	273	173	261	190	5	1.6

Only compounds detected are listed

ug/L = milligrams per liter

DL = detection limit

BDL = below detection limit

TCL = Target Compound List

MCL = Maximum Contaminant Level - Primary Drinking Water Standards

RBCs = Risk Based Concentrations

NS = no standard

NA = not analyzed for

J = estimated value - presence of the compound was confirmed but less than the reported DL

J* = estimated value - quality control recoveries outside acceptance ranges.

TABLE 3
Quarterly Analytical Results for TCL Volatile Organics on System Recovery Wells

Sample Identification Number			RW-09P-Y1Q1	RW-09-Y1Q2	RW-09-Y1Q3	RW-09-Y1Q4	RW-09-Y2Q1	*Maximum Contaminant Level (MCL) - Primary Drinking Water Standards*	*USEPA Region III RBCs - Tap Water (October 7, 1999)*
Laboratory & Lab Sample ID No.			9902206-07	9905638-07	9908741-21	9911028-06	0002385-08		
Date Sample Collected			05-Feb-99	24-May-99	27-Aug-99	01-Nov-99	14-Feb-00		
pH			NA	5.9	7.4	6.0	5.9		
Conductivity (umhos)			NA	220	282	327	368		
Temperature (°C)			NA	17.4	19.2	18.7	15.7		
Turbidity (ntu)			NA	2.0	183.0	0.1	0.5		
	DL	**Units**							
TCL Volatile Organics (Method 8260B)									
Carbon Tetrachloride	1/100	ug/L	ND	1.43	1.21	1.12	0.79J	5	0.16
Chloroform	1/100	ug/L	10.1	10.2	15.40	11.8	12.5	NS	0.15
1,1-Dichloroethane	1/100	ug/L	1.17	1.45	1.35	1.24	1.88	NS	800
1,2-Dichloroethane	1/100	ug/L	ND	ND	0 63J	0.53J	0.70J	5	0.12
1,1-Dichloroethene	1/100	ug/L	40.4	49 2	45.1	44.4	52.9	7	0.044
Trans-1,2-Dichloroethene	1/100	ug/L	2.28	3.18	1.94	1.86	2.23	100	120
Cis-1,2-Dichloroethene	1/100	ug/L	5.20	8.47	5.65	4.95	5.45	70	61
1,1,2,2-Tetrachloroethane	1/100	ug/L	ND	1.21	1.52	ND	2.98	NS	0.053
Tetrachloroethene	1/100	ug/L	35.4	41.5	37.7	38.8	61 2	5	1.1
1,1,1-Trichloroethane	1/100	ug/L	1.58	2.01	1.67	1.73	1.56	200	540
1,1,2-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0.19
Trichloroethene	1/100	ug/L	39.1	52.0	41.1	43.3	51.4	5	1.6

Only compounds detected are listed.

ug/L = milligrams per liter

DL = detection limit

BDL = below detection limit

TCL = Target Compound List

MCL = Maximum Contaminant Level - Primary Drinking Water Standards

RBCs = Risk Based Concentrations

NS = no standard

NA = not analyzed for

J = estimated value - presence of the compound was confirmed but less than the reported DL

J* = estimated value - quality control recoveries outside acceptance ranges

TABLE 4
Quarterly Quality Control Samples
Year Two, Quarter One

Sample Identification Number			MW-33-Y2Q1	MW-33A-Y2Q1	Field Blank	EQB-B	Trip Blank	*Maximum Contaminant Level (MCL)-Primary Drinking Water Standards*	*USEPA Region III RBCs - Tap Water (October 7,1999)*
Laboratory & Lab Sample ID No.			0002423-05	0002423-06	0002423-12	0002423-13	0002423-14		
Date Sample Collected			15-Feb-00	15-Feb-00	15-Feb-00	15-Feb-00	15-Feb-00		
LABORATORY ANALYSES	**DL**	**Units**							
TCL Volatile Organics (Method 8260B)									
Bromodichloromethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.17
Carbon Tetrachloride	1/100	ug/L	ND	ND	ND	ND	ND	5	0.16
Chlorobenzene	1/100	ug/L	ND	ND	ND	ND	ND	100	110
Chloroform	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.15
1,1-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	800
1,2-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0.12
1,1-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	7	0.044
Trans-1,2-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	100	120
Cis-1,2-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	70	61
1,1,2,2-Tetrachloroethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.053
Tetrachloroethene	1/100	ug/L	ND	ND	ND	ND	ND	5	1.1
Toluene	1/100	ug/L	ND	ND	ND	ND	ND	1000	750
1,1,1-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	200	540
1,1,2-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0.19
Trichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	5	1.6
Vinyl Chloride	1/100	ug/L	ND	ND	ND	ND	ND	2	0.019

TAL = Target Analyte List

TCL = Target Compound List

MCL = Maximum Contaminant Level - Primary Drinking Water Standards

RBCs = Risk Based Concentrations

ND = not detected

NS = no standard

NZ = not analyzed

NA = not available

B = analyte detected in associated method and/or equipment blank

TABLE 4
Quarterly Quality Control Samples
Year Two, Quarter One

Sample Identification Number			MW-58-Y2Q1	MW-58A-Y2Q1	EQB-P	EGB-B-Y2Q1	Trip Blank	*Maximum Contaminant Level (MCL)-Primary Drinking Water Standards*	*USEPA Region III RBCs - Tap Water (October 7,1999)*
Laboratory & Lab Sample ID No.			0002480-12	0002480-13	0002480-14	0002385-09	0002385-10		
Date Sample Collected			16-Feb-00	16-Feb-00	16-Feb-00	14-Feb-00	14-Feb-00		
LABORATORY ANALYSES	**DL**	**Units**							
TCL Volatile Organics (Method 8260B)									
Bromodichloromethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.17
Carbon Tetrachloride	1/100	ug/L	ND	ND	ND	ND	ND	5	0.16
Chlorobenzene	1/100	ug/L	ND	ND	ND	ND	ND	100	110
Chloroform	1/100	ug/L	3.68	2.88	ND	ND	ND	NS	0.15
1,1-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	800
1,2-Dichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0.12
1,1-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	7	0.044
Trans-1,2-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	100	120
Cis-1,2-Dichloroethene	1/100	ug/L	ND	ND	ND	ND	ND	70	61
1,1,2,2-Tetrachloroethane	1/100	ug/L	ND	ND	ND	ND	ND	NS	0.053
Tetrachloroethene	1/100	ug/L	ND	ND	ND	ND	ND	5	1.1
Toluene	1/100	ug/L	ND	ND	ND	ND	ND	1000	750
1,1,1-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	200	540
1,1,2-Trichloroethane	1/100	ug/L	ND	ND	ND	ND	ND	5	0.19
Trichloroethene	1/100	ug/L	4.36	3.84	ND	ND	ND	5	1.6
Vinyl Chloride	1/100	ug/L	ND	ND	ND	ND	ND	2	0.019

TAL = Target Analyte List

TCL = Target Compound List

MCL = Maximum Contaminant Level - Primary Drinking Water Standards

RBCs = Risk Based Concentrations

ND = not detected

NS = no standard

NZ = not analyzed

NA = not available

B = analyte detected in associated method and/or equipment blank

TABLE 5
Groundwater Levels Corresponding to Quarterly Sampled Wells

	MW-14 GWELEV	MW-15 GWELEV	MW-30 GWELEV	MW-31 GWELEV	MW-32 GWELEV	MW-33 GWELEV	MW-34 GWELEV	MW-40 GWELEV	MW-44 GWELEV	MW-51 GWELEV	MW-54 GWELEV	MW-56 GWELEV
Sampled Date												
03-Feb-99	NA	228.80	228.85	221.80	223.90	227.48	163.51	184.32	217.62	235.32	219.23	NA
25-May-99	NA	237.80	228.36	220.48	222.25	226.52	163.14	183.52	216.89	235.47	217.55	NA
27-Aug-99	NA	227.31	227.66	217.17	222.54	226.17	154.33	178.75	216.16	234.17	216.91	NA
03-Nov-99	NA	227.04	227.07	219.37	222.44	218.16	154.47	175.93	215.45	233.18	216.20	NA
07-Feb-00	228.12	226.92	226.42	218.92	222.04	225.60	160.39	177.98	214.77	232.38	215.46	226.45

Notes:

Groundwater elevations are in feet above mean sea leve (msl)

Table contains data corresponding to quarterly sampled groundwater wells only.

NA = indicates that complete data was not available.

TABLE 5
Groundwater Levels Corresponding to Quarterly Sampled Wells

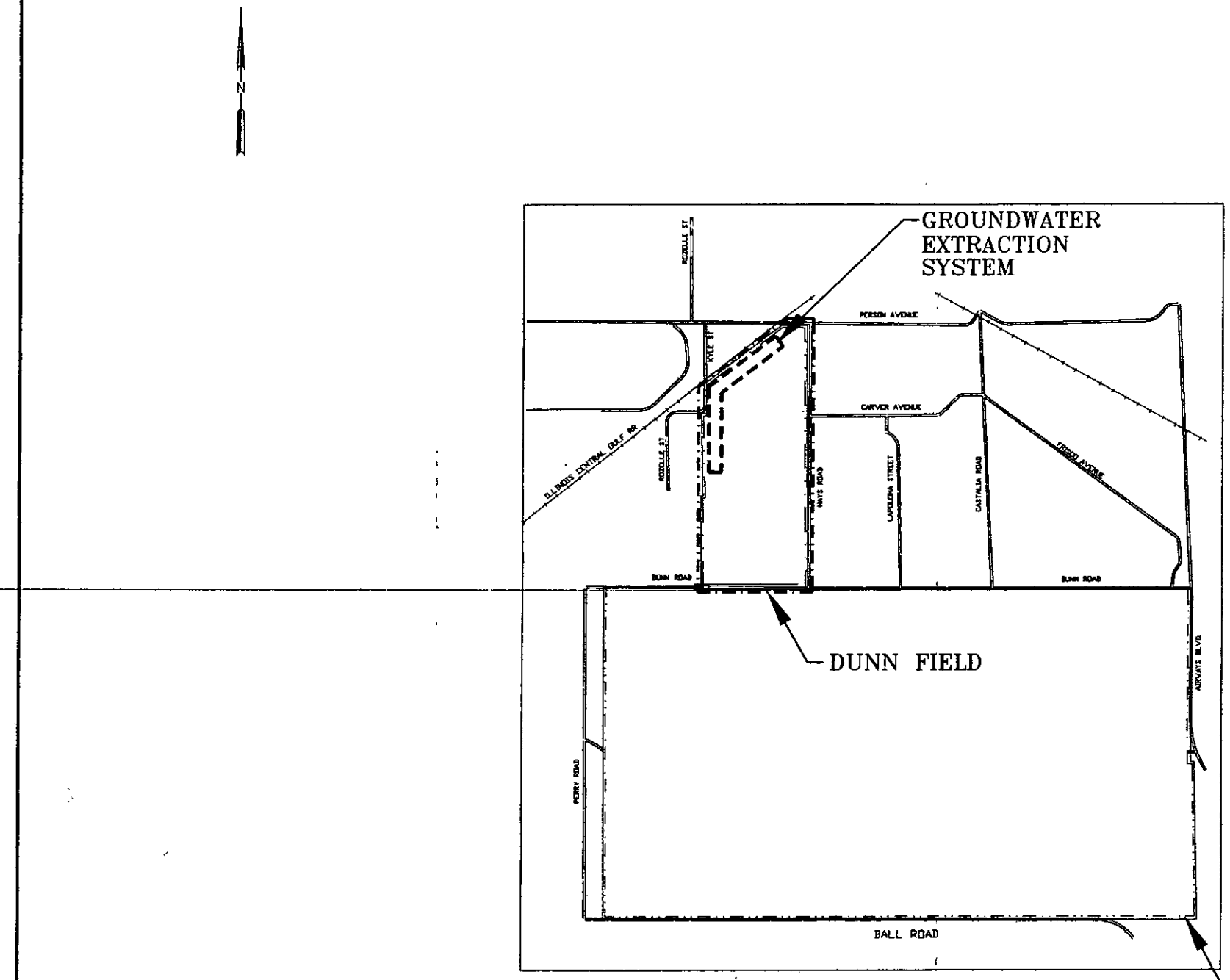
	MW-57 GWELEV	MW-58 GWELEV	MW-59 GWELEV	MW-67 GWELEV	MW-69 GWELEV	MW-70 GWELEV	MW-71 GWELEV
Sampled Date							
03-Feb-99	NA	NA	NA	NA	NA	NA	NA
25-May-99	NA	NA	NA	NA	NA	NA	NA
27-Aug-99	NA	NA	NA	NA	NA	NA	NA
03-Nov-99	NA	NA	NA	NA	NA	NA	NA
07-Feb-00	227.25	227.08	224.24	NA	222.83	223.94	225.49

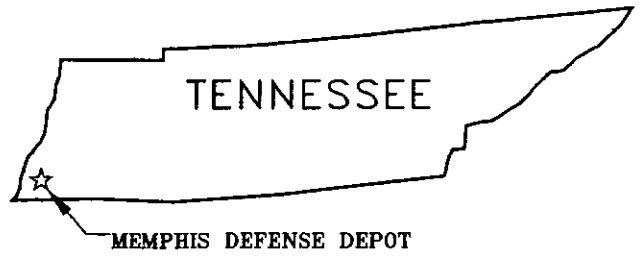
Notes:

Groundwater elevations are in feet above mean sea leve (msl)

Table contains data corresponding to quarterly sampled groundwater wells only.

NA = indicates that complete data was not available.





LEGEND

- GROUNDWATER EXTRACTION SYSTEM
- DUNN FIELD
- MEMPHIS DEFENSE DEPOT

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IT CORPORATION
A Member of The IT Group
Alpharetta, Georgia

AT FULL SCALE
IF NOT, (1"=SCALE ACCORDINGLY)

CADD FILE:
DRAWN: L. LANGE
DESIGNED:
CHECKED: S. BROSKA
APPROVED: A. DAVIE

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.
	-	-	-	---	

SVERDRUP CIVIL, INC.

SUBCONTRACT NO. CK05110152200

IT PROJECT NO. 801370 MEMPHIS, SHELBY COUNTY, TENNESSEE

MEMPHIS DEFENSE DEPOT, DUNN FIELD, AND THE GROUNDWATER EXTRACTON SYSTEM

DRAWING NUMBER: FIG. 1
SHEET NUMBER: 1 of 4
DATE: 05/12/00

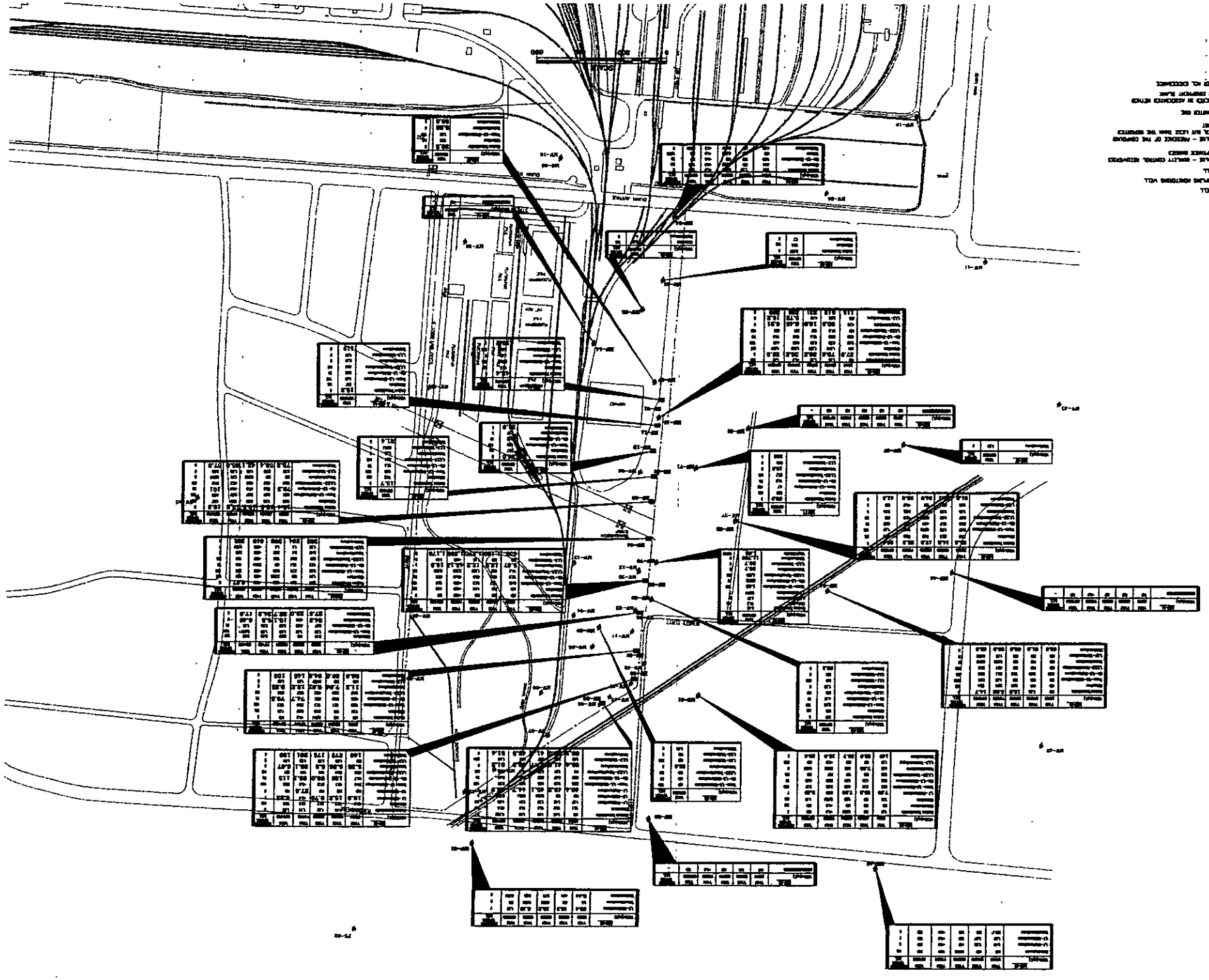
DRAWING NUMBER: FIG. 2	VOC CONCENTRATIONS IN SELECT MONITORING WELLS (T2Q1 - FEBRUARY 2000)	SVERDRUP CIVIL, INC.	
SHEET NUMBER: 2 of 4	DUNN FIELD GROUNDWATER EXTRACTION SYSTEM MEMPHIS DEFENSE DEPOT, TENNESSEE	SUBCONTRACT NO. CX53111S2200	
DATE: 06/12/00		IT PROJECT NO. 801370 SHELBY COUNTY, TENNESSEE	

REVISIONS

ZONE	REV	DESCRIPTION	BY	DATE	APP
-	-	-	-	-	

IT CORPORATION
A Member of the IT Group

AT FULL SCALE	
IF NOT 1-INCH, ADJUST	
CAD FILE: L_LANOE	
DRAWN: L. LANOE	
DESIGNED: S. BROSKA	
CHECKED: B. BROSKA	
APPROVED: A. DAVIS	



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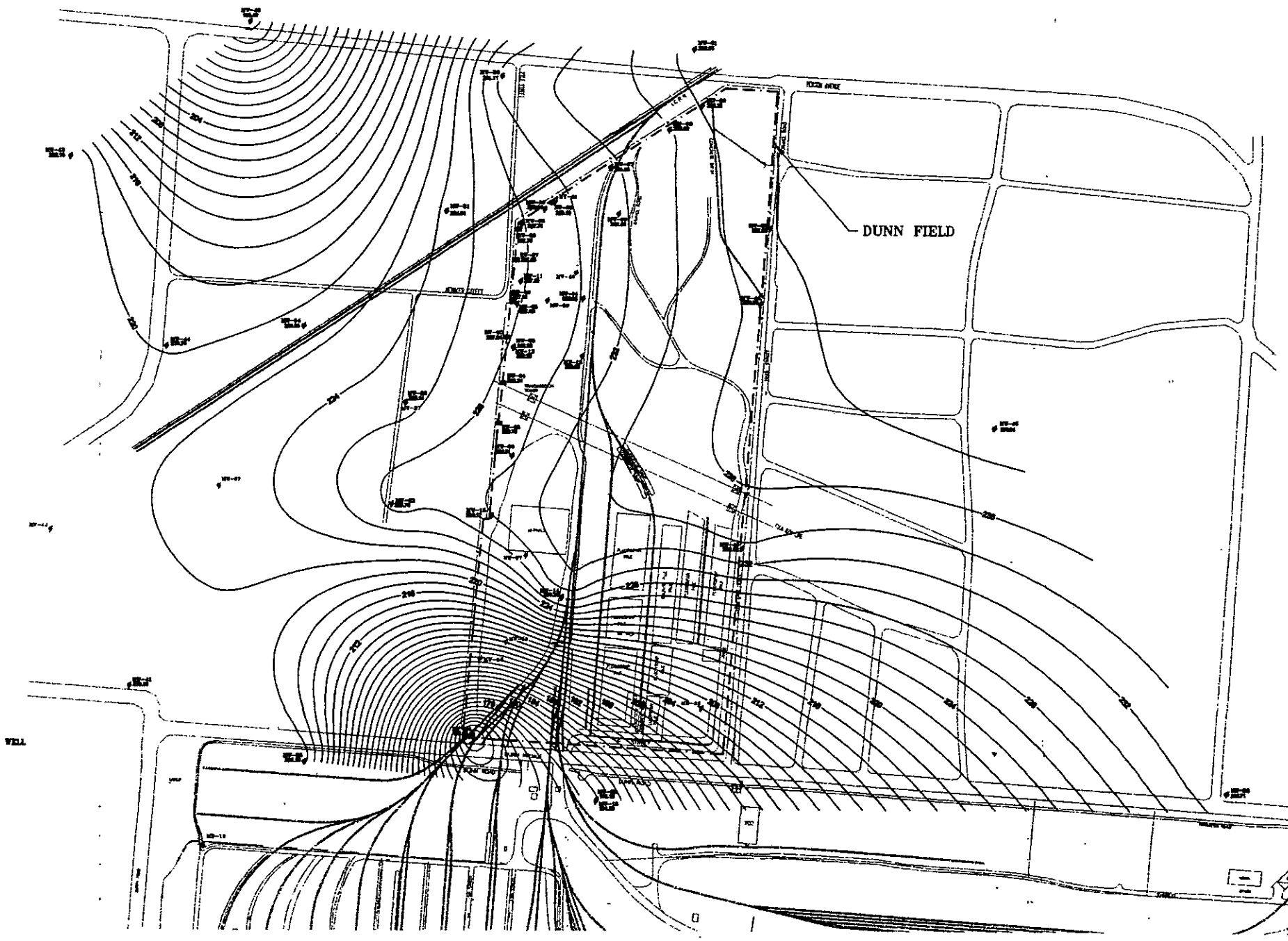

IT CORPORATION
A Member of The IT Group
Alpharetta, Georgia

AT FULL SCALE
IF NOT 1"=800' ADJUST SCALE ACCORDINGLY

DWG FILE: --
DRAWN: L. LANGE
DESIGNED: S. BROSKA
CHECKED: B. BROWN
APPROVED: A. DAVIS

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP
--	--	--	--	--	

SVERDRUP CIVIL, INC.

SUBCONTRACT NO. CSX311615200
IT PROJECT NO. 661370
MEMPHIS, SHELBY COUNTY, TENNESSEE

POTENTIOMETRIC SURFACE MAP BASELINE–NOVEMBER 1998
(STATIC GROUNDWATER CONDITIONS)

DUNN FIELD
GROUNDWATER EXTRACTION SYSTEM
MEMPHIS DEFENSE DEPOT, TENNESSEE

DRAWING NUMBER: FIG. 3
SHEET NUMBER: 3 of 4
DATE: 05/12/00

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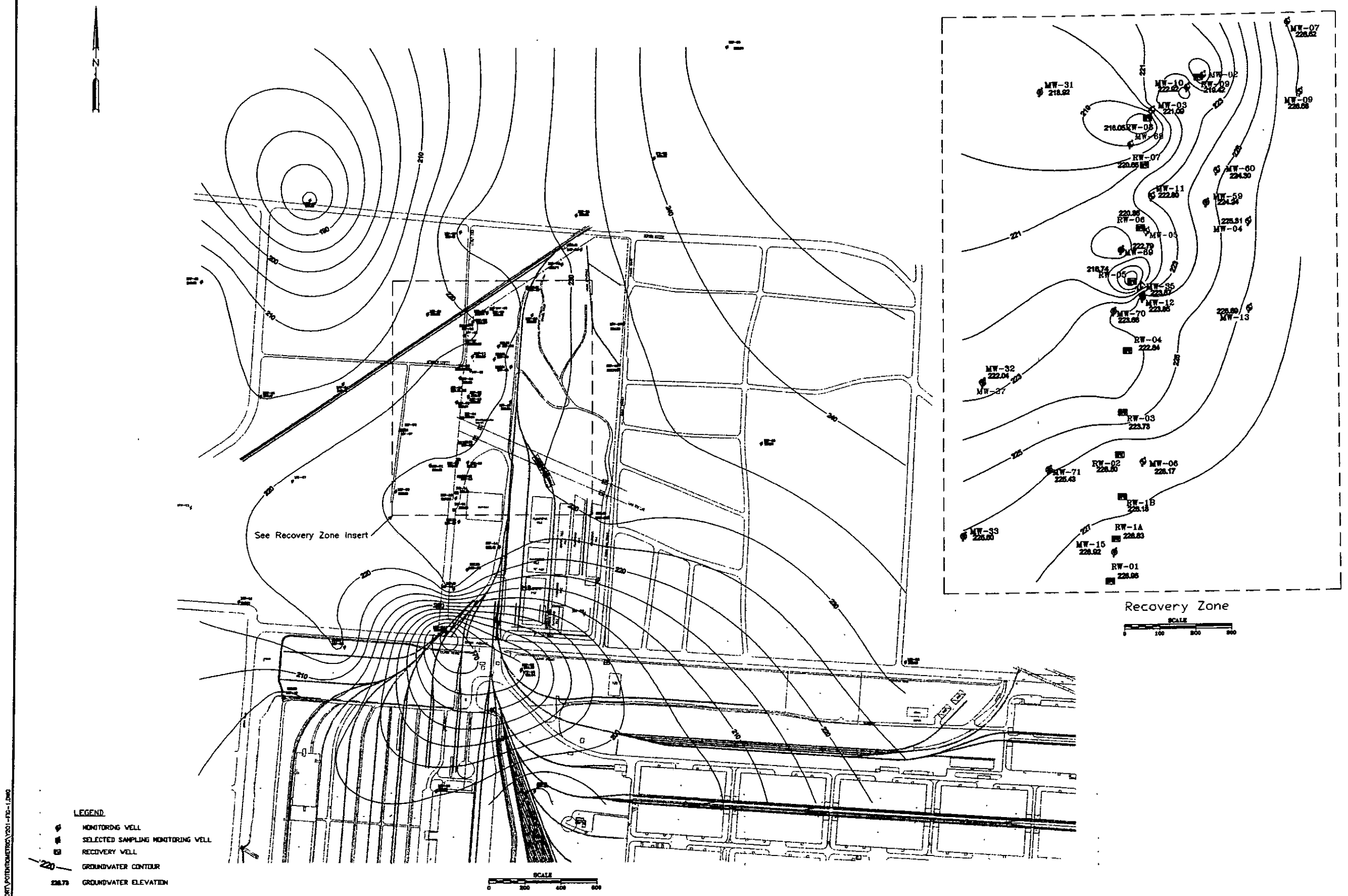

IT CORPORATION
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Alpharetta, Georgia

REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP
	-	-		-	

SVERDRUP CIVIL, INC.

SUBCONTRACT NO. CX811018200
IT PROJECT NO. 861270 MEMPHIS, SHELBY COUNTY, TENNESSEE

POTENTIOMETRIC SURFACE MAP
Y2Q1 - FEBRUARY 2000

DUNN FIELD
GROUNDWATER EXTRACTION SYSTEM
MEMPHIS DEFENSE DEPOT, TENNESSEE

DRAWING NUMBER: FIG. 4
SHEET NUMBER: 4 of 4
DATE: 05/12/00

J:\DSM\2000\Y2Q1\REPORT\POTENTIOMETRIC\Y2Q1-FIG-1.DWG

APPENDIX A

Groundwater Level Measurements

NOTES:

Year One O&M is a separate data set.

Baseline water levels were recorded 03-Nov-98 thru 04-Nov-98.

All elevations are in feet. All depths are in feet, Below Top of Casing (BTC).

Rainfall for the 24-hr period is recorded by the National Weather Service at Memphis International Airport.

Exhibit 5-1 of the O&M Plan identifies 54 monitoring wells requiring water level measurements - the following wells have monitoring record gaps the reasons listed:

MW-65: gauging required as of year two O&M, location unknown until 05-Jan-00.

MW-67: gauging required as of year two O&M, location unknown until 05-Jan-00.

PZ-02: gauging required as of year two O&M, location unknown until 15-Nov-99.

MW-68: Well to be installed

MW-69: Well not installed, first data available after installation on 05-Jan-00

MW-70: Well not installed, first data available after installation on 05-Jan-00

MW-71: Well not installed, first data available after installation on 05-Jan-00

TOC = top of casing

DTW = depth to water

NM = not measured

NA = not available

* = this value obtained from an average daily flow rate (gpm * 60 *24) and does not represent the instantaneous field totalized volume.

A = Effluent totalizing meter zeroed on 03-Nov-99.

Well ID	MW-2		MW-3		MW-4		MW-5		MW-6		MW-7		MW-8		MW-9		MW-10		MW-11		MW-12		MW-13		MW-14		MW-15		MW-18		MW-19	
TOC Elevation	292.04		292.35		301.61		304.64		289.11		295.1		292.59		304.32		288.83		299.47		301.35		299.73		302.22		295.12		308.02		290.57	
Total Depth (ft)	35.00		77.00		81.80		79.25		70.24		77.20		69.00		62.50		71.00		85.00		87.00		83.00		80.00		81.00		140.00		96.40	
Location	Dunn Field		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Depot	
DATE	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.
27-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
28-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
29-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
30-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
31-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
01-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
02-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
03-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
04-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
05-Jan-00	DRY	--	71.16	221.19	76.24	225.37	DRY	--	63.00	226.11	68.31	226.79	63.65	228.94	77.48	226.84	65.79	223.04	76.43	223.04	77.41	223.94	73.81	225.92	74.18	228.04	68.33	226.79	135.42	172.60	87.48	203.09
06-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
07-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
08-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
09-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
10-Jan-00	DRY	--	71.17	221.18	76.23	225.38	DRY	--	62.86	226.25	68.31	226.79	63.69	228.90	76.46	227.86	65.84	222.99	76.60	222.87	77.43	223.92	73.80	225.93	73.96	228.26	68.15	226.97	135.42	172.60	87.12	203.45
11-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
12-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
13-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
14-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
15-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
16-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
17-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
18-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
19-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
20-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
21-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
22-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
23-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
24-Jan-00	DRY	--	71.19	221.16	70.22	231.39	DRY	--	63.01	226.10	68.39	226.71	63.78	228.81	77.58	226.74	65.85	222.98	76.40	223.07	77.35	224.00	73.84	225.89	74.22	228.00	68.36	226.76	135.25	172.77	87.43	203.14
25-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
26-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
27-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
28-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
29-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
30-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
31-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
01-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
02-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
03-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
04-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
05-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
06-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
07-Feb-00	DRY	--	71.26	221.09	76.30	225.31	DRY	--	62.94	226.17	68.48	226.62	63.88	228.71	77.64	226.68	65.91	222.92	76.67	222.80	77.50	223.85	74.04	225.69	74.10	228.12	68.20	226.92	135.26	172.76	87.31	203.26
08-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
09-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
10-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
11-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
12-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
13-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
14-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
15-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
16-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
17-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
18-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
19-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
20-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
21-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
22-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
23-Feb-00	DRY	--	71.22	221.13	76.45	225.16	DRY	--	63.64	225.47	68.47	226.63	63.95	228.64	77.73	226.59	65.95	222.88	76.60	222.87	77.50	223.85	73.53	226.20	74.05	228.17	68.20	226.92	135.10	172.92	87.30	203.27
24-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
25-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
26-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
27-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
28-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
29-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	

Well ID	MW-2		MW-3		MW-4		MW-5		MW-6		MW-7		MW-8		MW-9		MW-10		MW-11		MW-12		MW-13		MW-14		MW-15		MW-18		MW-19	
TOC Elevation	292.04		292.35		301.61		304.64		289.11		295.1		292.59		304.32		288.83		299.47		301.35		299.73		302.22		295.12		308.02		290.57	
Total Depth (ft)	35.00		77.00		81.80		79.25		70.24		77.20		69.00		82.50		71.00		85.00		87.00		83.00		80.00		81.00		140.00		96.40	
Location	Dunn Field		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Depot	
DATE	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.
01-Nov-99	DRY	--	70.89	221.46	75.87	225.74	DRY	--	62.90	226.21	67.85	227.25	63.15	229.44	77.10	227.22	65.59	223.24	76.09	223.38	77.20	224.15	73.56	226.17	73.70	228.52	67.95	227.17	136.20	171.82	NM	NA
02-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
03-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
04-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
05-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
06-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
07-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
08-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
09-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
10-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
11-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
12-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
13-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
14-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
15-Nov-99	DRY	--	71.05	221.30	76.06	225.55	DRY	--	63.10	226.01	68.03	227.07	63.29	229.30	77.23	227.09	65.67	223.16	76.47	223.00	77.39	223.96	73.64	226.09	73.85	228.37	68.15	226.97	136.60	171.42	87.06	203.51
16-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
17-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
18-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
19-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
20-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
21-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
22-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
23-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
24-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
25-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
26-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
27-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
28-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
29-Nov-99	31.50	260.54	70.95	221.40	76.20	225.41	DRY	--	63.12	225.99	68.08	227.02	63.40	229.19	77.25	227.07	65.85	222.98	76.55	222.92	77.44	223.91	73.70	226.03	74.15	228.07	68.35	226.77	135.00	173.02	87.50	203.07
30-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
01-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
02-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
03-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
04-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
05-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
06-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
07-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
08-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
09-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
10-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
11-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
12-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
13-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
14-Dec-99	DRY	--	71.10	221.25	76.12	225.49	DRY	--	63.00	226.11	68.17	226.93	63.50	229.09	77.35	226.97	65.56	223.27	76.64	222.83	77.45	223.90	73.71	226.02	74.00	228.22	68.25	226.87	132.00	176.02	87.20	203.37
15-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
16-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
17-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
18-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
19-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
20-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
21-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
22-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
23-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
24-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
25-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
26-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	

Well ID	MW-27		MW-28		MW-29		MW-30		MW-31		MW-32		MW-33		MW-34		MW-35		MW-36		MW-37		MW-38		MW-40		MW-41		MW-42		MW-43	
TOC Elevation	303 86		294 79		273.22		274 87		290 17		284.88		280.56		299 72		300 52		310 24		284 89		307.44		262 45		283 81		274.87		284 99	
Total Depth (ft)	93 60		69 00		54 00		59.00		79.00		67 80		60.00		156 90		90.00		209 00		182.80		155 00		95 00		67 00		59 00		173.00	
Location	Depot		Dunn Field		Dunn Field		MLGW Facility		MLGW Facility		Kyle		Off-Site		Depot Field		Dunn Field		Dunn Field		Kyle		Depot		Off-Site		Off-Site		Off-Site		Elementary School	
DATE	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.
01-Nov-99	NM	NA	59 66	235 13	39 80	233 42	47 74	227.13	70 58	219 59	NM	NA	54 60	225.96	NM	NA	76 31	224 21	161 60	148 64	NM	NA	132 05	175 39	85.90	176 55	65 25	218 56	54 40	220 47	135 10	149.89
02-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
03-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
04-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
05-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
06-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
07-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
08-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
09-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
10-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
11-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
12-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
13-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
14-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
15-Nov-99	91 15	212.71	59 90	234 89	40 09	233.13	47 85	227.02	70.75	219.42	62.70	222.18	54.78	225.78	144 58	155 14	76.56	223.96	162 18	148.06	137.17	147.72	136.30	171.14	86.48	175.97	65 40	218.41	54 41	220 46	135.20	149.79
16-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
17-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
18-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
19-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
20-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
21-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
22-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
23-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
24-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
25-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
26-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
27-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
28-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
29-Nov-99	90 75	213 11	60.10	234 69	40 30	232 92	48 00	226 87	70 98	219 19	62 90	221 98	55 05	225.51	144 80	154 92	76 68	223 84	159 81	150 43	135 00	149 89	136 80	170 64	87 10	175 35	65 60	218 21	55 10	219.77	134.59	150.40
30-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
01-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
02-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
03-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
04-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
05-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
06-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
07-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
08-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
09-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
10-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
11-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
12-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
13-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
14-Dec-99	88.00	215.86	60.10	234 69	40 15	233 07	48 15	226.72	71.16	219 01	62.90	221.98	55.00	225.56	143 30	156 42	76.56	223.96	157.75	152 49	134.00	150 89	134 90	172 54	86.28	176.17	65.50	218 31	55.10	219.77	133.20	151.79
15-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
16-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
17-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
18-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
19-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
20-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
21-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
22-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
23-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
24-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
25-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
26-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	

Well ID	MW-27		MW-28		MW-29		MW-30		MW-31		MW-32		MW-33		MW-34		MW-35		MW-36		MW-37		MW-38		MW-40		MW-41		MW-42		MW-43	
TOC Elevation	303.86		294.79		273.22		274.87		290.17		284.88		280.56		299.72		300.52		310.24		284.89		307.44		262.45		283.81		274.87		284.99	
Total Depth (ft)	93.60		69.00		54.00		59.00		79.00		67.80		60.00		156.90		90.00		209.00		182.80		155.00		95.00		67.00		59.00		173.00	
Location	Depot		Dunn Field		Dunn Field		MLGW Facility		MLGW Facility		Kyle		Off-Site		Depot Field		Dunn Field		Dunn Field		Kyle		Depot		Off-Site		Off-Site		Off-Site		Elementary School	
DATE	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.
27-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
28-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
29-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
30-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
31-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
01-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
02-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
03-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
04-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
05-Jan-00	91.30	212.56	60.33	234.46	40.57	232.65	48.22	226.65	71.10	219.07	62.85	222.03	54.99	225.57	141.83	157.89	76.61	223.91	154.77	155.47	129.92	154.97	135.80	171.64	85.75	176.70	65.58	218.23	55.41	219.46	130.70	154.29
06-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
07-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
08-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
09-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
10-Jan-00	91.44	212.42	60.30	234.49	40.35	232.87	48.27	226.60	71.10	219.07	62.82	222.06	54.91	225.65	140.65	159.07	76.60	223.92	154.19	156.05	129.37	155.52	135.07	172.37	85.14	177.31	65.41	218.40	55.39	219.48	129.78	155.21
11-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
12-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
13-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
14-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
15-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
16-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
17-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
18-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
19-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
20-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
21-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
22-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
23-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
24-Jan-00	91.85	212.01	60.42	234.37	40.49	232.73	48.36	226.51	71.23	218.94	62.88	222.00	55.00	225.56	140.09	159.63	76.53	223.99	153.61	156.63	128.85	156.04	134.30	173.14	84.89	177.56	65.65	218.16	55.61	219.26	129.18	155.81
25-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
26-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
27-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
28-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
29-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
30-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
31-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
01-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
02-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
03-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
04-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
05-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
06-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
07-Feb-00	92.17	211.69	60.49	234.30	40.73	232.49	48.45	226.42	71.25	218.92	62.84	222.04	54.96	225.60	139.33	160.39	76.65	223.87	153.80	156.44	128.76	156.13	134.69	172.75	84.47	177.98	65.60	218.21	55.75	219.12	128.59	156.40
08-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
09-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
10-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
11-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
12-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
13-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
14-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
15-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
16-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
17-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
18-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
19-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
20-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
21-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
22-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
23-Feb-00	92.51	211.35	60.56	234.23	40.79	232.43	48.52	226.35	71.26	218.91	62.95	221.93	54.96	225.60	138.58	161.14	76.61	223.91	152.95	157.29	127.48	157.41	134.21	173.23	84.09	178.36	65.60	218.21	55.80	219.07	127.78	157.21
24-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
25-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
26-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
27-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
28-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
29-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	

Well ID	MW- 44		MW-45		MW-46		MW-49		MW-51		MW-53		MW-54		MW-55		MW-56		MW-57		MW-58		MW-59		MW-60		MW-62		MW-63		MW-65		MW-67	
TOC Elevation	269 07		292.81		287 56		310 49		275.24		306 38		295.36		292 05		293 80		290 79		290 52		300.12		296.85		293.60		304.58		263.22		278 21	
Total Depth (ft)	74 00		68.00		72 00		90 00		65.00		82 50		94 50		74 00		69 50		70.50		67.50		85.00		84.00		112.50		135 00		52 00		275.00	
Location	Off-Site		Off-Site		Dunn Field		Dunn Field		Off-Site		Off-Site		MLGW Facility		Depot		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Depot		Depot		Cloverdale		Off-Site	
DATE	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.
01-Nov-99	53.35	215.72	55 10	237.71	54 00	233 56	78 40	232 09	42 00	233.24	73 02	233 36	79 00	216 36	70 55	221 50	NM	NA	63 10	227 69	63 00	227 52	75 40	224 72	72.02	224 83	NM	NA	NM	NM	NM	NA	NM	NA
02-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
03-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
04-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
05-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
06-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
07-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
08-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
09-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
10-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
11-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
12-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
13-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
14-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
15-Nov-99	53.61	215.46	55 45	237.36	54.21	233.35	78 41	232 08	42 15	233.09	73.34	233.04	79 20	216.16	70 70	221.35	67 05	226.75	63.25	227.54	63.16	227 36	75.57	224 55	72 20	224 65	94 10	199 50	103.60	200.98	NM	NA	NM	NA
16-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
17-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
18-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
19-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
20-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
21-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
22-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
23-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
24-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
25-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
26-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
27-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
28-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
29-Nov-99	54 00	215 07	55 91	236 90	54 45	233 11	79 07	231 42	42 33	232 91	73 80	232 58	79 54	215 82	71 00	221 05	67 40	226 40	63 47	227 32	63 50	227 02	75 70	224 42	72 27	224 58	94 13	199 47	104 29	200 29	NM	NA	NM	NA
30-Nov-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
01-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
02-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
03-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
04-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
05-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
06-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
07-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
08-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
09-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
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11-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
12-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
13-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
14-Dec-99	54 04	215.03	55 56	237.25	54.40	233 16	78 80	231.69	42 50	232.74	73.47	232 91	79 62	215 74	70 88	221.17	67 25	226 55	63 44	227.35	63 37	227 15	75.70	224.42	72 30	224 55	94 45	199 15	103 91	200.67	NM	NA	NM	NA
15-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
16-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
17-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
18-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
19-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
20-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
21-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
22-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
23-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
24-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
25-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
26-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	

Well ID	MW- 44		MW-45		MW-46		MW-49		MW-51		MW-53		MW-54		MW-55		MW-56		MW-57		MW-58		MW-59		MW-60		MW-62		MW-63		MW-65		MW-67	
TOC Elevation	269 07		292 81		287 56		310 49		275 24		306 38		295.36		292 05		293 80		290.79		290 52		300 12		296.85		293 60		304 58		263 22		278 21	
Total Depth (ft)	74 00		68 00		72.00		90 00		65.00		82.50		94 50		74 00		69 50		70.50		67.50		85 00		84 00		112.50		135 00		52 00		275 00	
Location	Off-Site		Off-Site		Dunn Field		Dunn Field		Off-Site		Off-Site		MLGW Facility		Depot		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Dunn Field		Depot		Depot		Cloverdale		Off-Site	
DATE	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.
27-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
28-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
29-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
30-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
31-Dec-99	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
01-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
02-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
03-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
04-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
05-Jan-00	54.15	214 92	56.10	236.71	54.65	232.91	79.12	231.37	42.57	232.67	73.81	232.57	79 70	215 66	71.07	220.98	67 42	226 38	63.56	227.23	63.55	226.97	75.75	224 37	72.41	224 44	94 40	199.20	104.43	200.15	13 90	249 32	125.18	153.03
06-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
07-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
08-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
09-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
10-Jan-00	54.10	214 97	55.75	237.06	54.57	232.99	78 79	231 70	42 62	232.62	73.27	233 11	79 71	215.65	70.88	221.17	67.14	226.66	63.14	227.65	63.25	227.27	75.77	224.35	72 42	224 43	94.03	199.57	103.87	200.71	13 95	249.27	124 75	153 46
11-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
12-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
13-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
14-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
15-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
16-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
17-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
18-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
19-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
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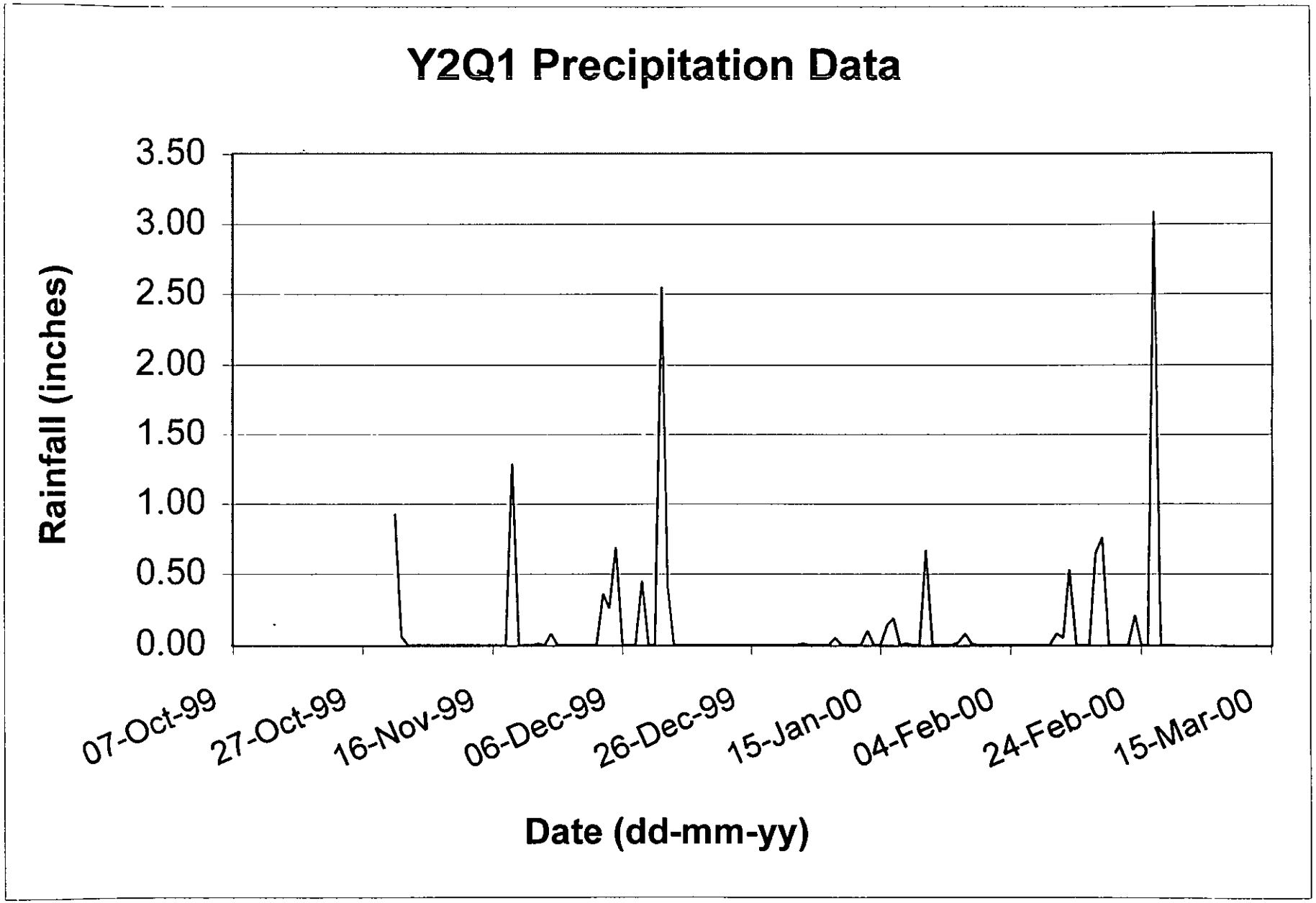
21-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
22-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
23-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
24-Jan-00	54 35	214 72	56.10	236.71	54.72	232 84	79 10	231.39	42.72	232 52	73 70	232 68	79 90	215 46	71.10	220 95	67.40	226 40	63 60	227 19	63 50	227 02	75.75	224.37	72 46	224 39	94 17	199 43	103 34	201.24	14 15	249 07	124 48	153 73
25-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
26-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
27-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
28-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
29-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
30-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
31-Jan-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
01-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
02-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
03-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
04-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
05-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
06-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
07-Feb-00	54 30	214.77	56 00	236 81	54.77	232.79	79 00	231.49	42.86	232 38	73 56	232 82	79 90	215.46	71 05	221 00	67.35	226 45	63.54	227.25	63 45	227 07	75.88	224.24	72 55	224 30	94.10	199.50	104.16	200 42	13 89	249.33	124.15	154 06
08-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
09-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
10-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
11-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
12-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
13-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
14-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
15-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
16-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
17-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
18-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
19-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
20-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
21-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
22-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
23-Feb-00	54 22	214 85	56 00	236.81	54 80	232.76	78 98	231 51	42 98	232 26	73 50	232 88	79 95	215 41	71 05	221 00	67 32	226 48	63 57	227 22	56.40	234 12	75 85	224 27	72 48	224 37	94 10	199 50	104 04	200 54	13 25	249 97	NM	NA
24-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
25-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
26-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
27-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
28-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	
29-Feb-00	NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM		NM	

Well ID	MW-68		MW-69		MW-70		MW-71		PZ-02		RW-3	RW-4	RW-5	RW-6	RW-7	RW-8	RW-9	Average System Effluent				Rainfall
TOC Elevation	291 68		307.04		305 05		294 39		284 39		299.40	305.22	307.25	304 67	297.53	293 09	290.79					24-hr Period
Total Depth (ft)	TBD		92.20		91 00		75.40		54.50		78.50	85.50	92.50	87.50	80 00	81 00	75 50					
Location	Off-Site		Off-Site		Off-Site		Off-Site		Off-Site		Dunn Field	Dunn Field	Dunn Field	Dunn Field	Dunn Field	Dunn Field	Dunn Field					
DATE	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	Flow Rate (gpm)	Flow Rate (gpm)	Flow Rate (gpm)	Flow Rate (gpm)	Flow Rate (gpm)	Flow Rate (gpm)	Flow Rate (gpm)	Flow Rate (gpm)	Totalized Flow* (gal)		Adjusted Totalized Flow (gallons)	Time	(inches)
01-Nov-99	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	5.6	4.4	4.2	2 0	5.1	22.5	21.7	68 8	53,449,502		53,449,502	12 00	**0.93**
02-Nov-99	NM		NM		NM		NM		NM		4.8	4 6	4.1	7.8	4.2	22 0	20.8	70 8	53,551,512		53,551,512	12:00	**0.06**
03-Nov-99	NM		NM		NM		NM		NM		NM	NM	NM	NM	NM	NM	NM	NM	132,617	A	53,684,129	12 00	0.00
04-Nov-99	NM		NM		NM		NM		NM		5.8	4.2	4.1	8.8	4.1	22.0	20.9	73.5	238,414		53,789,925	12 00	0.00
05-Nov-99	NM		NM		NM		NM		NM		5.3	4 1	4.0	8.6	4.1	22 1	20.9	73 1	343,606		53,895,117	12:00	0.00
06-Nov-99	NM		NM		NM		NM		NM		5.2	4.4	4.1	8.5	4.3	22.4	21.2	73 6	449,633		54,001,145	12:00	0.00
07-Nov-99	NM		NM		NM		NM		NM		5.5	4.2	4.1	8.5	4.5	22.4	21.3	73.9	556,035		54,107,546	12 00	0.00
08-Nov-99	NM		NM		NM		NM		NM		5.4	4.5	4.1	8.4	4.4	22 2	21.2	73 5	661,918		54,213,429	12:00	0.00
09-Nov-99	NM		NM		NM		NM		NM		5.3	4.4	4.1	8.4	4.2	22.1	21.1	72.7	766,635		54,318,146	12:00	0.00
10-Nov-99	NM		NM		NM		NM		NM		5.3	4.4	4 1	8.3	4.1	22.2	21.1	72.7	871,380		54,422,892	12 00	0.00
11-Nov-99	NM		NM		NM		NM		NM		5.0	3.8	4.0	8.3	3.4	21.8	20.7	70 9	973,505		54,525,017	12.00	0.00
12-Nov-99	NM		NM		NM		NM		NM		5.0	4 2	4.1	8.3	4.2	22.1	21.0	72.0	1,077,156		54,628,668	12:00	0.00
13-Nov-99	NM		NM		NM		NM		NM		5.2	4.2	4.1	8.3	4.3	22.0	21.0	72.5	1,181,571		54,733,082	12:00	0.00
14-Nov-99	NM		NM		NM		NM		NM		5 1	4.5	4.1	8.3	4.2	22.0	20.9	72 0	1,285,294		54,836,805	12:00	0 00
15-Nov-99	NM	NA	NM	NA	NM	NA	NM	NA	43 64	240.75	5.1	4 3	4.1	8.3	4.1	21.9	20.9	71.5	1,388,239		54,939,751	12:00	0.00
16-Nov-99	NM		NM		NM		NM		NM		4.8	4.1	4.1	8.2	4.1	22.0	20.8	69.7	1,488,651		55,040,162	12:00	0.00
17-Nov-99	NM		NM		NM		NM		NM		7.7	3.9	4 0	8.2	4.0	21.8	20.7	71 5	1,591,611		55,143,122	12 00	0.00
18-Nov-99	NM		NM		NM		NM		NM		3.5	4 0	4.0	8 2	4.1	21.9	20 7	70 1	1,692,612		55,244,124	12:00	0.00
19-Nov-99	NM		NM		NM		NM		NM		4.9	4.1	4.0	8.2	4.1	22.0	20.7	70.9	1,794,751		55,346,263	12:00	**1.29**
20-Nov-99	NM		NM		NM		NM		NM		4.6	3.9	4 0	8.2	4.2	22.1	8.5	58.2	1,878,531		55,430,042	12:00	**<0.01**
21-Nov-99	NM		NM		NM		NM		NM		4.8	4.2	4.1	8.3	4.4	22.4	0 0	50 5	1,951,251		55,502,762	12 00	0.00
22-Nov-99	NM		NM		NM		NM		NM		4.6	3.9	4.0	8.2	4.2	22.5	13.3	63 6	2,042,849		55,594,361	12 00	0 00
23-Nov-99	NM		NM		NM		NM		NM		4.6	4.0	4.0	8 2	4.2	22.4	22.1	72 3	2,146,947		55,698,458	12.00	**0.01**
24-Nov-99	NM		NM		NM		NM		NM		4 4	3.9	4.0	8 2	4.1	21.8	21 2	70 2	2,248,049		55,799,561	12:00	0.00
25-Nov-99	NM		NM		NM		NM		NM		1.3	4 0	4 1	8.3	4.4	22.2	21.4	69 2	2,347,740		55,899,252	12 00	**0.08**
26-Nov-99	NM		NM		NM		NM		NM		0.0	4.1	4.0	8 2	4.2	21 8	20.8	67 0	2,444,263		55,995,775	12 00	0.00
27-Nov-99	NM		NM		NM		NM		NM		0 0	4.2	4 0	8.1	4.0	21.7	8.5	54 3	2,522,441		56,073,953	12:00	0.00
28-Nov-99	NM		NM		NM		NM		NM		1.3	3 9	4 0	8 1	4.0	22.0	0.0	46 2	2,588,926		56,140,437	12 00	0.00
29-Nov-99	NM	NA	NM	NA	NM	NA	NM	NA	40.10	244 29	2 5	4.1	4.0	8 2	4.2	22 2	13.3	61 5	2,677,500		56,229,012	12 00	0 00
30-Nov-99	NM		NM		NM		NM		NM		1.7	4.2	4.0	8.3	4.3	22.3	22.5	67.3	2,774,441		56,325,953	12 00	0 00
01-Dec-99	NM		NM		NM		NM		NM		2.0	4.5	4 1	8.3	4.4	22.4	22.0	67 5	2,871,699		56,423,210	12 00	0 00
02-Dec-99	NM		NM		NM		NM		NM		0.0	4.4	4.0	8.2	4 4	22.3	21.4	64.8	2,964,982		56,516,493	12 00	0.00
03-Dec-99	NM		NM		NM		NM		NM		1.4	4 6	4.0	8.1	4.3	22.1	21 0	65 5	3,059,331		56,610,842	12 00	**0.36**
04-Dec-99	NM		NM		NM		NM		NM		0 0	4.6	4.0	8 1	4.1	21.7	20.6	63 2	3,150,281		56,701,793	12 00	**0.26**
05-Dec-99	NM		NM		NM		NM		NM		4 2	4.3	4.0	8 1	4.0	21 6	16.4	62 7	3,240,497		56,792,009	12.00	**0.69**
06-Dec-99	NM		NM		NM		NM		NM		3.9	4.4	4 0	8.1	3.9	21.9	0.0	46 1	3,306,924		56,858,436	12 00	0.00
07-Dec-99	NM		NM		NM		NM		NM		2.3	4.4	4.0	8 2	4.3	22.4	12 5	58 1	3,390,531		56,942,042	12 00	0.00
08-Dec-99	NM		NM		NM		NM		NM		0.6	4.1	4.0	8 2	4.2	22 0	21.9	65 0	3,484,073		57,035,585	12 00	0.00
09-Dec-99	NM		NM		NM		NM		NM		2.7	4.9	4.1	8.2	4.4	22.1	21.7	68 0	3,581,979		57,133,490	12 00	**0.45**
10-Dec-99	NM		NM		NM		NM		NM		2.8	4.1	4.0	8.1	3.8	21.5	12.8	56 9	3,663,886		57,215,397	12 00	**<0.01**
11-Dec-99	NM		NM		NM		NM		NM		1.3	4.1	4.0	8 1	4 2	21.9	21.5	65 1	3,757,630		57,309,141	12 00	0.00
12-Dec-99	NM		NM		NM		NM		NM		2.0	4.6	4.0	8.2	4.3	22.0	21.1	66 2	3,852,943		57,404,455	12:00	**2.55**
13-Dec-99	NM		NM		NM		NM		NM		1.5	4.2	4 0	8.2	4.1	21.7	20.6	64 2	3,945,391		57,496,903	12:00	**0.42**
14-Dec-99	NM	NA	NM	NA	NM	NA	NM	NA	43.95	240 44	2.3	4.2	4.0	8 0	3.9	21.4	19 0	62.8	4,035,838		57,587,349	12 00	0.00
15-Dec-99	NM		NM		NM		NM		NM		4 2	4.0	4.0	8 0	3.6	21 3	14.2	59 2	4,121,028		57,672,540	12.00	0.00
16-Dec-99	NM		NM		NM		NM		NM		1.7	4.0	4.0	8.0	3.9	21.5	20.6	63 7	4,212,814		57,764,325	12:00	0.00
17-Dec-99	NM		NM		NM		NM		NM		3.6	4.2	4.0	8 1	3.9	21.5	20.3	65 6	4,307,220		57,858,732	12.00	0.00
18-Dec-99	NM		NM		NM		NM		NM		0.0	4.3	4.0	8.1	4.1	21 6	20 5	62 6	4,397,350		57,948,861	12 00	0 00
19-Dec-99	NM		NM		NM		NM		NM		1.5	4.3	4 0	8.0	4 1	21.6	18.7	62 3	4,487,119		58,038,631	12 00	0.00
20-Dec-99	NM		NM		NM		NM		NM		0.0	3.9	4.0	7.9	3.8	21.5	0.0	41 1	4,546,289		58,097,801	12 00	0.00
21-Dec-99	NM		NM		NM		NM		NM		0.0	4.1	4.0	8 0	4.1	22.0	0.0	42 2	4,606,999		58,158,511	12 00	0.00
22-Dec-99	NM		NM		NM		NM		NM		0 0	4.3	4 0	8.1	4.3	22 2	13 1	55 9	4,687,481		58,238,993	12 00	0.00
23-Dec-99	NM		NM		NM		NM		NM		0.0	4.1	4.2	8 1	4.2	22.1	22.0	64 7	4,780,678		58,332,189	12 00	0 00
24-Dec-99	NM		NM		NM		NM		NM		0 0	4.4	4.0	8.0	4.1	21.6	21 0	63 1	4,871,499		58,423,010	12 00	0.00
25-Dec-99	NM		NM		NM		NM		NM		0.0	4.4	4 0	8 1	4.1	21 5	20.7	62 7	4,961,743		58,513,255	12 00	0.00
26-Dec-99	NM		NM		NM		NM		NM		0.0	4.7	4.1	8.1	4.2	21 8	20.8	63 6	5,053,313		58,604,825	12 00	0 00

Well ID	MW-68		MW-69		MW-70		MW-71		PZ-02		RW-3	RW-4	RW-5	RW-6	RW-7	RW-8	RW-9	Average System Effluent				Rainfall
TOC Elevation	291 68		307.04		305.05		294 39		284.39		299 40	305 22	307.25	304 67	297 53	293 09	290 79					24-hr Period
Total Depth (ft)	TBD		92.20		91.00		75 40		54 50		78.50	85 50	92 50	87 50	80 00	81.00	75 50					
Location	Off-Site		Off-Site		Off-Site		Off-Site		Off-Site		Dunn Field	Dunn Field	Dunn Field	Dunn Field	Dunn Field	Dunn Field	Dunn Field					
DATE	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	DTW (BTC)	GW Elev.	Flow Rate (gpm)	Flow Rate (gpm)	Flow Rate (gpm)	Flow Rate (gpm)	Flow Rate (gpm)	Flow Rate (gpm)	Flow Rate (gpm)	Flow Rate (gpm)	Totalized Flow* (gal)	Adjusted Totalized Flow (gallons)	Time	(inches)
27-Dec-99	NM		NM		NM		NM		NM		0.0	4.8	4.0	8 0	4.2	21.6	20.5	63.2	5,144,249	58,695,761	12:00	**<0.01**
28-Dec-99	NM		NM		NM		NM		NM		0 0	4.4	4 0	8.0	4.2	21.6	20.5	62 7	5,234,595	58,786,106	12:00	**<0.01**
29-Dec-99	NM		NM		NM		NM		NM		0.0	4.2	4.0	8 0	4.0	21 2	20.1	61.4	5,323,011	58,874,522	12:00	0.00
30-Dec-99	NM		NM		NM		NM		NM		0.0	4.5	4.0	8.0	4.1	20 1	21.2	61 9	5,412,089	58,963,601	12 00	0.00
31-Dec-99	NM		NM		NM		NM		NM		0.0	4.2	3.9	7.8	3.9	21.4	19.7	61 0	5,499,900	59,051,412	12.00	0.00
01-Jan-00	NM		NM		NM		NM		NM		0.0	4.3	4.0	7.9	3 9	21.3	19.9	63.8	5,591,815	59,143,327	12 00	0.00
02-Jan-00	NM		NM		NM		NM		NM		0.0	4.7	4.0	8.0	3.9	21.4	20 0	64 5	5,684,710	59,236,221	12 00	0.00
03-Jan-00	NM		NM		NM		NM		NM		0.0	4.7	4.0	8.0	4.1	21.5	20.1	65.1	5,778,511	59,330,023	12.00	**0.01**
04-Jan-00	NM		NM		NM		NM		NM		0.0	4.0	3.9	3.2	2.9	20.6	19.0	54 7	5,857,251	59,408,762	12 00	**<0.01**
05-Jan-00	NM	NA	84 02	223 02	81.40	223 65	68 99	225 40	44 06	240 33	0.0	4.3	4.0	4.0	4.0	21.2	19.7	57 9	5,940,684	59,492,196	12.00	0 00
06-Jan-00	NM		NM		NM		NM		NM		0.0	4.6	4.0	8.2	3.8	21.1	19.6	61.9	6,029,806	59,581,317	12.00	0.00
07-Jan-00	NM		NM		NM		NM		NM		0.0	4.5	4.0	8.1	3.9	21.1	19.6	62.0	6,119,071	59,670,583	12:00	0.00
08-Jan-00	NM		NM		NM		NM		NM		0.0	4.6	4.0	8 1	4.2	21.6	20.2	64.9	6,212,513	59,764,025	12:00	**0.05**
09-Jan-00	NM		NM		NM		NM		NM		0.0	5.0	4.1	8.1	4.2	21.7	20.3	65.9	6,307,395	59,858,906	12:00	**<0.01**
10-Jan-00	NM	NA	84.22	222 82	81.22	223.83	68.93	225.46	44 00	240 39	0.0	4.3	4.0	7.9	3.8	21.0	19.5	63.0	6,398,100	59,949,612	12:00	0 00
11-Jan-00	NM		NM		NM		NM		NM		0.0	4.2	3.9	7.8	3.2	20.7	19.2	61 2	6,486,156	60,037,668	12:00	0.00
12-Jan-00	NM		NM		NM		NM		NM		0.0	4.3	4 0	7.9	3.9	21.0	19.5	63 0	6,576,905	60,128,417	12:00	**<0.01**
13-Jan-00	NM		NM		NM		NM		NM		0.0	3.9	3.9	3.1	1.9	20.2	18 5	54 3	6,655,025	60,206,537	12:00	**0.10**
14-Jan-00	NM		NM		NM		NM		NM		0.0	4 8	4.0	0.0	4.1	21.0	19.4	53 0	6,731,273	60,282,785	12:00	0.00
15-Jan-00	NM		NM		NM		NM		NM		0.0	4.4	4.1	0.0	4.4	21.5	20.1	55 5	6,811,179	60,362,690	12:00	0.00
16-Jan-00	NM		NM		NM		NM		NM		0.0	4.5	4.1	0.0	4.2	21.3	19.6	56 1	6,892,006	60,443,517	12:00	**0.14**
17-Jan-00	NM		NM		NM		NM		NM		0.0	4.8	4.1	0 0	4 4	21 4	19.8	56 8	6,973,827	60,525,338	12 00	**0.19**
18-Jan-00	NM		NM		NM		NM		NM		0 0	4.9	4.1	3 4	4.3	21.2	19.5	59 2	7,059,118	60,610,629	12 00	**<0.01**
19-Jan-00	NM		NM		NM		NM		NM		0.0	5.0	4 1	8 8	4 3	21.6	20 0	64 5	7,152,055	60,703,567	12 00	**0.01**
20-Jan-00	NM		NM		NM		NM		NM		0 0	4.7	4.0	8.2	3.0	20.6	18.8	59 4	7,237,606	60,789,117	12.00	0.00
21-Jan-00	NM		NM		NM		NM		NM		0.0	4.5	4 0	5 0	3 9	21.0	19 4	58 7	7,322,177	60,873,689	12.00	0 00
22-Jan-00	NM		NM		NM		NM		NM		0.0	4 7	4.1	0.0	4.3	21.4	20 4	54.0	7,399,879	60,951,391	12 00	**0.67**
23-Jan-00	NM		NM		NM		NM		NM		0.0	4 6	4 1	0 0	4.1	20 9	19 1	51 9	7,474,659	61,026,170	12 00	**<0.01**
24-Jan-00	NM	NA	84 00	223.04	81 31	223 74	69 00	225 39	44 24	240 15	0.0	4.1	4.0	4.5	4.1	21.0	19.1	58.4	7,558,798	61,110,309	12 00	**<0.01**
25-Jan-00	NM		NM		NM		NM		NM		0.0	4.7	4.0	8 4	4.0	21.0	19 2	62 2	7,648,351	61,199,863	12.00	0.00
26-Jan-00	NM		NM		NM		NM		NM		0 0	4.5	4.0	8.1	3.8	20.7	19.0	62 1	7,737,718	61,289,229	12 00	0.00
27-Jan-00	NM		NM		NM		NM		NM		0.0	4.4	4.0	8 0	3.7	20.8	19.0	59 9	7,824,017	61,375,529	12.00	**0.02**
28-Jan-00	NM		NM		NM		NM		NM		0 0	4.2	4.0	8.0	3.9	20 9	19.3	61 5	7,912,635	61,464,146	12 00	**0.08**
29-Jan-00	NM		NM		NM		NM		NM		0.0	4.3	4.0	8.0	3.9	21.0	19.2	59 2	7,997,883	61,549,394	12 00	**0.01**
30-Jan-00	NM		NM		NM		NM		NM		0.0	4.5	4 0	7.9	3.7	20.8	19.1	59 6	8,083,735	61,635,247	12 00	0 00
31-Jan-00	NM		NM		NM		NM		NM		0.0	4 4	4.0	7.9	3.9	21.0	19.2	62.3	8,173,375	61,724,887	12.00	0.00
01-Feb-00	NM		NM		NM		NM		NM		0.0	4.2	4 0	7.8	3 6	20.7	18.9	60 1	8,259,977	61,811,489	12:00	0.00
02-Feb-00	NM		NM		NM		NM		NM		0.0	4.2	4.0	7.8	3.7	20.8	19.1	60 6	8,347,270	61,898,781	12 00	0.00
03-Feb-00	NM		NM		NM		NM		NM		0 0	4 8	4.0	7.9	4.1	21.3	19.6	63 0	8,438,047	61,989,559	12 00	0.00
04-Feb-00	NM		NM		NM		NM		NM		0.0	4.1	3 1	7.7	2.4	20.3	18.5	57 4	8,520,646	62,072,157	12 00	0.00
05-Feb-00	NM		NM		NM		NM		NM		0.0	4.0	3.9	7.8	3.1	20 6	18.7	59 8	8,606,787	62,158,298	12.00	0.00
06-Feb-00	NM		NM		NM		NM		NM		0 0	4.3	4.0	7 8	3.7	20.8	19.0	60.7	8,694,209	62,245,721	12 00	0.00
07-Feb-00	NM	NA	84.25	222 79	NM	NA	68.96	225.43	44.20	240 19	0.0	4.7	4.0	7.7	3 8	20 7	18.9	60 2	8,780,897	62,332,409	12:00	0.00
08-Feb-00	NM		NM		NM		NM		NM		0.0	4.3	3.9	7.7	3.6	20.6	18 7	59 2	8,866,203	62,417,714	12:00	0 00
09-Feb-00	NM		NM		NM		NM		NM		0.0	4.8	4.0	7.7	4 0	21 0	19.2	61.5	8,954,763	62,506,274	12:00	0.00
10-Feb-00	NM		NM		NM		NM		NM		0.0	0.4	4 0	7 7	4.0	21.1	19.2	59 2	9,040,068	62,591,580	12:00	0 00
11-Feb-00	NM		NM		NM		NM		NM		0.0	0.0	3.9	5.1	2 9	20.3	18.4	52 8	9,116,086	62,667,597	12 00	**0.08**
12-Feb-00	NM		NM		NM		NM		NM		0.0	0 0	3 6	0.2	3.7	19.4	4.5	31 5	9,161,446	62,712,957	12:00	**0.05**
13-Feb-00	NM		NM		NM		NM		NM		0 0	0.0	1.4	0.0	4.3	21.9	4.7	32.3	9,207,943	62,759,455	12:00	**0.53**
14-Feb-00	NM		NM		NM		NM		NM		2.1	1 3	3 4	1.5	3.8	20.9	12.2	45 1	9,272,844	62,824,356	12 00	0 00
15-Feb-00	NM		NM		NM		NM		NM		8 6	4 3	4.1	7.5	4.0	21.5	20.7	70 6	9,374,523	62,926,034	12 00	0 00
16-Feb-00	NM		NM		NM		NM		NM		3.9	3.7	4 0	7.2	3.6	20.7	19 1	62.1	9,463,990	63,015,501	12.00	0.00
17-Feb-00	NM		NM		NM		NM		NM		4.5	4.2	4.0	7.1	4 0	21.3	19.8	64.7	9,557,172	63,108,684	12 00	**0.65**
18-Feb-00	NM		NM		NM		NM		NM		4.4	3 6	4.0	7.0	3 8	20 9	19.2	62.8	9,647,662	63,199,173	12 00	**0.76**
19-Feb-00	NM		NM		NM		NM		NM		3.6	3.1	3.9	6 7	2.5	20.0	18 1	57 8	9,730,865	63,282,377	12 00	0 00
20-Feb-00	NM		NM		NM		NM		NM		5 6	3.6	3.9	6.7	3 4	20 4	18.7	62.3	9,820,577	63,372,089	12 00	0.00
21-Feb-00	NM		NM		NM		NM		NM		3.9	3 3	4 0	6.7	3 8	20 7	19 0	61 2	9,908,719	63,460,231	12 00	0 00
22-Feb-00	NM		NM		NM		NM		NM		4 0	4.4	3.9	6 6	3 6	20.7	19.0	62 2	9,998,316	63,549,828	12 00	0.00
23-Feb-00	NM	NA	84 23	222 81	81 39	223 66	69 05	225 34	44 44	239 95	4.0	3 7	4 0	6.5	3 5	20 7	18.9	61 2	10,086,444	63,637,956	12 00	**0.21**
24-Feb-00	NM		NM		NM		NM		NM		3 8	3 4	3 9	6 4	3.4	20.5	18.7	60 1	10,173,017	63,724,529	12 00	**<0.01**
25-Feb-00	NM		NM		NM		NM		NM		3 9	3 8	3.9	6 5	3.6	20.5	18.8	61 1	10,260,958	63,812,469	12 00	0.00
26-Feb-00	NM		NM		NM		NM		NM		4 0	3 6	3.9	6.5	3 6	20.4	18.7	60 7	10,348,337	63,899,849	12 00	**3.09**
27-Feb-00	NM		NM		NM		NM		NM		3 6	3.6	3 9	6.4	2.8	20.0	18.1	58 2	10,432,174	63,983,685	12 00	0 00
28-Feb-00	NM		NM		NM		NM		NM		3.8	4.6	3.9	6 4	3.4	20 4	18.5	61 0	10,520,071	64,071,583	12 00	0 00
29-Feb-00	NM		NM		NM		NM		NM		4.1	3 9	3 9	6 5	3 7	20 7	19.0	61 9	10,609,150	64,160,661	12 00	0 00


Y2Q1 Precipitation Data
Rainfall (inches)
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
07-Oct-99
27-Oct-99
16-Nov-99
06-Dec-99
26-Dec-99
15-Jan-00
04-Feb-00
24-Feb-00
15-Mar-00
Date (dd-mm-yy)

APPENDIX B

Analytical Laboratory Data for the Quarterly Monitoring Well Samples

Chemical Analytical Data Review Checklist

Report Type: [ ] Preliminary [✓] Final Date Received: _____ Project Number: 801370

Project Name: DDMT Analysis/Method: 8260B

Laboratory: ETC Lab Project/Case Number: 0002385

Sample Number(s): RW-3, 4, 5, 6, 7, 8, 8A, 9, EB, TB

Evaluated By: Betsy McDaniel Date Evaluated: 3/9/00

Data Package Deliverables Requirement: [✓] Mininum [ ] Standard [ ] Maximum

[ ] Other, please describe _____

Quality Control Deliverables	Required	Received	Passed	Failed
PQL, MDL, RL, etc meets DQOs				
Comment:				
Holding Times			✓	
Comment:				
Sample Condition (preservatives, containers, temperature, etc) / Case Narrative	X		✓	
Comment:				
Surrogate Recoveries	X		✓	
Comment:				
Lab Control Sample Recoveries	X		✓	
Comment: non target failures				
Lab Control Sample Duplicate or Other Spike Recoveries	X			
Comment: NA				
Lab Control Sample Duplicate or Other Laboratory Duplicate RPD	X			
Comment: NA				
Matrix Spike Recoveries	X			✓
Comment: spike RW-6, high recoveries, BDL results				
Matrix Spike Duplicate Recoveries	X			✓
Comment:				
Matrix Spike / Matrix Spike Duplicate RPD	X		✓	
Comment:				
Laboratory Blanks (daily, method, instrument)	X		✓	
Comment:				
Field Blanks (trip, equip, ambient, matrix)	X		✓	
Comment:				
Field Duplicates RPD	X			
Comment: NA				

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ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road • Memphis, TN 38111 • (901) 327-2750 • FAX (901) 327-6334
Founded 1972

February 23, 2000

Mr. Virgil Jansen
Sverdrup Corporation
13723 Riverport Drive
Maryland Heights, MO 63043

Ref: Analytical Testing
ETC Order # 0002385
Project Description DDMT-Dunn Field

Project # 801370- Memphis Defense Depot

The above referenced project has been analyzed per your instructions. The analyses were performed in our laboratory in accordance with Standard Methods 17th/18th Edition; The Solid Waste Manual SW-846; EPA Methods for the Analysis of Water and Wastes and/or 40 CFR part 136.

The results are shown on the attached analysis sheet(s).

Please do not hesitate to contact our office if you have any questions.

Sincerely,

CD Scheibel

Chester D. Scheibel
Project Manager

rt
Attachment

SVE_MHDDMT

Environmental Testing & Consulting, Inc.

Data Qualifiers for Organic Reporting

Within the attached report, some analytical data may be reported as "Qualified Data" as indicated by a "Data Qualifier" next to the result. This table summarizes the possible "Data Qualifiers" that may be associated with this report.

Q	Surrogate Recovery Outside QC Limits
J	Estimated Value. Presence of the compound was confirmed but less than the reported detection limit.
E	Concentration exceeds the established method calibration range but is within the working range of the instrument.
B	Analyte detected in the associated Method Blank.
U	Reported result was unconfirmed. Refer to Case Narrative.
N	Non-Compliance Report associated with this sample or project.
C	Result reported from GC/MS confirmation analysis.
M	Result reported represents a minimum value. Refer to Case Narrative.
NC	Result reported from Primary Column. Result did not confirm.
*	QC Data (percent recovery/RPD for a particular analyte was outside QC Limits)

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ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ANALYTICAL SUMMARY TABLE

Client Name Sverdrup Corporation
Site ID DDMT-Dunn Field

ETC Sample ID	Field ID	Matrix	Method	Method Description
000238501	RW-3-Y2Q1	AQUEOUS	8260B	GC/MS Volatile Organics
000238502	RW-4-Y2Q1	AQUEOUS	8260B	GC/MS Volatile Organics
000238503	RW-5-Y2Q1	AQUEOUS	8260B	GC/MS Volatile Organics
000238504	RW-6-Y2Q1	AQUEOUS	8260B	GC/MS Volatile Organics
000238505	RW-7-Y2Q1	AQUEOUS	8260B	GC/MS Volatile Organics
000238506	RW-8-Y2Q1	AQUEOUS	8260B	GC/MS Volatile Organics
000238507	RW-8A-Y2Q1	AQUEOUS	8260B	GC/MS Volatile Organics
000238508	RW-9-Y2Q1	AQUEOUS	8260B	GC/MS Volatile Organics
000238509	EGB-B-Y2Q1	AQUEOUS	8260B	GC/MS Volatile Organics
000238510	Trip Blank	AQUEOUS	8260B	GC/MS Volatile Organics

Environmental Testing & Consulting, Inc.

Login
Chain-of-Custody

775 7i

CHAIN OF CUSTODY RECORD

000004

Environmental Testing & Consulting, Inc.
2924 Walnut Grove Rd.
Memphis, TN 38111
(901)327-2750 FAX (901)327-6334

ETC Work Order : 0002385

Company Name: Srendrup
Phone #: 314-770-4025 | Fax Results:
Fax #: 314-770-5708 | RUSH:
Project/Site: 801370.2000000 | FID #: | Ice:
Project #: DDMT - Dunn Field | PO #:
Project Manager/Contact: Virgil Janson

Matrix: 1 Wastewater, 2 Aqueous, 3 Soil/Sediment, 4 Sludge, 5 Oil/Solvent, 6 Other

Analysis Requested (Note special detection limits or methods): 1,2,3 8260B

# of cont.	Sample ID/ Number	Depth	Sample Date	Sample Time	Matrix	Type Grab/Comp	1,2,3 8260B	Comments
3	RW-3-YZQ1		2/14/00	17:30	1	G	X	
3	RW-4-YZQ1		2/14/00	17:40	1	G	X	
3	RW-5-YZQ1		2/14/00	17:55	1	G	X	
3	RW-6-YZQ1		2/14/00	18:40	1	G	X	
3	RW-7-YZQ1		2/14/00	18:10	1	G	X	
3	RW-8-YZQ1		2/14/00	18:15	1	G	X	
3	RW-8A-YZQ1		2/14/00	18:20	1	G	X	
2	RW-9-YZQ1		2/14/00	18:30	1	G	X	
3	EGB-B-YZQ1		2/14/00	17:55	1	G	X	
3	Trip Blank		2/14/00				X	

Sampled By: S.Booka/K.McCord
Method of Shipment:
Blank/Cooler Temp: 4°C (IR)
Remarks:

	DATE	TIME		DATE	TIME	
RELINQUISHED BY (sign) Serena A Booka	2/15/00	0700	RECEIVED BY (sign)			Sample Delivery Group ID
RELINQUISHED BY (sign)	DATE	TIME	RECEIVED BY (sign)	DATE	TIME	
RELINQUISHED BY (sign)	DATE 2/15/00	TIME 0900	RECEIVED BY LAB (print/sign) R Barge	DATE 2/15/00	TIME 0900	

Distribution: Original and Yellow accompany samples to the laboratory. Pink copy for Crew.
Original copy returned with results. Yellow copy for ETC, Inc. files.

F:\QAQC\SL... ...OC0995.XLS

Environmental Testing & Consulting, Inc.
Cooler Receipt Form

Date Received 2/15/00
Date/Time Checked In 2/15/00-0900 *
Carrier/Bill# Hand-Delivered

LIMS# 0002-385
Project DDMT
Dunn Field
By PSBarge

1.	Custody Seals?/Location-NA	No
2.	Samples are non-radioactive?	Yes
3.	Chain of Custody in plastic?	Yes
4.	Temperature at receipt (ok = 4 ± 2 °C)<4oC	OK
5.	Ice & Packing-Bubble Wrap, Ice	Yes
6.	Chain of Custody filled out properly?	Yes
7.	All containers in separate bags?	Yes
8.	Sample containers intact?	Yes
9.	Label(s) complete and in good condition?	Yes
10.	Label(s) agree with Chain of Custody?	Yes
11.	Correct containers used?	Yes
12.	Sufficient sample?	Yes
13.	VOA vials bubble-free (H_2O) or no head space (soil)?	Yes
14.	Preservation OK? TM pH____; TRPH pH____; TOC pH____; TOX pH____; CN pH____; N/P pH____; Other pH____	Yes

Comments _____

*Validated Date and Time of Sample Receipt (VDTSR)

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Environmental Testing & Consulting, Inc.

Sample Reports

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-20000000
FID #

Site ID DDMT-Dunn Field

Date Arrived 02/15/00
ETC Order Number 0002385

ETC Lab ID **0002385-01**
Sample ID: RW-3-Y2Q1

Matrix :AQUEOUS
Sample Date :02/14/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							8260B
					02/16/00	LS	
QC Batch	V1021601	ug/L					
Acetone	ND	ug/L	20.0				
Benzene	ND	ug/L	1.00				
Bromodichloromethane	ND	ug/L	1.00				
Bromoform	ND	ug/L	1.00				
Bromomethane	ND	ug/L	1.00				
Carbon Disulfide	ND	ug/L	1.00				
Carbon Tetrachloride	10.9	ug/L	1.00				
hlorobenzene	ND	ug/L	1.00				
hlorodibromomethane	ND	ug/L	1.00				
Chloroethane	ND	ug/L	1.00				
Chloroform	4.57	ug/L	1.00				
Chloromethane	ND	ug/L	1.00				
1,1-Dichloroethane	ND	ug/L	1.00				
1,2-Dichloroethane	ND	ug/L	1.00				
1,1-Dichloroethene	ND	ug/L	1.00				
trans-1,2-Dichloroethene	4.52	ug/L	1.00				
1,2-Dichloropropane	ND	ug/L	1.00				
cis-1,3-Dichloropropene	ND	ug/L	1.00				
trans-1,3-Dichloropropene	ND	ug/L	1.00				
Ethylbenzene	ND	ug/L	1.00				
2-Hexanone (MBK)	ND	ug/L	5.00				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00				
2-Butanone (MEK)	ND	ug/L	20.0				
Methylene Chloride	ND	ug/L	5.00				
Styrene	ND	ug/L	1.00				
1,1,2,2-Tetrachloroethane	61.9	ug/L	1.00				
Tetrachloroethene	0.65J	ug/L	1.00				
Toluene	ND	ug/L	1.00				
1,1,1-Trichloroethane	ND	ug/L	1.00				
1,1,2-Trichloroethane	2.80	ug/L	1.00				
Trichloroethene	57.8	ug/L	1.00				
Vinyl Acetate	ND	ug/L	20.0				
Vinyl Chloride	ND	ug/L	1.00				
o-Xylenes	ND	ug/L	1.00				
m-Xylenes	ND	ug/L	1.00				
p-Xylenes	ND	ug/L	1.00				
cis-1,2-Dichloroethene	101	ug/L	1.00				

rogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	100	74	123
S2 - Toluene-d8	102	86	112
S3 - 4-Bromofluorobenzene	86	81	115

CDS
ABORATORY MANAGER

ND - Not Detected

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FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

0002-385-1

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-385

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 1101012

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 02/16/00

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

ient Name **Sverdrup Corporation**
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-20000000
FID #

ite ID DDMT-Dunn Field

Date Arrived 02/15/00
ETC Order Number 0002385

ETC Lab ID **0002385-02**
Sample ID: RW-4-Y2Q1

Matrix :AQUEOUS
Sample Date :02/14/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							8260B
					02/16/00	LS	
QC Batch	V1021601	ug/L					
Acetone	ND	ug/L	20.0				
Benzene	ND	ug/L	1.00				
Bromodichloromethane	ND	ug/L	1.00				
Bromoform	ND	ug/L	1.00				
Bromomethane	ND	ug/L	1.00				
Carbon Disulfide	ND	ug/L	1.00				
Carbon Tetrachloride	6.97	ug/L	1.00				
Chlorobenzene	ND	ug/L	1.00				
Chlorodibromomethane	ND	ug/L	1.00				
Chloroethane	ND	ug/L	1.00				
Chloroform	2.80	ug/L	1.00				
Chloromethane	ND	ug/L	1.00				
1,1-Dichloroethane	ND	ug/L	1.00				
1,2-Dichloroethane	ND	ug/L	1.00				
1,1-Dichloroethene	ND	ug/L	1.00				
trans-1,2-Dichloroethene	2.15	ug/L	1.00				
1,2-Dichloropropane	ND	ug/L	1.00				
cis-1,3-Dichloropropene	ND	ug/L	1.00				
trans-1,3-Dichloropropene	ND	ug/L	1.00				
Ethylbenzene	ND	ug/L	1.00				
2-Hexanone (MBK)	ND	ug/L	5.00				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00				
2-Butanone (MEK)	ND	ug/L	20.0				
Methylene Chloride	ND	ug/L	5.00				
Styrene	ND	ug/L	1.00				
1,1,2,2-Tetrachloroethane	12.3	ug/L	1.00				
Tetrachloroethene	2.03	ug/L	1.00				
Toluene	ND	ug/L	1.00				
1,1,1-Trichloroethane	ND	ug/L	1.00				
1,1,2-Trichloroethane	0.76J	ug/L	1.00				
Trichloroethene	208E	ug/L	1.00				
Vinyl Acetate	ND	ug/L	20.0				
Vinyl Chloride	ND	ug/L	1.00				
o-Xylenes	ND	ug/L	1.00				
m-Xylenes	ND	ug/L	1.00				
p-Xylenes	ND	ug/L	1.00				
cis-1,2-Dichloroethene	15.0	ug/L	1.00				

rrogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	103	74	123
S2 - Toluene-d8	100	86	112
S3 - 4-Bromofluorobenzene	88	81	115

CPS
ABORATORY MANAGER

ND - Not Detected

775 77

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
0002-385-2

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-385

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 1201013

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 02/16/00

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
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11.					
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29.					
30.					

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **Sverdrup Corporation**
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-20000000
FID #

Site ID DDMT-Dunn Field

Date Arrived 02/15/00
ETC Order Number 0002385

ETC Lab ID **0002385-02**
Sample ID: RW-4-Y2Q1-DIL

Matrix :AQUEOUS
Sample Date :02/14/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							8260B
QC Batch	V1021701	ug/L			02/17/00	LS	
Acetone	ND	ug/L	200				
Benzene	ND	ug/L	10.0				
Bromodichloromethane	ND	ug/L	10.0				
Bromoform	ND	ug/L	10.0				
Bromomethane	ND	ug/L	10.0				
Carbon Disulfide	ND	ug/L	10.0				
Carbon Tetrachloride	ND	ug/L	10.0				
Chlorobenzene	ND	ug/L	10.0				
Chlorodibromomethane	ND	ug/L	10.0				
Chloroethane	ND	ug/L	10.0				
Chloroform	ND	ug/L	10.0				
Chloromethane	ND	ug/L	10.0				
1,1-Dichloroethane	ND	ug/L	10.0				
1,2-Dichloroethane	ND	ug/L	10.0				
1,1-Dichloroethene	ND	ug/L	10.0				
trans-1,2-Dichloroethene	ND	ug/L	10.0				
1,2-Dichloropropane	ND	ug/L	10.0				
cis-1,3-Dichloropropene	ND	ug/L	10.0				
trans-1,3-Dichloropropene	ND	ug/L	10.0				
Ethylbenzene	ND	ug/L	10.0				
2-Hexanone (MBK)	ND	ug/L	50.0				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	50.0				
2-Butanone (MEK)	ND	ug/L	200				
Methylene Chloride	ND	ug/L	50.0				
Styrene	ND	ug/L	10.0				
1,1,2,2-Tetrachloroethane	14.4	ug/L	10.0				
Tetrachloroethene	ND	ug/L	10.0				
Toluene	ND	ug/L	10.0				
1,1,1-Trichloroethane	ND	ug/L	10.0				
1,1,2-Trichloroethane	ND	ug/L	10.0				
Trichloroethene	252	ug/L	10.0				
Vinyl Acetate	ND	ug/L	200				
Vinyl Chloride	ND	ug/L	10.0				
o-Xylenes	ND	ug/L	10.0				
m-Xylenes	ND	ug/L	10.0				
p-Xylenes	ND	ug/L	10.0				
cis-1,2-Dichloroethene	16.4	ug/L	10.0				

rrogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	100	74	123
S2 - Toluene-d8	100	86	112
S3 - 4-Bromofluorobenzene	89	81	115

CPS
LABORATORY MANAGER

ND - Not Detected

775 79

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **Sverdrup Corporation**
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-20000000
FID #

Site ID DDMT-Dunn Field

Date Arrived 02/15/00
ETC Order Number 0002385

ETC Lab ID **0002385-03**
Sample ID: RW-5-Y2Q1

Matrix :AQUEOUS
Sample Date :02/14/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							8260B
QC Batch	V1021601	ug/L			02/16/00	LS	
Acetone	ND	ug/L	20.0				
Benzene	ND	ug/L	1.00				
Bromodichloromethane	ND	ug/L	1.00				
Bromoform	ND	ug/L	1.00				
Bromomethane	ND	ug/L	1.00				
Carbon Disulfide	ND	ug/L	1.00				
Carbon Tetrachloride	ND	ug/L	1.00				
Chlorobenzene	ND	ug/L	1.00				
Chlorodibromomethane	ND	ug/L	1.00				
Chloroethane	ND	ug/L	1.00				
Chloroform	1.36	ug/L	1.00				
Chloromethane	ND	ug/L	1.00				
1,1-Dichloroethane	ND	ug/L	1.00				
1,2-Dichloroethane	ND	ug/L	1.00				
1,1-Dichloroethene	ND	ug/L	1.00				
trans-1,2-Dichloroethene	12.3	ug/L	1.00				
1,2-Dichloropropane	ND	ug/L	1.00				
cis-1,3-Dichloropropene	ND	ug/L	1.00				
trans-1,3-Dichloropropene	ND	ug/L	1.00				
Ethylbenzene	ND	ug/L	1.00				
2-Hexanone (MBK)	ND	ug/L	5.00				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00				
2-Butanone (MEK)	ND	ug/L	20.0				
Methylene Chloride	ND	ug/L	5.00				
Styrene	ND	ug/L	1.00				
1,1,2,2-Tetrachloroethane	1,230E	ug/L	1.00				
Tetrachloroethene	10.8	ug/L	1.00				
Toluene	ND	ug/L	1.00				
1,1,1-Trichloroethane	ND	ug/L	1.00				
1,1,2-Trichloroethane	1.93	ug/L	1.00				
Trichloroethene	710E	ug/L	1.00				
Vinyl Acetate	ND	ug/L	20.0				
Vinyl Chloride	ND	ug/L	1.00				
o-Xylenes	ND	ug/L	1.00				
m-Xylenes	ND	ug/L	1.00				
p-Xylenes	ND	ug/L	1.00				
cis-1,2-Dichloroethene	50.2	ug/L	1.00				

Surrogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	102	74	123
S2 - Toluene-d8	104	86	112
S3 - 4-Bromofluorobenzene	90	81	115

CDS

LABORATORY MANAGER

ND - Not Detected

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

775 80

Client Name Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-20000000
FID #

Site ID DDMT-Dunn Field

Date Arrived 02/15/00
ETC Order Number 0002385

ETC Lab ID 0002385-03
Sample ID: RW-5-Y2Q1-DIL

Matrix :AQUEOUS
Sample Date :02/14/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							8260B
QC Batch	V1021701	ug/L			02/17/00	LS	
Acetone	ND	ug/L	2000				
Benzene	ND	ug/L	100				
Bromodichloromethane	ND	ug/L	100				
Bromoform	ND	ug/L	100				
Bromomethane	ND	ug/L	100				
Carbon Disulfide	ND	ug/L	100				
Carbon Tetrachloride	ND	ug/L	100				
Chlorobenzene	ND	ug/L	100				
Chlorodibromomethane	ND	ug/L	100				
Chloroethane	ND	ug/L	100				
Chloroform	ND	ug/L	100				
Chloromethane	ND	ug/L	100				
1,1-Dichloroethane	ND	ug/L	100				
1,2-Dichloroethane	ND	ug/L	100				
1,1-Dichloroethene	ND	ug/L	100				
trans-1,2-Dichloroethene	ND	ug/L	100				
1,2-Dichloropropane	ND	ug/L	100				
cis-1,3-Dichloropropene	ND	ug/L	100				
trans-1,3-Dichloropropene	ND	ug/L	100				
Ethylbenzene	ND	ug/L	100				
2-Hexanone (MBK)	ND	ug/L	500				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	500				
2-Butanone (MEK)	ND	ug/L	2000				
Methylene Chloride	ND	ug/L	500				
Styrene	ND	ug/L	100				
1,1,2,2-Tetrachloroethane	3,120	ug/L	100				
Tetrachloroethene	ND	ug/L	100				
Toluene	ND	ug/L	100				
1,1,1-Trichloroethane	ND	ug/L	100				
1,1,2-Trichloroethane	ND	ug/L	100				
Trichloroethene	1,170	ug/L	100				
Vinyl Acetate	ND	ug/L	2000				
Vinyl Chloride	ND	ug/L	100				
o-Xylenes	ND	ug/L	100				
m-Xylenes	ND	ug/L	100				
p-Xylenes	ND	ug/L	100				
cis-1,2-Dichloroethene	ND	ug/L	100				

Surrogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	106	74	123
S2 - Toluene-d8	100	86	112
S3 - 4-Bromofluorobenzene	86	81	115

CAS

LABORATORY MANAGER

ND - Not Detected

775 81

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

.ent Name **Sverdrup Corporation**
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-20000000
FID #

Site ID DDMT-Dunn Field

Date Arrived 02/15/00
ETC Order Number 0002385

ETC Lab ID **0002385-04**
Sample ID: RW-6-Y2Q1

Matrix :AQUEOUS
Sample Date :02/14/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							8260B
					02/17/00	LS	
QC Batch	V1021701	ug/L					
Acetone	ND	ug/L	20.0				
Benzene	ND	ug/L	1.00				
Bromodichloromethane	ND	ug/L	1.00				
Bromoform	ND	ug/L	1.00				
Bromomethane	ND	ug/L	1.00				
Carbon Disulfide	ND	ug/L	1.00				
Carbon Tetrachloride	ND	ug/L	1.00				
hlorobenzene	ND	ug/L	1.00				
hlorodibromomethane	ND	ug/L	1.00				
Chloroethane	ND	ug/L	1.00				
Chloroform	3.20	ug/L	1.00				
Chloromethane	ND	ug/L	1.00				
1,1-Dichloroethane	ND	ug/L	1.00				
1,2-Dichloroethane	ND	ug/L	1.00				
1,1-Dichloroethene	ND	ug/L	1.00				
trans-1,2-Dichloroethene	0.69J	ug/L	1.00				
1,2-Dichloropropane	ND	ug/L	1.00				
cis-1,3-Dichloropropene	ND	ug/L	1.00				
trans-1,3-Dichloropropene	ND	ug/L	1.00				
Ethylbenzene	ND	ug/L	1.00				
2-Hexanone (MBK)	ND	ug/L	5.00				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00				
2-Butanone (MEK)	ND	ug/L	20.0				
Methylene Chloride	ND	ug/L	5.00				
Styrene	ND	ug/L	1.00				
1,1,2,2-Tetrachloroethane	ND	ug/L	1.00				
Tetrachloroethene	6.48	ug/L	1.00				
Toluene	ND	ug/L	1.00				
1,1,1-Trichloroethane	ND	ug/L	1.00				
1,1,2-Trichloroethane	ND	ug/L	1.00				
Trichloroethene	17.0	ug/L	1.00				
Vinyl Acetate	ND	ug/L	20.0				
Vinyl Chloride	ND	ug/L	1.00				
o-Xylenes	ND	ug/L	1.00				
m-Xylenes	ND	ug/L	1.00				
p-Xylenes	ND	ug/L	1.00				
cis-1,2-Dichloroethene	1.18	ug/L	1.00				

rogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	104	74	123
S2 - Toluene-d8	103	86	112
S3 - 4-Bromofluorobenzene	89	81	115

CDS
LABORATORY MANAGER

ND - Not Detected

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

775 82

.ent Name Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-20000000
FID #

Site ID DDMT-Dunn Field

Date Arrived 02/15/00
ETC Order Number 0002385

ETC Lab ID **0002385-05**
Sample ID: RW-7-Y2Q1

Matrix :AQUEOUS
Sample Date :02/14/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							8260B
QC Batch	V1021701	ug/L			02/17/00	LS	
Acetone	ND	ug/L	20.0				
Benzene	ND	ug/L	1.00				
Bromodichloromethane	ND	ug/L	1.00				
Bromoform	ND	ug/L	1.00				
Bromomethane	ND	ug/L	1.00				
Carbon Disulfide	ND	ug/L	1.00				
Carbon Tetrachloride	ND	ug/L	1.00				
hlorobenzene	ND	ug/L	1.00				
.hlorodibromomethane	ND	ug/L	1.00				
Chloroethane	ND	ug/L	1.00				
Chloroform	1.84	ug/L	1.00				
Chloromethane	ND	ug/L	1.00				
1,1-Dichloroethane	ND	ug/L	1.00				
1,2-Dichloroethane	ND	ug/L	1.00				
1,1-Dichloroethene	ND	ug/L	1.00				
trans-1,2-Dichloroethene	19.2	ug/L	1.00				
1,2-Dichloropropane	ND	ug/L	1.00				
cis-1,3-Dichloropropene	ND	ug/L	1.00				
trans-1,3-Dichloropropene	ND	ug/L	1.00				
Ethylbenzene	ND	ug/L	1.00				
2-Hexanone (MBK)	ND	ug/L	5.00				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00				
2-Butanone (MEK)	ND	ug/L	20.0				
Methylene Chloride	ND	ug/L	5.00				
Styrene	ND	ug/L	1.00				
1,1,2,2-Tetrachloroethane	49.9	ug/L	1.00				
Tetrachloroethene	9.33	ug/L	1.00				
Toluene	ND	ug/L	1.00				
1,1,1-Trichloroethane	ND	ug/L	1.00				
1,1,2-Trichloroethane	1.03	ug/L	1.00				
Trichloroethene	102	ug/L	1.00				
Vinyl Acetate	ND	ug/L	20.0				
Vinyl Chloride	ND	ug/L	1.00				
o-Xylenes	ND	ug/L	1.00				
m-Xylenes	ND	ug/L	1.00				
p-Xylenes	ND	ug/L	1.00				
cis-1,2-Dichloroethene	70.3	ug/L	1.00				

:rogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	100	74	123
S2 - Toluene-d8	99	86	112
S3 - 4-Bromofluorobenzene	85	81	115

CDS

LABORATORY MANAGER

ND - Not Detected

775 83

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

.ent Name **Sverdrup Corporation**
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-20000000
FID #

Site ID DDMT-Dunn Field

Date Arrived 02/15/00
ETC Order Number 0002385

ETC Lab ID **0002385-06**
Sample ID: RW-8-Y2Q1

Matrix :AQUEOUS
Sample Date :02/14/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							8260B
QC Batch	V1021701	ug/L			02/17/00	LS	
Acetone	ND	ug/L	20.0				
Benzene	ND	ug/L	1.00				
Bromodichloromethane	ND	ug/L	1.00				
Bromoform	ND	ug/L	1.00				
Bromomethane	ND	ug/L	1.00				
Carbon Disulfide	ND	ug/L	1.00				
Carbon Tetrachloride	1.03	ug/L	1.00				
hlorobenzene	ND	ug/L	1.00				
hlorodibromomethane	ND	ug/L	1.00				
Chloroethane	ND	ug/L	1.00				
Chloroform	10.5	ug/L	1.00				
Chloromethane	ND	ug/L	1.00				
1,1-Dichloroethane	ND	ug/L	1.00				
1,2-Dichloroethane	ND	ug/L	1.00				
1,1-Dichloroethene	6.82	ug/L	1.00				
trans-1,2-Dichloroethene	30.8	ug/L	1.00				
1,2-Dichloropropane	ND	ug/L	1.00				
cis-1,3-Dichloropropene	ND	ug/L	1.00				
trans-1,3-Dichloropropene	ND	ug/L	1.00				
Ethylbenzene	ND	ug/L	1.00				
2-Hexanone (MBK)	ND	ug/L	5.00				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00				
2-Butanone (MEK)	ND	ug/L	20.0				
Methylene Chloride	ND	ug/L	5.00				
Styrene	ND	ug/L	1.00				
1,1,2,2-Tetrachloroethane	121	ug/L	1.00				
Tetrachloroethene	6.67	ug/L	1.00				
Toluene	ND	ug/L	1.00				
1,1,1-Trichloroethane	ND	ug/L	1.00				
1,1,2-Trichloroethane	1.58	ug/L	1.00				
Trichloroethene	190	ug/L	1.00				
Vinyl Acetate	ND	ug/L	20.0				
Vinyl Chloride	ND	ug/L	1.00				
o-Xylenes	ND	ug/L	1.00				
m-Xylenes	ND	ug/L	1.00				
p-Xylenes	ND	ug/L	1.00				
cis-1,2-Dichloroethene	115	ug/L	1.00				

rogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	100	74	123
S2 - Toluene-d8	101	86	112
S3 - 4-Bromofluorobenzene	85	81	115

LABORATORY MANAGER

ND - Not Detected

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

775 84

ent Name Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-20000000
FID #

Site ID DDMT-Dunn Field

Date Arrived 02/15/00
ETC Order Number 0002385

ETC Lab ID 0002385-07
Sample ID: RW-8A-Y2Q1

Matrix :AQUEOUS
Sample Date :02/14/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							8260B
QC Batch	V1021701	ug/L			02/17/00	LS	
Acetone	ND	ug/L	20.0				
Benzene	ND	ug/L	1.00				
Bromodichloromethane	ND	ug/L	1.00				
Bromoform	ND	ug/L	1.00				
Bromomethane	ND	ug/L	1.00				
Carbon Disulfide	ND	ug/L	1.00				
Carbon Tetrachloride	0.93J	ug/L	1.00				
hlorobenzene	ND	ug/L	1.00				
ılorodibromomethane	ND	ug/L	1.00				
Chloroethane	ND	ug/L	1.00				
Chloroform	11.1	ug/L	1.00				
Chloromethane	ND	ug/L	1.00				
1,1-Dichloroethane	ND	ug/L	1.00				
1,2-Dichloroethane	ND	ug/L	1.00				
1,1-Dichloroethene	5.97	ug/L	1.00				
trans-1,2-Dichloroethene	36.6	ug/L	1.00				
1,2-Dichloropropane	ND	ug/L	1.00				
cis-1,3-Dichloropropene	ND	ug/L	1.00				
trans-1,3-Dichloropropene	ND	ug/L	1.00				
Ethylbenzene	ND	ug/L	1.00				
2-Hexanone (MBK)	ND	ug/L	5.00				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00				
2-Butanone (MEK)	ND	ug/L	20.0				
Methylene Chloride	ND	ug/L	5.00				
Styrene	ND	ug/L	1.00				
1,1,2,2-Tetrachloroethane	118	ug/L	1.00				
Tetrachloroethene	6.46	ug/L	1.00				
Toluene	ND	ug/L	1.00				
1,1,1-Trichloroethane	ND	ug/L	1.00				
1,1,2-Trichloroethane	2.00	ug/L	1.00				
Trichloroethene	186	ug/L	1.00				
Vinyl Acetate	ND	ug/L	20.0				
Vinyl Chloride	ND	ug/L	1.00				
o-Xylenes	ND	ug/L	1.00				
m-Xylenes	ND	ug/L	1.00				
p-Xylenes	ND	ug/L	1.00				
cis-1,2-Dichloroethene	114	ug/L	1.00				

rogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	106	74	123
S2 - Toluene-d8	103	86	112
S3 - 4-Bromofluorobenzene	86	81	115

ABORATORY MANAGER

ND - Not Detected

775 85

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

.ent Name Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-20000000
FID #

Site ID DDMT-Dunn Field

Date Arrived 02/15/00
ETC Order Number 0002385

ETC Lab ID **0002385-08**
Sample ID: RW-9-Y2Q1

Matrix :AQUEOUS
Sample Date :02/14/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							8260B
					02/17/00	LS	
QC Batch	V1021701	ug/L					
Acetone	ND	ug/L	20.0				
Benzene	ND	ug/L	1.00				
Bromodichloromethane	ND	ug/L	1.00				
Bromoform	ND	ug/L	1.00				
Bromomethane	ND	ug/L	1.00				
Carbon Disulfide	ND	ug/L	1.00				
Carbon Tetrachloride	0.79J	ug/L	1.00				
hlorobenzene	ND	ug/L	1.00				
.hlorodibromomethane	ND	ug/L	1.00				
Chloroethane	ND	ug/L	1.00				
Chloroform	12.5	ug/L	1.00				
Chloromethane	ND	ug/L	1.00				
1,1-Dichloroethane	1.88	ug/L	1.00				
1,2-Dichloroethane	0.70J	ug/L	1.00				
1,1-Dichloroethene	52.9	ug/L	1.00				
trans-1,2-Dichloroethene	2.23	ug/L	1.00				
1,2-Dichloropropane	ND	ug/L	1.00				
cis-1,3-Dichloropropene	ND	ug/L	1.00				
trans-1,3-Dichloropropene	ND	ug/L	1.00				
Ethylbenzene	ND	ug/L	1.00				
2-Hexanone (MBK)	ND	ug/L	5.00				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00				
2-Butanone (MEK)	ND	ug/L	20.0				
Methylene Chloride	ND	ug/L	5.00				
Styrene	ND	ug/L	1.00				
1,1,2,2-Tetrachloroethane	2.98	ug/L	1.00				
Tetrachloroethene	61.2	ug/L	1.00				
Toluene	ND	ug/L	1.00				
1,1,1-Trichloroethane	1.56	ug/L	1.00				
1,1,2-Trichloroethane	ND	ug/L	1.00				
Trichloroethene	51.4	ug/L	1.00				
Vinyl Acetate	ND	ug/L	20.0				
Vinyl Chloride	ND	ug/L	1.00				
o-Xylenes	ND	ug/L	1.00				
m-Xylenes	ND	ug/L	1.00				
p-Xylenes	ND	ug/L	1.00				
cis-1,2-Dichloroethene	5.45	ug/L	1.00				

rogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	106	74	123
S2 - Toluene-d8	104	86	112
S3 - 4-Bromofluorobenzene	86	81	115

LABORATORY MANAGER

ND - Not Detected

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

775 86

.ent Name Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-20000000
FID #

Site ID DDMT-Dunn Field

Date Arrived 02/15/00
ETC Order Number 0002385

ETC Lab ID **0002385-09**
Sample ID: EGB-B-Y2Q1

Matrix :AQUEOUS
Sample Date :02/14/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							8260B
QC Batch	V1021601	ug/L			02/16/00	LS	
Acetone	ND	ug/L	20.0				
Benzene	ND	ug/L	1.00				
Bromodichloromethane	ND	ug/L	1.00				
Bromoform	ND	ug/L	1.00				
Bromomethane	ND	ug/L	1.00				
Carbon Disulfide	ND	ug/L	1.00				
Carbon Tetrachloride	ND	ug/L	1.00				
hlorobenzene	ND	ug/L	1.00				
nlorodibromomethane	ND	ug/L	1.00				
Chloroethane	ND	ug/L	1.00				
Chloroform	ND	ug/L	1.00				
Chloromethane	ND	ug/L	1.00				
1,1-Dichloroethane	ND	ug/L	1.00				
1,2-Dichloroethane	ND	ug/L	1.00				
1,1-Dichloroethene	ND	ug/L	1.00				
trans-1,2-Dichloroethene	ND	ug/L	1.00				
1,2-Dichloropropane	ND	ug/L	1.00				
cis-1,3-Dichloropropene	ND	ug/L	1.00				
trans-1,3-Dichloropropene	ND	ug/L	1.00				
Ethylbenzene	ND	ug/L	1.00				
2-Hexanone (MBK)	ND	ug/L	5.00				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00				
2-Butanone (MEK)	ND	ug/L	20.0				
Methylene Chloride	ND	ug/L	5.00				
Styrene	ND	ug/L	1.00				
1,1,2,2-Tetrachloroethane	ND	ug/L	1.00				
Tetrachloroethene	ND	ug/L	1.00				
Toluene	ND	ug/L	1.00				
1,1,1-Trichloroethane	ND	ug/L	1.00				
1,1,2-Trichloroethane	ND	ug/L	1.00				
Trichloroethene	ND	ug/L	1.00				
Vinyl Acetate	ND	ug/L	20.0				
Vinyl Chloride	ND	ug/L	1.00				
o-Xylenes	ND	ug/L	1.00				
m-Xylenes	ND	ug/L	1.00				
p-Xylenes	ND	ug/L	1.00				
cis-1,2-Dichloroethene	ND	ug/L	1.00				

:rogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	104	74	123
S2 - Toluene-d8	101	86	112
S3 - 4-Bromofluorobenzene	85	81	115

ABORATORY MANAGER

ND - Not Detected

ENVIRONMENTAL TESTING & CONSULTING, INC.

7.75 8.7

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **Sverdrup Corporation**
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-20000000
FID #

Site ID DDMT-Dunn Field

Date Arrived 02/15/00
ETC Order Number 0002385

ETC Lab ID **0002385-10**
Sample ID: Trip Blank

Matrix :AQUEOUS
Sample Date :02/14/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							8260B
QC Batch	V1021601	ug/L			02/16/00	LS	
Acetone	ND	ug/L	20.0				
Benzene	ND	ug/L	1.00				
Bromodichloromethane	ND	ug/L	1.00				
Bromoform	ND	ug/L	1.00				
Bromomethane	ND	ug/L	1.00				
Carbon Disulfide	ND	ug/L	1.00				
Carbon Tetrachloride	ND	ug/L	1.00				
Chlorobenzene	ND	ug/L	1.00				
Chlorodibromomethane	ND	ug/L	1.00				
Chloroethane	ND	ug/L	1.00				
Chloroform	ND	ug/L	1.00				
Chloromethane	ND	ug/L	1.00				
1,1-Dichloroethane	ND	ug/L	1.00				
1,2-Dichloroethane	ND	ug/L	1.00				
1,1-Dichloroethene	ND	ug/L	1.00				
trans-1,2-Dichloroethene	ND	ug/L	1.00				
1,2-Dichloropropane	ND	ug/L	1.00				
cis-1,3-Dichloropropene	ND	ug/L	1.00				
trans-1,3-Dichloropropene	ND	ug/L	1.00				
Ethylbenzene	ND	ug/L	1.00				
2-Hexanone (MBK)	ND	ug/L	5.00				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00				
2-Butanone (MEK)	ND	ug/L	20.0				
Methylene Chloride	ND	ug/L	5.00				
Styrene	ND	ug/L	1.00				
1,1,2,2-Tetrachloroethane	ND	ug/L	1.00				
Tetrachloroethene	ND	ug/L	1.00				
Toluene	ND	ug/L	1.00				
1,1,1-Trichloroethane	ND	ug/L	1.00				
1,1,2-Trichloroethane	ND	ug/L	1.00				
Trichloroethene	ND	ug/L	1.00				
Vinyl Acetate	ND	ug/L	20.0				
Vinyl Chloride	ND	ug/L	1.00				
o-Xylenes	ND	ug/L	1.00				
m-Xylenes	ND	ug/L	1.00				
p-Xylenes	ND	ug/L	1.00				
cis-1,2-Dichloroethene	ND	ug/L	1.00				

Surrogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	102	74	123
S2 - Toluene-d8	102	86	112
S3 - 4-Bromofluorobenzene	84	81	115

CD

LABORATORY MANAGER

ND - Not Detected

Environmental Testing & Consulting, Inc.

Quality Control Reports
Level III
GC/MS Volatiles

775 89

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
GC/MS VOLATILE COMPOUNDS - AQUEOUS

Client Name	Sverdrup Corporation
Project Name	DDMT- Dunn Field
ETC Order #	0002-385
Method (SW-846)	8260B/5030B

QUALITY CONTROL

Matrix Spike / Matrix Spike Dup. FORM 3

Batch V1021601		
0002-385-04	RPD	All analytes within QC limits.
RW-6-Y2Q1	Spike Recovery	All analytes within QC limits, except as listed below.

Benzene and Chlorobenzene were flagged for high recovery in the MS/MSD. Toluene was flagged for high recovery in the MSD. Sample results should be considered biased high due to matrix interferences.

Refer to Laboratory Control Sample(s) for system verification.

Matrix Spike / Matrix Spike Dup. FORM 3

Batch V1021701		
0002-385-08	RPD	All analytes within QC limits.
RW-9-Y2Q1	Spike Recovery	All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

CALIBRATION

BFB Daily 12-Hour Tune	All criteria met. FORM 5
Initial Calibration	All criteria met. FORM 6
Calibration Verification	All criteria met. FORM 7, except as listed below.

Calibration Verification (CV): Date 02/17/00 Time: 1400

Analyte	%Diff(30% Max)	Response
Chloromethane	+36.6	High

Samples affected by this CV include V1021711LB, V1021711LCS, 0002-385-02DIL, 0002-385-03DIL, and samples 0002-385-05 through 0002-385-08. High response indicates that reported levels for this analyte may be biased high. This analyte was not identified in associated project samples.

Volatile Internal Standard Area and RT FORM 8

Daily Check Standard(s) Internal Standard Areas and Retention Times within QC limits.

SAMPLE ANALYSIS

Instrumentation	HP 5890 Series II GC, 5971MSD
Dilutions Required	No dilutions required, except as listed below.

FORM 2
WATER VOA-GCMS SYSTEM MONITORING COMPOUND RECOVERY

'775 90

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-385

	CLIENT SAMPLE NO.	SMC1 #	SMC2 (TOL) #	SMC3 (BFB) #	OTHER	TOT OUT
01	V1021611LCS	97	105	93		0
02	V1021611LB	103	100	87		0
03	0002-385-10	102	102	84		0
04	0002-385-9	104	101	85		0
05	0002-385-1	100	102	86		0
06	0002-385-2	103	100	88		0
07	0002-385-3	102	104	90		0
08	0002-385-4	104	99	86		0
09	0002-385-4MS	114	100	88		0
10	0002-385-4MS	112	98	91		0
11	V1021711LCS	99	98	85		0
12	V1021711LB	102	98	86		0
13	0002-385-4	104	103	89		0
14	0002-385-2	100	100	89		0
15	0002-385-3	106	100	86		0
16	0002-385-5	100	99	85		0
17	0002-385-6	100	101	85		0
18	0002-385-7	106	103	86		0
19	0002-385-8	106	104	86		0
20	0002-385-8MS	123*	102	92		1
21	0002-385-8MS	107	104	89		0
22						
23						
24						
25						
26						
27						
28						
29						
30						

		QC LIMITS
SMC1	= Dibromofluoromethane	(74-123)
SMC2 (TOL)	= Toluene-d8	(86-112)
SMC3 (BFB)	= Bromofluorobenzene	(81-115)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

775 91

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V1021611LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-385

Matrix: (soil/water) WATER Lab Prep Batch: V1021601

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0302004

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 02/16/00

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	20.00	U
75-05-8	Acetonitrile	50.00	U
107-02-8	Acrolein	20.00	U
107-13-1	Acrylonitrile	20.00	U
107-05-1	Allyl chloride	1.00	U
71-43-2	Benzene	1.00	U
108-86-1	Bromobenzene	1.00	U
74-97-5	Bromochloromethane	1.00	U
75-27-4	Bromodichloromethane	1.00	U
75-25-2	Bromoform	1.00	U
74-83-9	Bromomethane	1.00	U
78-93-3	2-Butanone	20.00	U
104-51-8	n-Butylbenzene	1.00	U
135-98-8	sec-Butylbenzene	1.00	U
98-06-6	tert-Butylbenzene	1.00	U
75-15-0	Carbon Disulfide	1.00	U
56-23-5	Carbon Tetrachloride	1.00	U
108-90-7	Chlorobenzene	1.00	U
124-48-1	Chlorodibromomethane	1.00	U
75-00-3	Chloroethane	1.00	U
110-75-8	2-Chloroethyl vinyl Ether	5.00	U
67-66-3	Chloroform	1.00	U
74-87-3	Chloromethane	1.00	U
126-99-8	Chloroprene	1.00	U
95-49-8	2-Chlorotoluene	1.00	U
106-43-4	4-Chlorotoluene	1.00	U
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U
106-93-4	1,2-Dibromoethane	1.00	U
74-95-3	Dibromomethane	1.00	U
95-50-1	1,2-Dichlorobenzene	1.00	U
541-73-1	1,3-Dichlorobenzene	1.00	U
106-46-7	1,4-Dichlorobenzene	1.00	U
1476-11-5	cis-1,4-Dichloro-2-butene	1.00	U

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
V1021611LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-385

Matrix: (soil/water) WATER Lab Prep Batch: V1021601

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0302004

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 02/16/00

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
107-12-0	Propionitrile	10.00	U
109-60-4	n-Propyl Acetate	1.00	U
103-65-1	n-Propylbenzene	1.00	U
100-42-5	Styrene	1.00	U
630-20-6	1,1,1,2-Tetrachloroethane	1.00	U
79-34-5	1,1,2,2-Tetrachloroethane	1.00	U
127-18-4	Tetrachloroethene	1.00	U
109-99-9	Tetrahydrofuran	20.00	U
108-88-3	Toluene	1.00	U
87-61-6	1,2,3-Trichlorobenzene	1.00	U
120-82-1	1,2,4-Trichlorobenzene	1.00	U
71-55-6	1,1,1-Trichloroethane	1.00	U
79-00-5	1,1,2-Trichloroethane	1.00	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	1.00	U
79-01-6	Trichloroethene	1.00	U
75-69-4	Trichlorofluoromethane	1.00	U
96-18-4	1,2,3-Trichloropropane	1.00	U
95-63-6	1,2,4-Trimethylbenzene	1.00	U
108-67-8	1,3,5-Trimethylbenzene	1.00	U
108-05-4	Vinyl Acetate	20.00	U
75-01-4	Vinyl Chloride	1.00	U
108-38-3	Xylene-mp	2.00	U
95-47-6	Xylene-o	1.00	U

775 93

FORM 3
WATER VOA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: V1021601

Lab Code: Case No.: SAS No.: SDG No.: 0002-385

Matrix Spike - Sample No.: V1021611LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Acetone	100.0		98.46	98	59-151
Acetonitrile	1000		1410	141	57-143
Acrolein	100.0		161.9	162*	59-134
Acrylonitrile	100.0		116.6	117	60-146
Allyl chloride	100.0		113.9	114	74-120
Benzene	100.0		114.0	114	72-124
Bromobenzene	100.0		109.3	109	77-120
Bromochloromethane	100.0		119.4	119	74-120
Bromodichloromethane	100.0		78.59	78	68-119
Bromoform	100.0		96.95	97	66-136
Bromomethane	100.0		120.4	120	40-134
2-Butanone	100.0		115.8	116	55-151
n-Butylbenzene	100.0		90.25	90	69-129
sec-Butylbenzene	100.0		93.68	94	72-127
tert-Butylbenzene	100.0		97.83	98	73-126
Carbon Disulfide	100.0		111.3	111	60-133
Carbon Tetrachloride	100.0		81.82	82	64-123
Chlorobenzene	100.0		104.6	105	77-112
Chlorodibromomethane	100.0		97.15	97	72-118
Chloroethane	100.0		110.8	111	64-142
2-Chloroethyl vinyl Eth	100.0		102.1	102	22-165
Chloroform	100.0		93.45	93	70-115
Chloromethane	100.0		104.0	104	58-139
Chloroprene	100.0		96.54	96	73-118
2-Chlorotoluene	100.0		88.21	88	65-132
4-Chlorotoluene	100.0		92.85	93	67-127
1,2-Dibromo-3-chloropro	100.0		67.54	68	56-134
1,2-Dibromoethane	100.0		109.0	109	74-118

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOA-GCMS LAB CONTROL SAMPLE

775 94

Lab Name: ETC, INC. Lab Prep Batch: V1021601

Lab Code: Case No.: SAS No.: SDG No.: 0002-385

Matrix Spike - Sample No.: V1021611LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Isobutyl Alcohol	2000		2416	121	60-134
Isopropylbenzene	100.0		95.02	95	74-125
4-Isopropyltoluene	100.0		93.92	94	72-127
Methacrylonitrile	1000		1126	113	70-125
Methylene Chloride	100.0		117.7	118*	76-115
Methyl methacrylate	200.0		188.4	94	57-147
4-Methyl-2-Pentanone	100.0		111.3	111	42-144
Methyl-tertbutyl-Ether	100.0		81.49	81	62-122
Naphthalene	100.0		77.01	77	53-124
Pentachloroethane	100.0		122.7	123	78-126
Propionitrile	1000		1285	128	58-139
n-Propyl Acetate	100.0		115.2	115	88-170
n-Propylbenzene	100.0		91.86	92	75-125
Styrene	100.0		104.4	104	77-117
1,1,1,2-Tetrachloroetha	100.0		91.05	91	79-113
1,1,2,2-Tetrachloroetha	100.0		96.68	97	67-126
Tetrachloroethene	100.0		94.61	95	77-115
Tetrahydrofuran	100.0		111.9	112	76-181
Toluene	100.0		104.7	105	77-115
1,2,3-Trichlorobenzene	100.0		84.34	84	62-132
1,2,4-Trichlorobenzene	100.0		83.00	83	68-132
1,1,1-Trichloroethane	100.0		79.90	80	63-122
1,1,2-Trichloroethane	100.0		106.3	106	69-117
1,1,2-trichloro-1,2,2-t	100.0		91.81	92	70-130
Trichloroethene	100.0		93.65	94	75-113
Trichlorofluoromethane	100.0		74.18	74	55-130
1,2,3-Trichloropropane	100.0		93.48	93	62-130
1,2,4-Trimethylbenzene	100.0		92.10	92	69-126

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOA-GCMS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC. Lab Prep Batch: V1021601

Lab Code: Case No.: SAS No.: SDG No.: 0002-385

Matrix Spike - Sample No.: 0002-385-4

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Benzene	100.0	0.000	131.5	132*	72-124
Chlorobenzene	100.0	0.000	113.6	114*	77-112
1,1-Dichloroethene	100.0	0.000	113.2	113	69-121
Toluene	100.0	0.000	115.0	115	77-115
Trichloroethene	100.0	18.67	120.3	102	75-113

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Benzene	100.0	126.9	127*	4	20	72-124
Chlorobenzene	100.0	119.5	120*	5	20	77-112
1,1-Dichloroethene	100.0	110.4	110	3	20	69-121
Toluene	100.0	119.5	120*	4	20	77-115
Trichloroethene	100.0	123.4	105	3	20	75-113

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 5 out of 10 outside limits

COMMENTS: _____

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V1021711LB

Lab Name: ETC,INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-385

Matrix: (soil/water) WATER Lab Prep Batch: V1021701

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0302004

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 02/17/00

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	20.00	U
75-05-8	Acetonitrile	50.00	U
107-02-8	Acrolein	20.00	U
107-13-1	Acrylonitrile	20.00	U
107-05-1	Allyl chloride	1.00	U
71-43-2	Benzene	1.00	U
108-86-1	Bromobenzene	1.00	U
74-97-5	Bromochloromethane	1.00	U
75-27-4	Bromodichloromethane	1.00	U
75-25-2	Bromoform	1.00	U
74-83-9	Bromomethane	1.00	U
78-93-3	2-Butanone	20.00	U
104-51-8	n-Butylbenzene	1.00	U
135-98-8	sec-Butylbenzene	1.00	U
98-06-6	tert-Butylbenzene	1.00	U
75-15-0	Carbon Disulfide	1.00	U
56-23-5	Carbon Tetrachloride	1.00	U
108-90-7	Chlorobenzene	1.00	U
124-48-1	Chlorodibromomethane	1.00	U
75-00-3	Chloroethane	1.00	U
110-75-8	2-Chloroethyl vinyl Ether	5.00	U
67-66-3	Chloroform	1.00	U
74-87-3	Chloromethane	1.00	U
126-99-8	Chloroprene	1.00	U
95-49-8	2-Chlorotoluene	1.00	U
106-43-4	4-Chlorotoluene	1.00	U
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U
106-93-4	1,2-Dibromoethane	1.00	U
74-95-3	Dibromomethane	1.00	U
95-50-1	1,2-Dichlorobenzene	1.00	U
541-73-1	1,3-Dichlorobenzene	1.00	U
106-46-7	1,4-Dichlorobenzene	1.00	U
1476-11-5	cis-1,4-Dichloro-2-butene	1.00	U

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FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
V1021711LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-385

Matrix: (soil/water) WATER Lab Prep Batch: V1021701

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0302004

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 02/17/00

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
107-12-0	Propionitrile	10.00	U
109-60-4	n-Propyl Acetate	1.00	U
103-65-1	n-Propylbenzene	1.00	U
100-42-5	Styrene	1.00	U
630-20-6	1,1,1,2-Tetrachloroethane	1.00	U
79-34-5	1,1,2,2-Tetrachloroethane	1.00	U
127-18-4	Tetrachloroethene	1.00	U
109-99-9	Tetrahydrofuran	20.00	U
108-88-3	Toluene	1.00	U
87-61-6	1,2,3-Trichlorobenzene	1.00	U
120-82-1	1,2,4-Trichlorobenzene	1.00	U
71-55-6	1,1,1-Trichloroethane	1.00	U
79-00-5	1,1,2-Trichloroethane	1.00	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	1.00	U
79-01-6	Trichloroethene	1.00	U
75-69-4	Trichlorofluoromethane	1.00	U
96-18-4	1,2,3-Trichloropropane	1.00	U
95-63-6	1,2,4-Trimethylbenzene	1.00	U
108-67-8	1,3,5-Trimethylbenzene	1.00	U
108-05-4	Vinyl Acetate	20.00	U
75-01-4	Vinyl Chloride	1.00	U
108-38-3	Xylene-mp	2.00	U
95-47-6	Xylene-o	1.00	U

FORM 3
WATER VOA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: V1021701

Lab Code: Case No.: SAS No.: SDG No.: 0002-385

Matrix Spike - Sample No.: V1021711LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Acetone	100.0		109.1	109	59-151
Acetonitrile	1000		1593	159*	57-143
Acrolein	100.0		177.9	178*	59-134
Acrylonitrile	100.0		124.9	125	60-146
Allyl chloride	100.0		116.0	116	74-120
Benzene	100.0		115.9	116	72-124
Bromobenzene	100.0		104.0	104	77-120
Bromochloromethane	100.0		119.8	120	74-120
Bromodichloromethane	100.0		78.50	78	68-119
Bromoform	100.0		90.89	91	66-136
Bromomethane	100.0		123.7	124	40-134
2-Butanone	100.0		124.1	124	55-151
n-Butylbenzene	100.0		84.95	85	69-129
sec-Butylbenzene	100.0		86.00	86	72-127
tert-Butylbenzene	100.0		90.71	91	73-126
Carbon Disulfide	100.0		117.2	117	60-133
Carbon Tetrachloride	100.0		84.31	84	64-123
Chlorobenzene	100.0		98.06	98	77-112
Chlorodibromomethane	100.0		94.91	95	72-118
Chloroethane	100.0		115.9	116	64-142
2-Chloroethyl vinyl Eth	100.0		105.3	105	22-165
Chloroform	100.0		96.19	96	70-115
Chloromethane	100.0		136.6	137	58-139
Chloroprene	100.0		100.5	100	73-118
2-Chlorotoluene	100.0		83.36	83	65-132
4-Chlorotoluene	100.0		85.23	85	67-127
1,2-Dibromo-3-chloropro	100.0		67.05	67	56-134
1,2-Dibromoethane	100.0		104.0	104	74-118

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC,INC. Lab Prep Batch: V1021701

Lab Code: Case No.: SAS No.: SDG No.: 0002-385

Matrix Spike - Sample No.: V1021711LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Isobutyl Alcohol	2000		2565	128	60-134
Isopropylbenzene	100.0		87.76	88	74-125
4-Isopropyltoluene	100.0		82.98	83	72-127
Methacrylonitrile	1000		1192	119	70-125
Methylene Chloride	100.0		121.1	121*	76-115
Methyl methacrylate	200.0		199.5	100	57-147
4-Methyl-2-Pentanone	100.0		112.4	112	42-144
Methyl-tertbutyl-Ether	100.0		89.10	89	62-122
Naphthalene	100.0		91.14	91	53-124
Pentachloroethane	100.0		118.1	118	78-126
Propionitrile	1000		1313	131	58-139
n-Propyl Acetate	100.0		119.6	120	88-170
n-Propylbenzene	100.0		84.36	84	75-125
Styrene	100.0		97.95	98	77-117
1,1,1,2-Tetrachloroetha	100.0		87.30	87	79-113
1,1,2,2-Tetrachloroetha	100.0		99.18	99	67-126
Tetrachloroethene	100.0		91.59	92	77-115
Tetrahydrofuran	100.0		109.8	110	76-181
Toluene	100.0		105.5	106	77-115
1,2,3-Trichlorobenzene	100.0		94.30	94	62-132
1,2,4-Trichlorobenzene	100.0		90.70	91	68-132
1,1,1-Trichloroethane	100.0		83.76	84	63-122
1,1,2-Trichloroethane	100.0		105.9	106	69-117
1,1,2-trichloro-1,2,2-t	100.0		93.86	94	70-130
Trichloroethene	100.0		91.11	91	75-113
Trichlorofluoromethane	100.0		77.23	77	55-130
1,2,3-Trichloropropane	100.0		88.73	89	62-130
1,2,4-Trimethylbenzene	100.0		83.06	83	69-126

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOA-GCMS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC. Lab Prep Batch: V1021701

Lab Code: Case No.: SAS No.: SDG No.: 0002-385

Matrix Spike - Sample No.: 0002-385-8

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Benzene	100.0	0.000	119.1	119	72-124
Chlorobenzene	100.0	0.000	105.3	105	77-112
1,1-Dichloroethene	100.0	52.93	172.7	120	69-121
Toluene	100.0	0.000	110.4	110	77-115
Trichloroethene	100.0	51.37	135.0	84	75-113

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Benzene	100.0	115.2	115	3	20	72-124
Chlorobenzene	100.0	103.0	103	2	20	77-112
1,1-Dichloroethene	100.0	171.3	118	2	20	69-121
Toluene	100.0	109.5	110	0	20	77-115
Trichloroethene	100.0	136.3	85	1	20	75-113

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

Chemical Analytical Data Review Checklist

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Report Type: [ ] Preliminary [✓] Final Date Received: _____ Project Number: 801370

Project Name: DDMT Analysis/Method: 8260B

Laboratory: ETC Lab Project/Case Number: 0002423

Sample Number(s): MW-40, 30, 51, 44, 33, 33A, 32, 70, 71, 54, 31, 15, RW-1A, FB, EB, TB

Evaluated By: Betsy McDaniel Date Evaluated: 3/9/00

Data Package Deliverables Requirement: [✓] Mininum [ ] Standard [ ] Maximum

[ ] Other, please describe _____

Quality Control Deliverables	Required	Received	Passed	Failed
PQL, MDL, RL, etc meets DQOs				
Comment:				
Holding Times			✓	
Comment:				
Sample Condition (preservatives, containers, temperature, etc) / Case Narrative	X		✓	
Comment:				
Surrogate Recoveries	X		✓	
Comment:				
Lab Control Sample Recoveries	X			✓
Comment: Some recoveries outside acceptance range, batch control from MS/MSD, surrogates				
Lab Control Sample Duplicate or Other Spike Recoveries	X			
Comment: NA				
Lab Control Sample Duplicate or Other Laboratory Duplicate RPD	X			
Comment: NA				
Matrix Spike Recoveries	X		✓	
Comment:				
Matrix Spike Duplicate Recoveries	X		✓	
Comment:				
Matrix Spike / Matrix Spike Duplicate RPD	X		✓	
Comment:				
Laboratory Blanks (daily, method, instrument)	X		✓	
Comment:				
Field Blanks (trip, equip, ambient, matrix)	X		✓	
Comment:				
Field Duplicates RPD	X			
Comment: NA				

-over-

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ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road • Memphis, TN 38111 • (901) 327-2750 • FAX (901) 327-6334
Founded 1972

February 24, 2000

Mr. Virgil Jansen
Sverdrup Corporation
13723 Riverport Drive
Maryland Heights, MO 63043

Ref: Analytical Testing
ETC Order # 0002423
Project Description DDMT-Dunn Field

Project # 801370-10000003 Memphis Defense Depot

The above referenced project has been analyzed per your instructions. The analyses were performed in our laboratory in accordance with Standard Methods 17th/18th Edition; The Solid Waste Manual SW-846; EPA Methods for the Analysis of Water and Wastes and/or 40 CFR part 136.

The results are shown on the attached analysis sheet(s).

Please do not hesitate to contact our office if you have any questions.

Sincerely,

C D Scheibel

Chester D. Scheibel
Project Manager

rt
Attachment

SVE_MHDDMT

Environmental Testing & Consulting, Inc.

Data Qualifiers for Organic Reporting

Within the attached report, some analytical data may be reported as "Qualified Data" as indicated by a "Data Qualifier" next to the result. This table summarizes the possible "Data Qualifiers" that may be associated with this report.

Q	Surrogate Recovery Outside QC Limits
J	Estimated Value. Presence of the compound was confirmed but less than the reported detection limit.
E	Concentration exceeds the established method calibration range but is within the working range of the instrument.
B	Analyte detected in the associated Method Blank.
U	Reported result was unconfirmed. Refer to Case Narrative.
N	Non-Compliance Report associated with this sample or project.
C	Result reported from GC/MS confirmation analysis.
M	Result reported represents a minimum value. Refer to Case Narrative.
NC	Result reported from Primary Column. Result did not confirm.
*	QC Data (percent recovery/RPD for a particular analyte was outside QC Limits)

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ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
GC/MS VOLATILE COMPOUNDS - AQUEOUS

Client Name Sverdrup Corporation
Project Name DDMT- Dunn Field

ETC Order # 0002-423
Method (SW-846) 8260B/5030B

SAMPLE PRESERVATION (Verified at time of analysis)

All aqueous samples preserved to pH < 2.

HOLDING TIMES

Sample Analysis All samples analyzed within 14 days of collection.

QUALITY CONTROL

QC Batch	Form 4 Summary
V2021701	V2021711LB
V2021801	V2021811LB
V2022101	V2022111LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.

Method Blank FORM 4
V2021711LB
V2021811LB
V2022111LB

Target Analytes were not detected in the Method Blanks.

Laboratory Control Sample FORM 3
V2021711LCS
V2021712LCS
V2021811LCS
V2022111LCS

All acceptance criteria met, except as listed below.

V2021711LCS/V2021712LCS

1,2-Dichlorobenzene (non-target analyte), Tetrachloroethene, and Tetrahydrofuran (non-target analyte) were flagged for low recovery in the LCS. These analytes were re-analyzed in V2021712LCS with recoveries within control limits. Furan and Pentachloroethane, which were non-target analytes, were flagged for high recovery in the LCS. The LCS is considered acceptable. There is no effect on the data.

V2021811LCS

Acrolein (non-target analyte), Chlorodibromomethane, 2,2-Dichloropane (non-target analyte), cis-1,3-Dichloropropene, Ethylbenzene, Furan (non-target analyte), Pentachloroethane (non-target analyte) and 1,1,1,2-Tetrachloroethane (non-target analyte) were flagged for high recoveries in this LCS. The target analytes were not detected in the associated samples. There is no effect on the data.

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
GC/MS VOLATILE COMPOUNDS - AQUEOUS

Client Name Sverdrup Corporation
Project Name DDMT- Dunn Field

ETC Order # 0002-423
Method (SW-846) 8260B/5030B

QUALITY CONTROL

V2022111LCS

Furan and Pentachloroethane, which were non-target analytes, were flagged for high recovery in the LCS. There is no effect on the data.

Matrix Spike / Matrix Spike Dup. FORM 3
Batch V2021701

0002-423-06	RPD	All analytes within QC limits.
MW-33A-Y2Q1	Spike Recovery	All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Matrix Spike / Matrix Spike Dup. FORM 3
Batch V2021801

0002-423-10	RPD	All analytes within QC limits.
MW-54-Y2Q1	Spike Recovery	All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Matrix Spike / Matrix Spike Dup. FORM 3
Batch V2022101

0002-423-16	RPD	All analytes within QC limits.
RW-1A-Y2Q1	Spike Recovery	All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

CALIBRATION

BFB Daily 12-Hour Tune	All criteria met. FORM 5
Initial Calibration	All criteria met. FORM 6
Calibration Verification	All criteria met. FORM 7, except as listed below.

Calibration Verification (CV): Date 02/21/00 Time: 1117/1239

Analyte	%Diff(30% Max)	Response
Tetrachloroethene	-37.7	Low

Samples affected by this CV include V2022111LB, V2022111LCS, 0002-423-16MS/MSD, 0002-423-08DIL, 0002-423-09DIL, 0002-423-15DIL, and 0002-423-16DIL. Low response indicates that reported levels for this analyte may be biased low. This analyte was not identified in associated project samples, except sample 0002-423-08DIL. The LCS recovery was within control limits. However, the result for Tetrachloroethene may be biased slightly low.

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
GC/MS VOLATILE COMPOUNDS - AQUEOUS

Client Name Sverdrup Corporation
Project Name DDMT- Dunn Field

ETC Order # 0002-423
Method (SW-846) 8260B/5030B

CALIBRATION

Volatile Internal Standard Area and RT FORM 8
Daily Check Standard(s) Internal Standard Areas and Retention Times within QC limits.

SAMPLE ANALYSIS

Instrumentation HP 5890 Series II GC, 5971MSD
Dilutions Required No dilutions required, except as listed below.

Dilutions were performed on samples associated with this project to bring the Target Analyte(s) within calibration range.

ETC ORDER #	Sample ID	Dilutions Performed
0002-423-08	MW-70-Y2Q1	1:100
0002-423-09	MW-71-Y2Q1	1:100
0002-423-15	MW-15-Y2Q1	1:100
0002-423-16	RW-1A-Y2Q1	1:10

PBC
Project Manager

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ANALYTICAL SUMMARY TABLE

ient Name Sverdrup Corporation
.te ID DDMT-Dunn Field

ETC Sample ID	Field ID	Matrix	Method	Method Description
000242301	MW-40-Y2Q1	AQUEOUS	8260B	GC/MS Volatile Organics
000242302	MW-30-Y2Q1	AQUEOUS	8260B	GC/MS Volatile Organics
000242303	MW-51-Y2Q1	AQUEOUS	8260B	GC/MS Volatile Organics
000242304	MW-44-Y2Q1	AQUEOUS	8260B	GC/MS Volatile Organics
000242305	MW-33-Y2Q1	AQUEOUS	8260B	GC/MS Volatile Organics
000242306	MW-33A-Y2Q1	AQUEOUS	8260B	GC/MS Volatile Organics
000242307	MW-32-Y2Q1	AQUEOUS	8260B	GC/MS Volatile Organics
000242308	MW-70-Y2Q1	AQUEOUS	8260B	GC/MS Volatile Organics
000242309	MW-71-Y2Q1	AQUEOUS	8260B	GC/MS Volatile Organics
000242310	MW-54-Y2Q1	AQUEOUS	8260B	GC/MS Volatile Organics
000242311	MW-31-Y2Q1	AQUEOUS	8260B	GC/MS Volatile Organics
000242312	Field Blank	AQUEOUS	8260B	GC/MS Volatile Organics
000242313	EQB-B	AQUEOUS	8260B	GC/MS Volatile Organics
000242314	Trip Blank	AQUEOUS	8260B	GC/MS Volatile Organics
000242315	MW-15-Y2Q1	AQUEOUS	8260B	GC/MS Volatile Organics
000242316	RW-1A-Y2Q1	AQUEOUS	8260B	GC/MS Volatile Organics

Environmental Testing & Consulting, Inc.

Sample Reports

the igroup

Project # 801370-20000000

GROUNDWATER SAMPLING DATA SHEET

Client: USACE
Location: Memphis Defense Depot (DDMT)
Event: Quarterly Sampling
Date: 2.15.00 Time: 0950
Weather: Sunny/cool

Well ID: MW-40
Sample ID: MW-40 Y2Q1
Sample Team: KYLIE McCORD
SERENA BROSKA
Measuring Device: WATER LEVEL INDICATOR

Total Depth: 95.00 ft (BTOC)
Depth to Water: (-) 84.34 ft (BTOC)
Water Column: 10.66 ft
(x)*0.163 gal/ft
Well Volume: 1.7 gal
Total Purge Volume: 8.7 gal
Purge Device: Grundfos Pump (2")

* Well Diameters and Corresponding Volumes

(1" = 0.041 gal/ft, 1.25" = 0.064 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.47 gal/ft, 8" = 2.61 gal/ft, 12" = 5.88 gal/ft)

FIELD PARAMETERS

Time	Cumulative Purge Vol. (gal)	Cond. (mS/cm) or (umhos)	Temp. (°C)	D.O. (mg/L)	pH	Redox (mV)	Turbidity (ntu)	Color / Odor / Comments
0930	—	—	—	—	—	—	—	—
	4	861	13.2	NA	6.50	NA	27.1	lt yellow
0945	8	857	16.3	NA	6.47	NA	8.57	clear

Sample information: method, container number, size, type and preservative used:
3 - 40 ml amber VOA preserved with HCl

Sample Time: 0950
Sample Appearance: clear

Notes:

Signature: Kyle K McCord

2.24.00
Date

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the igroup

Project # 801370-20000000

GROUNDWATER SAMPLING DATA SHEET

Client: USACE
Location: Memphis Defense Depot (DDMT)
Event: Quarterly Sampling
Date: 2.15.00 Time. 1025
Weather: Sunny, cool

Well ID: MW-30
Sample ID: MW-30 Y2Q1
Sample Team: KYLIE McCORD
SERENA BROSKA
Measuring Device: WATER LEVEL INDICATOR

Total Depth: 59.00 ft (BTOC)
Depth to Water: (-) 48.55 ft (BTOC)
Water Column: 10.45 ft
(x)* 0.163 gal/ft
Well Volume: 1.7 gal
Total Purge Volume: 8.5 gal
Purge Device: Grundfos Pump (2")

* Well Diameters and Corresponding Volumes

(1" = 0.041 gal/ft, 1.25" = 0.064 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.47 gal/ft, 8" = 2.61 gal/ft, 12" = 5.88 gal/ft)

FIELD PARAMETERS

Time	Cumulative Purge Vol. (gal)	Cond. (mS/cm) or (umhos)	Temp. (°C)	D.O. (mg/L)	pH	Redox (mV)	Turbidity (ntu)	Color / Odor / Comments
1000	—	—	—	—	—	—	—	
	3	474	13.7	—	6.33	—	>999	murky, orange
	6	325	14.8	—	6.32	—	>999	murky, orange
1025	8.8							

Sample information: method, container number, size, type and preservative used:
3 - 40 ml amber VOA preserved with HCl

Sample Time. 1025
Sample Appearance orange, murky

Notes:

Signature: Lynn K McCord

2.24.00
Date

the igroup

Project # 801370-20000000

GROUNDWATER SAMPLING DATA SHEET

Client: USACE
Location: Memphis Defense Depot (DDMT)
Event: Quarterly Sampling
Date: 2.15.00 Time: 1055
Weather: Sunny, cool

Well ID MW-51
Sample ID. MW-51 Y2Q1
Sample Team KYLIE McCORD
SERENA BROSKA
Measuring Device: WATER LEVEL INDICATOR

Total Depth: 67.00 ft (BTOC)
Depth to Water: (-) 42.93 ft (BTOC)
Water Column: 24.07 ft
(x)* 0.163 gal/ft
Well Volume: 3.9 gal
Total Purge Volume: 19.6 gal
Purge Device: Grundfos Pump (2")

* Well Diameters and Corresponding Volumes

(1" = 0.041 gal/ft, 1.25" = 0.064 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.47 gal/ft, 8" = 2.61 gal/ft, 12" = 5 88 gal/ft)

FIELD PARAMETERS

Time	Cumulative Purge Vol. (gal)	Cond. (mS/cm) or (umhos)	Temp. (°C)	D.O. (mg/L)	pH	Redox (mV)	Turbidity (ntu)	Color / Odor / Comments
1055	5	290	15.7	NA	5.82	NA	646	murky, orange
	10	310	16.6	NA	5.88	NA	51.9	lt orange, clearing
	15	309	16.8	NA	5.93	NA	17.5	clear, lt yellow
1110	20							

Sample information: method, container number, size, type and preservative used:
3 - 40 ml amber VOA preserved with HCl

Sample Time: 1115
Sample Appearance: clear, lt yellow

Notes:

Signature Lynn K McCord

2.24.00
Date

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Project # 801370-20000000

GROUNDWATER SAMPLING DATA SHEET

Client: USACE
Location: Memphis Defense Depot (DDMT)
Event: Quarterly Sampling
Date: 2.15.00 Time: 1120
Weather: Sunny, cool

Well ID Mw-44
Sample ID: Mw-44 Y2Q1
Sample Team: KYLIE McCORD
SERENA BROSKA
Measuring Device: WATER LEVEL INDICATOR

Total Depth. 74 ft (BTOC)
Depth to Water: (-) 54.52 ft (BTOC)
Water Column: 19.6 ft
(x)* 0.163 gal/ft
Well Volume: 3.2 gal
Total Purge Volume: 16.0 gal
Purge Device: Grundfos Pump (2")

* Well Diameters and Corresponding Volumes

(1" = 0.041 gal/ft, 1.25" = 0.064 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.47 gal/ft, 8" = 2.61 gal/ft, 12" = 5.88 gal/ft)

FIELD PARAMETERS

Time	Cumulative Purge Vol. (gal)	Cond. (mS/cm) or (umhos)	Temp. (°C)	D.O. (mg/L)	pH	Redox (mV)	Turbidity (ntu)	Color / Odor / Comments
	5	320	16.1	NA	6.14	NA	62	Yellow orange, sl. murky
	10	310	16.6	NA	6.07	NA	19.7	clearing, lt orange tint
1150	15	307	17.2	NA	6.05	NA	13.4	clear, lt yellow tint

Sample information: method, container number, size, type and preservative used:
3 - 40 ml amber VOA preserved with HCl

Sample Time: 1150
Sample Appearance: clear, lt yellow tint

Notes:

Signature. Kylie K McCord

2.24.00
Date

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Project # 801370-20000000

GROUNDWATER SAMPLING DATA SHEET

Client: USACE
Location: Memphis Defense Depot (DDMT)
Event: Quarterly Sampling
Date: 2.15.00 Time: 1220
Weather: Sunny, cool

Well ID: MW-33
Sample ID: MW-33Y2Q1
Sample Team: KYLIE McCORD
SERENA BROSKA
Measuring Device: WATER LEVEL INDICATOR

Total Depth: 63.0 ft (BTOC)
Depth to Water: (-) 55.05 ft (BTOC)
Water Column: 7.95 ft
(x)* ~~0.5~~ 0.163 gal/ft
Well Volume: ~~0.75~~ 1.3 gal
Total Purge Volume: 6.5 gal
Purge Device: Grundfos Pump (2")

* Well Diameters and Corresponding Volumes
(1" = 0.041 gal/ft, 1.25" = 0.064 gal/ft, 2" = 0 163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.47 gal/ft, 8" = 2.61 gal/ft, 12" = 5.88 gal/ft)

FIELD PARAMETERS

Time	Cumulative Purge Vol. (gal)	Cond. (mS/cm) or (umhos)	Temp. (°C)	D.O. (mg/L)	pH	Redox (mV)	Turbidity (ntu)	Color / Odor / Comments
	4	180	17.4	NA	5.84	NA	71000	murky, orange
	8	190	17.5	NA	5.81	NA	224	clearing, orange
1240	12	191	17.6	NA	5.81	NA		clear, lt yellow tint

Sample information: method, container number, size, type and preservative used:
3 - 40 ml amber VOA preserved with HCl

Sample Time: 1245
Sample Appearance: clear, lt yellow tint

Notes: MW-33A-Y2Q1 Duplicate

Signature: Kylie McCord
Date: 2.24.00

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Project # 801370-20000000

GROUNDWATER SAMPLING DATA SHEET

Client: USACE
Location: Memphis Defense Depot (DDMT)
Event: Quarterly Sampling
Date: 2.15.00 Time: 1250
Weather:

Well ID: MW-32
Sample ID: MW-32 Y2Q1
Sample Team: KYLIE McCORD
SERENA BROSKA
Measuring Device: WATER LEVEL INDICATOR

Total Depth: 67.30 ft (BTOC)
Depth to Water: (-) 62.87 ft (BTOC)
Water Column: 4.43 ft
(x)* 0.163 gal/ft
Well Volume: 0.7 gal
Total Purge Volume: 3.6 gal
Purge Device: ~~Grundfos Pump (2")~~ hand purge because well dries up quickly

* Well Diameters and Corresponding Volumes
(1" = 0.041 gal/ft, 1.25" = 0.064 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.47 gal/ft, 8" = 2.61 gal/ft, 12" = 5.88 gal/ft)

FIELD PARAMETERS

Time	Cumulative Purge Vol. (gal)	Cond. (mS/cm) or (umhos)	Temp. (°C)	D.O. (mg/L)	pH	Redox (mV)	Turbidity (ntu)	Color / Odor / Comments
	1	266	18	NA	6.0	NA	>999	murky, orange
1300	3	278	17.1	NA	6.2	NA	>999	murky, orange

Sample information: method, container number, size, type and preservative used:
3 - 40 ml amber VOA preserved with HCl

Sample Time: 1305
Sample Appearance: orange, murky

Notes:

Signature: Ryan McCord

2.24.00
Date

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Project # 801370-20000000

GROUNDWATER SAMPLING DATA SHEET

Client: USACE
Location: Memphis Defense Depot (DDMT)
Event: Quarterly Sampling
Date: 2.15.00 Time: 1430
Weather: Sunny, cool

Well ID: MW-70
Sample ID: MW-70 Y2Q1
Sample Team: KYLIE McCORD
SERENA BROSKA
Measuring Device: WATER LEVEL INDICATOR

Total Depth: 93 ft (BTOC)
Depth to Water: (-) 81.11 ft (BTOC)
Water Column: 11.89 ft
(x)* 0.163 gal/ft
Well Volume: 1.9 gal
Total Purge Volume: 9.7 gal
Purge Device: Grundfos Pump (2")

* Well Diameters and Corresponding Volumes

(1" = 0 041 gal/ft, 1.25" = 0 064 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.47 gal/ft, 8" = 2.61 gal/ft, 12" = 5.88 gal/ft)

FIELD PARAMETERS

Time	Cumulative Purge Vol. (gal)	Cond. (mS/cm) or (umhos)	Temp. (°C)	D.O. (mg/L)	pH	Redox (mV)	Turbidity (ntu)	Color / Odor / Comments
	3	264	19.6	NA	5.96	NA	7000	orange, murky
	6	223	18.8	NA	5.85	NA	7000	"
1445	9	233	18.5	NA	5.84	NA	7000	never cleared up
								Purged 10 gallons

Sample information: method, container number, size, type and preservative used:

3 - 40 ml amber VOA preserved with HCl

Sample Time: 1450
Sample Appearance: orange, murky

Notes.

Signature: Kyle R McCord

Date: 2.24.00

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Project # 801370-20000000

GROUNDWATER SAMPLING DATA SHEET

Client: USACE
Location: Memphis Defense Depot (DDMT)
Event: Quarterly Sampling
Date: 2.15.00 Time: 1510
Weather: Sunny, cool

Well ID: MW-71
Sample ID: MW-71 Y2Q1
Sample Team: KYLIE McCORD
SERENA BROSKA
Measuring Device: WATER LEVEL INDICATOR

Total Depth: 77.70 ft (BTOC)
Depth to Water: (-) 68.90 ft (BTOC)
Water Column: 8.80 ft
(x)* 0.163 gal/ft
Well Volume: 1.4 gal
Total Purge Volume: 7.2 gal
Purge Device: Grundfos Pump (2")

* Well Diameters and Corresponding Volumes

(1" = 0 041 gal/ft, 1 25" = 0.064 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.47 gal/ft, 8" = 2.61 gal/ft, 12" = 5.88 gal/ft)

FIELD PARAMETERS

Time	Cumulative Purge Vol. (gal)	Cond. (mS/cm) or (umhos)	Temp. (°C)	D.O. (mg/L)	pH	Redox (mV)	Turbidity (ntu)	Color / Odor / Comments
	3	207	19.3	NA	5.94	NA	7/000	orange, murky, silty
	6	230	18.6	NA	5.90	NA	7/000	
1525	9	226	18.1	NA	5.90	NA	7/000	didn't clear up

Sample information: method, container number, size, type and preservative used:
3 - 40 ml amber VOA preserved with HCl

Sample Time: 1530
Sample Appearance: murky, orange, silty

Notes:

Signature: Ryan McCord

2.24.00
Date

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Project # 801370-20000000

GROUNDWATER SAMPLING DATA SHEET

Client: USACE
Location: Memphis Defense Depot (DDMT)
Event: Quarterly Sampling
Date: 2.25.00 Time: 1550
Weather: Sunny, cool

Well ID: MW-54
Sample ID: MW-54 Y2Q1
Sample Team: KYLIE McCORD
SERENA BROSKA
Measuring Device: WATER LEVEL INDICATOR

Total Depth 95 ft (BTOC)
Depth to Water: (-) 79.84 ft (BTOC)
Water Column: 15.16 ft
(x)* 0.163 gal/ft
Well Volume: 2.5 gal
Total Purge Volume: 12 gal
Purge Device: Grundfos Pump (2")

* Well Diameters and Corresponding Volumes

(1" = 0 041 gal/ft, 1.25" = 0.064 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.47 gal/ft, 8" = 2.61 gal/ft, 12" = 5 88 gal/ft)

FIELD PARAMETERS

Time	Cumulative Purge Vol. (gal)	Cond. (mS/cm) or (umhos)	Temp. (°C)	D.O. (mg/L)	pH	Redox (mV)	Turbidity (ntu)	Color / Odor / Comments
	4	NS	NS	NA	NS	NA	122	
	8	385	17.9	NA	5.86	NA	NS	
1615	12	385	17.7	NA	5.86	NA	16.6	clear, lt.orange/yellow

Sample information: method, container number, size, type and preservative used:
3 - 40 ml amber VOA preserved with HCl

Sample Time: 1620
Sample Appearance: Clear, lt orange/yellow tint

Notes:

Signature: Kyan L McCord

2.24.00
Date

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Project # 801370-20000000

GROUNDWATER SAMPLING DATA SHEET

Client USACE

Location Memphis Defense Depot (DDMT)

Event: Quarterly Sampling

Date 2.15.00 Time: 1630

Weather: Sunny, cool

Well ID MW-31

Sample ID. MW-31 Y2Q1

Sample Team: KYLIE McCORD

SERENA BROSKA

Measuring Device: WATER LEVEL INDICATOR

Total Depth: 79 ft (BTOC)

Depth to Water: (-) 71.17 ft (BTOC)

Water Column: 7.83 ft

(x)* 0.163 gal/ft

Well Volume: 1.3 gal

Total Purge Volume: 6.5 gal

Purge Device: Grundfos Pump (2")

* Well Diameters and Corresponding Volumes

(1" = 0 041 gal/ft, 1.25" = 0.064 gal/ft, 2" = 0.163 gal/ft, 4" = 0 653 gal/ft, 6" = 1.47 gal/ft, 8" = 2.61 gal/ft, 12" = 5.88 gal/ft)

FIELD PARAMETERS

Time	Cumulative Purge Vol. (gal)	Cond. (mS/cm) or (umhos)	Temp (°C)	D O. (mg/L)	pH	Redox (mV)	Turbidity (ntu)	Color / Odor / Comments
	4	235	18.3	NA	6.06	NA	>1000	murky, orange
1700	8	236	17.5	NA	6.02	NA	182	clearing, Horange color

Sample information: method, container number, size, type and preservative used:

3 - 40 ml amber VOA preserved with HCl

Sample Time: ~~1700~~

Sample Appearance: slightly murky, orange

Notes:

Signature Ryan T McCord

2.24.00
Date

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Project # 801370-20000000

GROUNDWATER SAMPLING DATA SHEET

Client: USACE
Location: Memphis Defense Depot (DDMT)
Event: Quarterly Sampling
Date: 2.15.00 Time 1750
Weather: Sunny, cool

Well ID: MW-15
Sample ID: MW-15Y2Q1
Sample Team: KYLIE McCORD
SERENA BROSKA
Measuring Device: WATER LEVEL INDICATOR

Total Depth: 81 ft (BTOC)
Depth to Water: (-) 68.16 ft (BTOC)
Water Column: 12.84 ft
(x)* 0.163 gal/ft
Well Volume: 2.1 gal
Total Purge Volume: 10.5 gal
Purge Device: Grundfos Pump (2")

* Well Diameters and Corresponding Volumes

(1" = 0.041 gal/ft, 1.25" = 0.064 gal/ft, 2" = 0 163 gal/ft, 4" = 0.653 gal/ft, 6" = 1 47 gal/ft, 8" = 2.61 gal/ft, 12" = 5.88 gal/ft)

FIELD PARAMETERS

Time	Cumulative Purge Vol. (gal)	Cond. (mS/cm) or (umhos)	Temp. (°C)	D O. (mg/L)	pH	Redox (mV)	Turbidity (ntu)	Color / Odor / Comments
	4	240	18.5	NA	5.81	NA	873	orange, murky
	8	234	18.0	NA	5.78	NA	187	clearing
1810	12	240	17.8	NA	5.78	NA	16.3	clear

Sample information: method, container number, size, type and preservative used:
3 - 40 ml amber VOA preserved with HCl

Sample Time:
Sample Appearance: orange, murky

Notes:

Signature: Ryan K McCord
2.24.00
Date

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Project # 801370-20000000

GROUNDWATER SAMPLING DATA SHEET

Client: USACE
Location: Memphis Defense Depot (DDMT)
Event: Quarterly Sampling
Date: 2.15.00 Time: 1805
Weather: Sunny, cool

Well ID: RW-1A
Sample ID: RW1A Y2Q1
Sample Team: KYLIE McCORD
SERENA BROSKA
Measuring Device: WATER LEVEL INDICATOR

Total Depth: 79.9 ft (BTOC)
Depth to Water: (-) 70.0 ft (BTOC)
Water Column: 9.9 ft
(x)* 0.653 gal/ft
Well Volume: 6.5 gal
Total Purge Volume: 32 gal
Purge Device: Grundfos Pump (2")

* Well Diameters and Corresponding Volumes

(1" = 0.041 gal/ft, 1.25" = 0.064 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.47 gal/ft, 8" = 2.61 gal/ft, 12" = 5.88 gal/ft)

FIELD PARAMETERS

Time	Cumulative Purge Vol. (gal)	Cond. (mS/cm) or (umhos)	Temp. (°C)	D.O. (mg/L)	pH	Redox (mV)	Turbidity (ntu)	Color / Odor / Comments
	5	276	17.5	NA	6.02	NA	463	
	15	256	17.5	NA	5.80	NA	77.2	
	25	254	17.4	NA	5.76	NA	12.7	clear, lt yellow tint
								35 gallons purged

Sample information: method, container number, size, type and preservative used:
3 - 40 ml amber VOA preserved with HCl

Sample Time:
Sample Appearance: clear, lt yellow tint

Notes:
4' sump on bottom of recovery well

Signature: Kyle X McCord
2.24.00
Date

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Project # 801370-20000000

GROUNDWATER SAMPLING DATA SHEET

Client: USACE
Location: Memphis Defense Depot (DDMT)
Event: Quarterly Sampling
Date: 2.16.00 Time: 0800
Weather: Sunny, cool

Well ID: MW-69
Sample ID: MW-69 Y2Q1
Sample Team: KYLIE McCORD
SERENA BROSKA
Measuring Device: WATER LEVEL INDICATOR

Total Depth: 94.20 ft (BTOC)
Depth to Water. (-) 84.21 ft (BTOC)
Water Column: 9.99 ft
(x)* 0.163 gal/ft
Well Volume: 1.6 gal
Total Purge Volume: 8.1 gal
Purge Device: Grundfos Pump (2")

* Well Diameters and Corresponding Volumes

(1" = 0.041 gal/ft, 1.25" = 0.064 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.47 gal/ft, 8" = 2.61 gal/ft, 12" = 5.88 gal/ft)

FIELD PARAMETERS

Time	Cumulative Purge Vol. (gal)	Cond. (mS/cm) or (umhos)	Temp. (°C)	D O. (mg/L)	pH	Redox (mV)	Turbidity (ntu)	Color / Odor / Comments
	3	273	17.2	NA	5.96	NA	>1000	
	8	251	17.0	NA	5.85	NA	>1000	
0830	12	251	16.9	NA	5.84	NA	>1000	dark, murky, silty never cleared up

Sample information: method, container number, size, type and preservative used:
3 - 40 ml amber VOA preserved with HCl

Sample Time:
Sample Appearance: murky, silty, orange

Notes:

Signature: Ryan K McCord

2.24.00
Date

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Project # 801370-20000000

GROUNDWATER SAMPLING DATA SHEET

Client: USACE
Location: Memphis Defense Depot (DDMT)
Event: Quarterly Sampling
Date: 2.16.00 Time: 0920
Weather: Sunny, cool

Well ID: RW-2
Sample ID: RW-2Y2Q1
Sample Team: KYLIE McCORD
SERENA BROSKA
Measuring Device: WATER LEVEL INDICATOR

Total Depth: 76.20 ft (BTOC)
Depth to Water: (-) 65.43 ft (BTOC)
Water Column: 10.8 ft
(x)* 0.653 gal/ft
Well Volume: 7 gal
Total Purge Volume: 35 gal
Purge Device: Grundfos Pump (2")

* Well Diameters and Corresponding Volumes

(1" = 0.041 gal/ft, 1.25" = 0.064 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.47 gal/ft, 8" = 2.61 gal/ft, 12" = 5.88 gal/ft)

FIELD PARAMETERS

Time	Cumulative Purge Vol. (gal)	Cond. (mS/cm) or (umhos)	Temp. (°C)	D.O. (mg/L)	pH	Redox (mV)	Turbidity (ntu)	Color / Odor / Comments
	5	305	16.3	NA	5.81	NA	104	
	15	306	16.6	NA	5.83	NA	336	
	25	299	16.8	NA	5.82	NA	195	
	30	296	17	NA	5.81	NA	168	clearing, orange, murky
								purged 35 gallons

Sample information: method, container number, size, type and preservative used:
3 - 40 ml amber VOA preserved with HCl

Sample Time:
Sample Appearance: sl. clear, orange, sl. silty

Notes:
4' sump @ bottom of recovery well

Signature: Ryan X McCord
2.24.00
Date

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Project # 801370-20000000

GROUNDWATER SAMPLING DATA SHEET

Client: USACE
Location: Memphis Defense Depot (DDMT)
Event: Quarterly Sampling
Date: 2-16-00 Time: ____
Weather: Sunny, cool

Well ID: RW-1B
Sample ID: RW-1BY2Q1
Sample Team: KYLIE McCORD
SERENA BROSKA
Measuring Device: WATER LEVEL INDICATOR

Total Depth: 74.40 ft (BTOC)
Depth to Water: (-) 64.30 ft (BTOC)
Water Column: 10.10 ft
(x)* 0.653 gal/ft
Well Volume: 9.45 gal
Total Purge Volume: 47 gal
Purge Device: Grundfos Pump (2")

* Well Diameters and Corresponding Volumes

(1" = 0.041 gal/ft, 1.25" = 0.064 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.47 gal/ft, 8" = 2.61 gal/ft, 12" = 5.88 gal/ft)

FIELD PARAMETERS

Time	Cumulative Purge Vol. (gal)	Cond. (mS/cm) or (umhos)	Temp. (°C)	D.O. (mg/L)	pH	Redox (mV)	Turbidity (ntu)	Color / Odor / Comments
	15	312	17.2	NA	6.05	NA	393	murky, orange, silty
	25	299	17.2	NA	6.03	NA	71.5	still silty but clearing
	35	300	17.2	NA	6.03	NA	35.5	lt orange/yellow tint
	45	—	—	NA	—			

Sample information: method, container number, size, type and preservative used:
3 - 40 ml amber VOA preserved with HCl

Sample Time: ____
Sample Appearance: lt orange, yellow tint

Notes:

Signature [signature]

2.26.00
Date

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Project # 801370-20000000

GROUNDWATER SAMPLING DATA SHEET

Client: USACE

Location: Memphis Defense Depot (DDMT)

Event: Quarterly Sampling

Date: 2-16-00 Time: 1055

Weather: Sunny, cool

Well ID: ~~MW-34~~ RW-1

Sample ID ~~MW-34-Y2-01~~ RW-1Y2Q1

Sample Team: KYLIE McCORD

SERENA BROSKA

Measuring Device: WATER LEVEL INDICATOR

Total Depth: 79 ft (BTOC)

Depth to Water: (-) 69.61 ft (BTOC)

Water Column: 9.39 ft

(x)* 0.653 gal/ft

Well Volume: 6.1 gal

Total Purge Volume: 30 gal

Purge Device: Grundfos Pump (2")

* Well Diameters and Corresponding Volumes

(1" = 0.041 gal/ft, 1.25" = 0.064 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.47 gal/ft, 8" = 2.61 gal/ft, 12" = 5.88 gal/ft)

FIELD PARAMETERS

Time	Cumulative Purge Vol (gal)	Cond. (mS/cm) or (umhos)	Temp. (°C)	D.O. (mg/L)	pH	Redox (mV)	Turbidity (ntu)	Color / Odor / Comments
	5	393	18.6	NA	6.08	NA	25.9	clear, lt yellow tint
	15	360	18.2	NA	6.08	NA	35.2	"
	25	358	18.2	NA	6.08	NA	101	getting siltier
	30	—	—					Sampled

Sample information: method, container number, size, type and preservative used:

3 - 40 ml amber VOA preserved with HCl

Sample Time

Sample Appearance sl. silty, orange color

Notes:

Signature Ryan K. Miller

1-26-00

Date

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Project # 801370-20000000

GROUNDWATER SAMPLING DATA SHEET

Client: USACE
Location: Memphis Defense Depot (DDMT)
Event: Quarterly Sampling
Date: 2.16.00 Time: 1105
Weather: Sunny, cool

Well ID MW-57
Sample ID: MW-57 Y2Q1
Sample Team: KYLIE McCORD
SERENA BROSKA
Measuring Device: WATER LEVEL INDICATOR

Total Depth. 70 ft (BTOC)
Depth to Water: (-) 63.65 ft (BTOC)
Water Column. 6.35 ft
(x)* 0.163 gal/ft
Well Volume: 1.0 gal
Total Purge Volume: 5.0 gal
Purge Device: Grundfos Pump (2")

* Well Diameters and Corresponding Volumes
(1" = 0.041 gal/ft, 1.25" = 0.064 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.47 gal/ft, 8" = 2.61 gal/ft, 12" = 5.88 gal/ft)

FIELD PARAMETERS

Time	Cumulative Purge Vol. (gal)	Cond. (mS/cm) or (umhos)	Temp. (°C)	D.O. (mg/L)	pH	Redox (mV)	Turbidity (ntu)	Color / Odor / Comments
	2	183	19.3	—	5.73	—	>1000	very silty, orange
	4	169	18.7	—	5.70	—	>1000	"
	6	189	18.6	—	5.65	—	>1000	"
	8	189	19.2	—	5.65	—	>1000	Never cleared up

Sample information: method, container number, size, type and preservative used:
3 - 40 ml amber VOA preserved with HCl

Sample Time:
Sample Appearance: very silty, orange

Notes:

Signature. [illegible]

2.16.00
Date

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Project # 801370-20000000

GROUNDWATER SAMPLING DATA SHEET

Client: USACE
Location: Memphis Defense Depot (DDMT)
Event: Quarterly Sampling
Date: 2.16.00 Time: 1200
Weather: Sunny, cool

Well ID. MW-59
Sample ID MW-59 Y2Q1
Sample Team: KYLIE McCORD
SERENA BROSKA
Measuring Device: WATER LEVEL INDICATOR

Total Depth: 82.10 ft (BTOC)
Depth to Water: (-) 75.48 ft (BTOC)
Water Column. 6.62 ft
(x)* 0.163 gal/ft
Well Volume: 1.1 gal
Total Purge Volume: 5.4 gal
Purge Device: Grundfos Pump (2")

* Well Diameters and Corresponding Volumes

(1" = 0.041 gal/ft, 1.25" = 0 064 gal/ft, 2" = 0 163 gal/ft, 4" = 0.653 gal/ft, 6" = 1 47 gal/ft, 8" = 2.61 gal/ft, 12" = 5.88 gal/ft)

FIELD PARAMETERS

Time	Cumulative Purge Vol. (gal)	Cond. (mS/cm) or (umhos)	Temp. (°C)	D.O. (mg/L)	pH	Redox (mV)	Turbidity (ntu)	Color / Odor / Comments
	2	223	19.2	—	5.86	—	>1000	silty, orange color
	4	226	18.9	—	5.83	—	>100	"
	8	227	18.8	—	5.83	—	>1000	"
	12	—	—	—	—	—	362	beginning to clear up

Sample information: method, container number, size, type and preservative used:
3 - 40 ml amber VOA preserved with HCl

Sample Time:
Sample Appearance: silty, lt orange color

Notes:

Signature. Kyle M McCord

2.26.00
Date

the igroup

Project # 801370-20000000

GROUNDWATER SAMPLING DATA SHEET

Client: USACE
Location: Memphis Defense Depot (DDMT)
Event: Quarterly Sampling
Date: 2.16.00 Time
Weather: Sunny, cool

Well ID. MW-14
Sample ID: MW-14Y2Q1
Sample Team: KYLIE McCORD
SERENA BROSKA
Measuring Device: WATER LEVEL INDICATOR

Total Depth: 78.20 ft (BTOC)
Depth to Water: (-) 74.28 ft (BTOC)
Water Column: 3.92 ft
(x)* .163 gal/ft
Well Volume: 0.64 gal
Total Purge Volume. 3.2 gal
Purge Device: Grundfos Pump (2")

* Well Diameters and Corresponding Volumes

(1" = 0.041 gal/ft, 1.25" = 0.064 gal/ft, 2" = 0 163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.47 gal/ft, 8" = 2.61 gal/ft, 12" = 5.88 gal/ft)

FIELD PARAMETERS

Time	Cumulative Purge Vol. (gal)	Cond. (mS/cm) or (umhos)	Temp. (°C)	D.O. (mg/L)	pH	Redox (mV)	Turbidity (ntu)	Color / Odor / Comments
	4	219	17.3	—	5.73	—	7/1000	orange, silty
	8	218	17.6	—	5.74	—	184	clearing, still orange

Sample information: method, container number, size, type and preservative used:
3 - 40 ml amber VOA preserved with HCl

Sample Time:
Sample Appearance. sl orange, silty

Notes.

Signature

2-26-00
Date

775 128

the igroup

Project # 801370-20000000

GROUNDWATER SAMPLING DATA SHEET

Client: USACE
Location: Memphis Defense Depot (DDMT)
Event: Quarterly Sampling
Date: 2.16.00 Time 1240
Weather: Sunny, cool

Well ID. MW-34
Sample ID: MW-34 Y2Q1
Sample Team: KYLIE McCORD
SERENA BROSKA
Measuring Device: WATER LEVEL INDICATOR

Total Depth: 155.30 ft (BTOC)
Depth to Water: (-) 139.25 ft (BTOC)
Water Column: 16.05 ft
(x)*0.163 gal/ft
Well Volume: 2.7 gal
Total Purge Volume: 13.1 gal
Purge Device: Grundfos Pump (2")

* Well Diameters and Corresponding Volumes

(1" = 0 041 gal/ft, 1 25" = 0.064 gal/ft, 2" = 0.163 gal/ft, 4" = 0.653 gal/ft, 6" = 1.47 gal/ft, 8" = 2.61 gal/ft, 12" = 5 88 gal/ft)

FIELD PARAMETERS

Time	Cumulative Purge Vol (gal)	Cond. (mS/cm) or (umhos)	Temp. (°C)	D.O. (mg/L)	pH	Redox (mV)	Turbidity (ntu)	Color / Odor / Comments
—	—	—	—	—	—	—	—	—

Sample information: method, container number, size, type and preservative used:
3 - 40 ml amber VOA preserved with HCl

Sample Time: 1240
Sample Appearance: orange, silty

Notes:
Purged ≈ 8 gallons (3 well volumes) teflon bailer because grundfos would not fit in well
Did not collect Field Parameters

Signature: Kylie McCord

2-16-00
Date

APPENDIX C

Analytical Laboratory Data for the Monthly Effluent Samples

FORM 3
WATER VOA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC,INC. Lab Prep Batch: V1122001

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix Spike - Sample No.: V1122011LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,3,5-Trimethylbenzene	100.0		81.91	82	69-128
Vinyl Acetate	100.0		70.54	70	28-146
Vinyl Chloride	100.0		98.33	98	65-134
Xylene-mp	200.0		186.3	93	77-115
Xylene-o	100.0		100.7	101	77-115

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 2 out of 89 outside limits

COMMENTS: _____

FORM 3

WATER VOA-GCMS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC. Lab Prep Batch: V1122001

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix Spike - Sample No.: 9912-495-1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Benzene	100.0	0.000	98.80	99	72-124
Chlorobenzene	100.0	0.000	103.0	103	77-112
1,1-Dichloroethene	100.0	15.69	100.7	85	69-121
Toluene	100.0	0.000	98.70	99	77-115
Trichloroethene	100.0	174.4	227.3	53*	75-113

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Benzene	100.0	101.1	101	2	20	72-124
Chlorobenzene	100.0	97.71	98	5	20	77-112
1,1-Dichloroethene	100.0	100.9	85	0	20	69-121
Toluene	100.0	96.48	96	3	20	77-115
Trichloroethene	100.0	223.4	49*	8	20	75-113

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 2 out of 10 outside limits

COMMENTS: _____

Environmental Testing & Consulting, Inc.

Quality Control Reports
Level III
GC/MS Semi-Volatiles

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ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - AQUEOUS

Client Name	Sverdrup Corporation
Project Name	Memphis Depot Dunn Field
ETC Order#	9912-495
Method (SW-846)	8270C/3510C

HOLDING TIMES

Sample Extraction	All aqueous samples extracted within 7 days.
Sample Analysis	All samples analyzed within 40 days of extraction.

QUALITY CONTROL

QC Batch	Form 4 Summary
P05271	P05271LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.

Method Blank FORM 4
P05271LB

Target analytes were not detected in the Method Blanks, except as listed below.

Bis(2-ethylhexyl)phthalate identified in the Method Blank at 1.45J ug/L. Sample concentration less than 10 times (14.5 ug/L) the Method Blank value and should be attributed to Lab contamination.

Laboratory Control Sample FORM 3
P05271LCS/LCSD

All acceptance criteria met, except as listed below.

Bis(2-ethylhexyl)phthalate was flagged for high recovery in the LCS. LCSD recovery was within QC Limits. There is no effect on the data.

RPDs for Benzidine, 3,3'-Dimethylbenzidine, 2,4-Dinitrophenol, and 4-Nitroaniline were flagged outside QC limits due to variances in the LCS/LCSD recoveries.

RPD for Bis(2-ethylhexyl)phthalate was flagged outside QC Limits due to high LCS recovery.

Matrix Spike / Matrix Spike Dup FORM 3

9912-495-01	RPD	All analytes within QC Limits, except as listed below.
ST-EFF-019	Spike Recovery	All analytes within QC Limits.

RPD for 4-Chloro-3-methylphenol was flagged outside QC limits due to variances in the MS/MSD.

Refer to Laboratory Control Sample(s) for system verification.

CALIBRATION

DFTPP Daily 12 Hour Tune	All criteria met. FORM 5
Initial Calibration	All criteria met. FORM 6
Calibration Verification	All criteria met. FORM 7

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - AQUEOUS

Client Name	Sverdrup Corporation
Project Name	Memphis Depot Dunn Field
ETC Order#	9912-495
Method (SW-846)	8270C/3510C

CALIBRATION

Semi-Volatile Internal Standard Area and RT FORM 8

Daily Check Standard(s) Internal Standard Areas and Retention Times within QC limits.

SAMPLE ANALYSIS

Instrumentation	HP 5890 Series II GC, 5971MSD
Dilutions Required	No dilutions required

Laboratory Manager

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FORM 2
WATER BNA-GCMS SURROGATE RECOVERY

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

	CLIENT SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (TBP) #	S6 (2FP) #	S7 #	S8 #	TOT OUT
01	P05271LB	85	78	113	33	71	43			0
02	P05271LCS	85	85	98	33	76	42			0
03	P05271LCSD	82	80	90	31	78	42			0
04	9912-495-1	78	73	102	30	70	38			0
05	9912-495-1MS	95	95	118	35	81	50			0
06	9912-495-1MS	101	93	121	42	97	55			0
07	9912-495-2	76	69	117	29	70	38			0
08										
09										
10										
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		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(29-110)
S2 (FBP)	= 2-Fluorobiphenyl	(38-107)
S3 (TPH)	= Terphenyl-d14	(33-122)
S4 (PHL)	= Phenol-d6	(7- 58)
S5 (TBP)	= 2,4,6-Tribromophenol	(16-138)
S6 (2FP)	= 2-Fluorophenol	(8- 88)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM II BNA-GCMS

FORM 4
BNA-GCMS METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

P05271LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Lab File ID: 0401004 Lab Prep Batch: P05271

Instrument ID: BNA1 Date Extracted:

Matrix: (soil/water) WATER Date Analyzed: 12/21/99

Level:(low/med) LOW Time Analyzed: 1225

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	P05271LCS	P05271	0501005	12/21/99
02	P05271LCSD	P05271	0601006	12/21/99
03	9912-495-1	P05271	0801008	12/21/99
04	9912-495-1MS	P05271	0901009	12/21/99
05	9912-495-1MS	P05271	1001010	12/21/99
06	9912-495-2	P05271	1101011	12/21/99
07				
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COMMENTS:

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
P05271LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix: (soil/water) WATER Lab Prep Batch: P05271

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 0401004

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/21/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
83-32-9	Acenaphthene	2.00	U
208-96-8	Acenaphthylene	2.00	U
98-86-2	Acetophenone	5.00	U
62-53-3	Aniline	5.00	U
120-12-7	Anthracene	2.00	U
92-87-5	Benzidine	20.00	U
56-55-3	Benz(a)Anthracene	2.00	U
205-99-2	Benzo(b)fluoranthene	2.00	U
207-08-9	Benzo(k)fluoranthene	2.00	U
191-24-2	Benzo(ghi)perylene	2.00	U
50-32-8	Benzo(a)pyrene	2.00	U
65-85-0	Benzoic acid	50.00	U
100-51-6	Benzyl alcohol	5.00	U
111-91-1	Bis(2-chloroethoxy)methane	5.00	U
111-44-4	Bis(2-chloroethyl)ether	5.00	U
108-60-1	Bis(2-chloroisopropyl)ether	5.00	U
117-81-7	Bis(2-ethylhexyl)phthalate	1.45	J
101-55-3	4-Bromophenyl phenyl ether	5.00	U
85-68-7	Butyl benzyl phthalate	5.00	U
86-74-8	Carbazole	10.00	U
106-47-8	4-Chloroaniline	5.00	U
510-15-6	Chlorobenzilate	5.00	U
59-50-7	4-Chloro-3-methylphenol	5.00	U
91-58-7	2-Chloronaphthalene	5.00	U
95-57-8	2-Chlorophenol	5.00	U
7005-72-3	4-Chlorophenyl phenyl ether	5.00	U
218-01-9	Chrysene	2.00	U
53-70-3	Dibenz(a,h)anthracene	2.00	U
132-64-9	Dibenzofuran	5.00	U
84-74-2	Di-n-butyl phthalate	5.00	U
95-50-1	1,2-Dichlorobenzene	5.00	U
541-73-1	1,3-Dichlorobenzene	5.00	U
106-46-7	1,4-Dichlorobenzene	5.00	U

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

P05271LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix: (soil/water) WATER Lab Prep Batch: P05271

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 0401004

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/21/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-94-1	3,3'-Dichlorobenzidine	10.00	U
120-83-2	2,4-Dichlorophenol	5.00	U
87-65-0	2,6-Dichlorophenol	5.00	U
84-66-2	Diethyl phthalate	5.00	U
119-93-7	3,3-Dimethylbenzidine	10.00	U
105-67-9	2,4-Dimethyphenol	5.00	U
131-11-3	Dimethyl phthalate	5.00	U
534-52-1	4,6-Dinitro-2-methylphenol	10.00	U
51-28-5	2,4-Dinitrophenol	20.00	U
121-14-2	2,4-Dinitrotoluene	5.00	U
606-20-2	2,6-Dinitrotoluene	5.00	U
122-39-4	N-NitrsdiphylAm/Diphenylamin	5.00	U
117-84-0	Di-n-octyl phthalate	5.00	U
62-50-0	Ethyl methanesulfonate	5.00	U
206-44-0	Fluoranthene	2.00	U
86-73-7	Fluorene	2.00	U
118-74-1	Hexachlorobenzene	5.00	U
87-68-3	Hexachlorobutadiene	5.00	U
77-47-4	Hexachlorocyclopentadiene	5.00	U
67-72-1	Hexachloroethane	5.00	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.00	U
78-59-1	Isophorone	5.00	U
66-27-3	Methyl methanesulfonate	5.00	U
91-57-6	2-Methylnaphthalene	5.00	U
95-48-7	2-Methylphenol	5.00	U
108-39-4	3&4-Methylphenol	5.00	U
91-20-3	Naphthalene	5.00	U
88-74-4	2-Nitroaniline	10.00	U
99-09-2	3-Nitroaniline	10.00	U
100-01-6	4-Nitroaniline	10.00	U
98-95-3	Nitrobenzene	5.00	U
88-75-5	2-Nitrophenol	10.00	U
100-02-7	4-Nitrophenol	5.00	U

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FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
P05271LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix: (soil/water) WATER Lab Prep Batch: P05271

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 0401004

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/21/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
924-16-3	N-Nitrosodibutylamine	5.00	U
55-18-5	N-Nitrosodiethylamine	5.00	U
62-75-9	N-Nitrosodimethylamine	5.00	U
621-64-7	N-Nitrosodi-n-propylamine	5.00	U
82-68-8	Pentachloronitrobenzene	10.00	U
87-86-5	Pentachlorophenol	5.00	U
62-44-2	Phenacetin	5.00	U
85-01-8	Phenanthrene	2.00	U
108-95-2	Phenol	5.00	U
129-00-0	Pyrene	2.00	U
110-86-1	Pyridine	5.00	U
95-94-3	1,2,4,5-Tetrachlorobenzene	5.00	U
58-90-2	2,3,4,6-Tetrachlorophenol	5.00	U
120-82-1	1,2,4-Trichlorobenzene	5.00	U
95-95-4	2,4,5-Trichlorophenol	5.00	U
88-06-2	2,4,6-Trichlorophenol	5.00	U
103-33-3	1,2-Dphnylhydrzine/Azobenzen	5.00	U

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FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

P05271LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 0401004

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/21/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	1576-87-0	2-PENTENAL, (E)-	4.53	7.28	NJ
2.	2207-04-7	CYCLOHEXANE, 1,4-DIMETHYL-,	4.73	6.36	NJ
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4.					
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FORM 3
WATER BNA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: P05271

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix Spike - Sample No.: P05271LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Acenaphthene	50.00		41.31	83	37-123
Acenaphthylene	50.00		43.50	87	67-118
Acetophenone	50.00		35.99	72	60-120
Aniline	50.00		37.58	75	25-102
Anthracene	50.00		44.01	88	68-124
Benzidine	50.00		31.51	63	22-127
Benz(a)Anthracene	50.00		47.01	94	69-125
Benzo(b)fluoranthene	50.00		46.07	92	68-127
Benzo(k)fluoranthene	50.00		44.88	90	73-128
Benzo(ghi)perylene	50.00		42.27	84	53-138
Benzo(a)pyrene	50.00		46.48	93	73-125
Benzoic acid	50.00		18.78	38	20-150
Benzyl alcohol	50.00		36.43	73	23-142
Bis(2-chloroethoxy)meth	50.00		38.40	77	45-135
Bis(2-chloroethyl)ether	50.00		45.46	91	51-120
Bis(2-chloroisopropyl)e	50.00		31.98	64	34-137
Bis(2-ethylhexyl)phthal	50.00		154.4	309*	61-151
4-Bromophenyl phenyl et	50.00		43.82	88	60-120
Butyl benzyl phthalate	50.00		40.24	80	60-120
Carbazole	50.00		42.60	85	37-156
4-Chloroaniline	50.00		42.94	86	45-135
Chlorobenzilate	50.00		42.16	84	20-150
4-Chloro-3-methylphenol	50.00		35.39	71	33-134
2-Chloronaphthalene	50.00		39.63	79	63-121
2-Chlorophenol	50.00		37.53	75	17-134
4-Chlorophenyl phenyl e	50.00		36.80	74	60-120
Chrysene	50.00		44.21	88	70-124
Dibenz(a,h)anthracene	50.00		40.62	81	57-136

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER BNA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: P05271

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix Spike - Sample No.: P05271LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Dibenzofuran	50.00		38.78	78	64-122
Di-n-butyl phthalate	50.00		43.40	87	60-120
1,2-Dichlorobenzene	50.00		34.83	70	39-101
1,3-Dichlorobenzene	50.00		34.64	69	38- 98
1,4-Dichlorobenzene	50.00		33.43	67	31- 97
3,3'-Dichlorobenzidine	50.00		44.57	89	35-165
2,4-Dichlorophenol	50.00		38.75	78	13-146
2,6-Dichlorophenol	50.00		38.67	77	20-150
Diethyl phthalate	50.00		36.84	74	60-120
3,3-Dimethylbenzidine	50.00		30.11	60	20-150
2,4-Dimethyphenol	50.00		37.50	75	51-118
Dimethyl phthalate	50.00		37.55	75	60-120
4,6-Dinitro-2-methylphe	50.00		35.70	71	15-150
2,4-Dinitrophenol	50.00		28.26	56	12-182
2,4-Dinitrotoluene	50.00		33.56	67	34-130
2,6-Dinitrotoluene	50.00		38.27	76	62-135
N-NitrsdiphylAm/Dipheny	50.00		41.95	84	45-135
Di-n-octyl phthalate	50.00		43.48	87	60-120
Ethyl methanesulfonate	50.00		35.52	71	45-135
Fluoranthene	50.00		44.18	88	55-135
Fluorene	50.00		39.69	79	66-121
Hexachlorobenzene	50.00		45.34	91	65-133
Hexachlorobutadiene	50.00		39.70	79	50-112
Hexachlorocyclopentadie	50.00		30.92	62	21-141
Hexachloroethane	50.00		35.00	70	37-100
Indeno(1,2,3-cd)pyrene	50.00		42.08	84	57-140
Isophorone	50.00		39.93	80	13-146
Methyl methanesulfonate	50.00		28.81	58	45-135

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER BNA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: P05271

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix Spike - Sample No.: P05271LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
2-Methylnaphthalene	50.00		43.17	86	50-124
2-Methylphenol	50.00		35.39	71	48-117
3&4-Methylphenol	50.00		24.39	49	46- 99
Naphthalene	50.00		45.29	90	55-113
2-Nitroaniline	50.00		42.26	84	63-129
3-Nitroaniline	50.00		48.08	96	61-120
4-Nitroaniline	50.00		47.13	94	60-126
Nitrobenzene	50.00		37.40	75	57-120
2-Nitrophenol	50.00		42.32	85	27-137
4-Nitrophenol	50.00		20.46	41	20-150
N-Nitrosodibutylamine	50.00		42.67	85	60-120
N-Nitrosodiethylamine	50.00		38.26	76	60-120
N-Nitrosodimethylamine	50.00		28.42	57	30- 96
N-Nitrosodi-n-propylami	50.00		35.10	70	60-120
Pentachloronitrobenzene	50.00		45.98	92	20-150
Pentachlorophenol	50.00		39.98	80	22-171
Phenacetin	50.00		30.70	61	20-150
Phenanthrene	50.00		43.14	86	65-126
Phenol	50.00		18.13	36	12- 57
Pyrene	50.00		44.83	90	40-149
Pyridine	50.00		28.94	58	10- 82
1,2,4,5-Tetrachlorobenz	50.00		37.57	75	60-120
2,3,4,6-Tetrachlorophen	50.00		37.81	76	20-150
1,2,4-Trichlorobenzene	50.00		37.88	76	29-116
2,4,5-Trichlorophenol	50.00		38.62	77	31-147
2,4,6-Trichlorophenol	50.00		42.77	86	31-147
1,2-Dphnylhydrzine/Azob	50.00		49.76	100	45-135

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER BNA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: P05271

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix Spike - Sample No.: P05271LCS

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Acenaphthene	50.00	42.08	84	1	20	37-123
Acenaphthylene	50.00	44.21	88	1	20	67-118
Acetophenone	50.00	36.42	73	1	20	60-120
Aniline	50.00	32.22	64	16	20	25-102
Anthracene	50.00	45.35	91	3	20	68-124
Benzidine	50.00	16.17	32	65*	20	22-127
Benz(a)Anthracene	50.00	47.66	95	1	20	69-125
Benzo(b)fluoranthene	50.00	47.56	95	3	20	68-127
Benzo(k)fluoranthene	50.00	45.92	92	2	20	73-128
Benzo(ghi)perylene	50.00	43.72	87	4	20	53-138
Benzo(a)pyrene	50.00	48.39	97	4	20	73-125
Benzoic acid	50.00	20.03	40	5	20	20-150
Benzyl alcohol	50.00	32.77	66	10	20	23-142
Bis(2-chloroethoxy)meth	50.00	38.05	76	1	20	45-135
Bis(2-chloroethyl)ether	50.00	44.12	88	3	20	51-120
Bis(2-chloroisopropyl)e	50.00	30.42	61	5	20	34-137
Bis(2-ethylhexyl)phthal	50.00	54.98	110	95*	20	61-151
4-Bromophenyl phenyl et	50.00	42.79	86	2	20	60-120
Butyl benzyl phthalate	50.00	41.26	82	2	20	60-120
Carbazole	50.00	43.56	87	2	20	37-156
4-Chloroaniline	50.00	38.98	78	10	20	45-135
Chlorobenzilate	50.00	37.50	75	11	20	20-150
4-Chloro-3-methylphenol	50.00	35.53	71	0	20	33-134
2-Chloronaphthalene	50.00	38.92	78	1	20	63-121
2-Chlorophenol	50.00	36.22	72	4	20	17-134
4-Chlorophenyl phenyl e	50.00	38.43	77	4	20	60-120
Chrysene	50.00	45.39	91	3	20	70-124
Dibenz(a,h)anthracene	50.00	42.65	85	5	20	57-136

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER BNA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: P05271

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix Spike - Sample No.: P05271LCS

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Dibenzofuran	50.00	40.19	80	2	20	64-122
Di-n-butyl phthalate	50.00	43.10	86	1	20	60-120
1,2-Dichlorobenzene	50.00	34.40	69	1	20	39-101
1,3-Dichlorobenzene	50.00	34.36	69	0	20	38- 98
1,4-Dichlorobenzene	50.00	32.92	66	2	20	31- 97
3,3'-Dichlorobenzidine	50.00	44.00	88	1	20	35-165
2,4-Dichlorophenol	50.00	36.65	73	7	20	13-146
2,6-Dichlorophenol	50.00	37.58	75	3	20	20-150
Diethyl phthalate	50.00	39.93	80	8	20	60-120
3,3-Dimethylbenzidine	50.00	21.98	44	31*	20	20-150
2,4-Dimethyphenol	50.00	36.04	72	4	20	51-118
Dimethyl phthalate	50.00	39.04	78	4	20	60-120
4,6-Dinitro-2-methylphe	50.00	38.03	76	7	20	15-150
2,4-Dinitrophenol	50.00	34.70	69	21*	20	12-182
2,4-Dinitrotoluene	50.00	37.67	75	11	20	34-130
2,6-Dinitrotoluene	50.00	40.86	82	8	20	62-135
N-NitrsdiphylAm/Dipheny	50.00	41.33	83	1	20	45-135
Di-n-octyl phthalate	50.00	42.52	85	2	20	60-120
Ethyl methanesulfonate	50.00	34.13	68	4	20	45-135
Fluoranthene	50.00	42.04	84	5	20	55-135
Fluorene	50.00	42.90	86	8	20	66-121
Hexachlorobenzene	50.00	44.39	89	2	20	65-133
Hexachlorobutadiene	50.00	39.71	79	0	20	50-112
Hexachlorocyclopentadie	50.00	31.63	63	2	20	21-141
Hexachloroethane	50.00	36.72	73	4	20	37-100
Indeno(1,2,3-cd)pyrene	50.00	43.69	87	4	20	57-140
Isophorone	50.00	37.68	75	6	20	13-146
Methyl methanesulfonate	50.00	28.70	57	2	20	45-135

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER BNA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: P05271

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix Spike - Sample No.: P05271LCS

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
2-Methylnaphthalene	50.00	40.24	80	7	20	50-124
2-Methylphenol	50.00	34.03	68	4	20	48-117
3&4-Methylphenol	50.00	24.81	50	2	20	46- 99
Naphthalene	50.00	44.74	89	1	20	55-113
2-Nitroaniline	50.00	46.23	92	9	20	63-129
3-Nitroaniline	50.00	56.10	112	15	20	61-120
4-Nitroaniline	50.00	59.81	120	24*	20	60-126
Nitrobenzene	50.00	37.00	74	1	20	57-120
2-Nitrophenol	50.00	41.17	82	4	20	27-137
4-Nitrophenol	50.00	23.81	48	16	20	20-150
N-Nitrosodibutylamine	50.00	39.18	78	8	20	60-120
N-Nitrosodiethylamine	50.00	37.62	75	1	20	60-120
N-Nitrosodimethylamine	50.00	28.99	58	2	20	30- 96
N-Nitrosodi-n-propylami	50.00	35.13	70	0	20	60-120
Pentachloronitrobenzene	50.00	46.41	93	1	20	20-150
Pentachlorophenol	50.00	43.19	86	7	20	22-171
Phenacetin	50.00	32.64	65	6	20	20-150
Phenanthrene	50.00	44.17	88	2	20	65-126
Phenol	50.00	16.90	34	6	20	12- 57
Pyrene	50.00	49.93	100	10	20	40-149
Pyridine	50.00	24.39	49	17	20	10- 82
1,2,4,5-Tetrachlorobenz	50.00	34.94	70	7	20	60-120
2,3,4,6-Tetrachlorophen	50.00	43.52	87	13	20	20-150
1,2,4-Trichlorobenzene	50.00	37.17	74	3	20	29-116
2,4,5-Trichlorophenol	50.00	41.40	83	8	20	31-147
2,4,6-Trichlorophenol	50.00	42.63	85	1	20	31-147
1,2-Dphnylhydrzine/Azob	50.00	47.44	95	5	20	45-135

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 5 out of 83 outside limits
Spike Recovery: 1 out of 166 outside limits

COMMENTS: _____

FORM 3
WATER BNA-GCMS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC. Lab Prep Batch: P05271

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix Spike - Sample No.: 9912-495-1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Acenaphthene	100.0	0.000	94.00	94	37-123
4-Chloro-3-methylphenol	160.0	0.000	100.3	63	33-134
2-Chlorophenol	160.0	0.000	109.6	68	17-134
1,4-Dichlorobenzene	100.0	0.000	75.42	75	31- 97
2,4-Dinitrotoluene	100.0	0.000	83.18	83	34-130
4-Nitrophenol	160.0	0.000	60.66	38	20-150
Pentachlorophenol	160.0	0.000	152.1	95	22-171
Phenol	160.0	0.000	59.38	37	12- 57
Pyrene	100.0	0.000	90.14	90	40-149
1,2,4-Trichlorobenzene	100.0	0.000	91.42	91	33-134

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Acenaphthene	100.0	96.74	97	3	20	37-123
4-Chloro-3-methylphenol	160.0	130.6	82	26*	20	33-134
2-Chlorophenol	160.0	124.2	78	14	20	17-134
1,4-Dichlorobenzene	100.0	80.75	81	8	20	31- 97
2,4-Dinitrotoluene	100.0	93.10	93	11	20	34-130
4-Nitrophenol	160.0	66.58	42	10	20	20-150
Pentachlorophenol	160.0	175.6	110	15	20	22-171
Phenol	160.0	69.79	44	17	20	12- 57
Pyrene	100.0	99.20	99	10	20	40-149
1,2,4-Trichlorobenzene	100.0	96.39	96	5	20	33-134

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 1 out of 10 outside limits
Spike Recovery: 0 out of 20 outside limits

COMMENTS: _____

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

V1122011LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0301004

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 12/20/99

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM 3
WATER VOA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC,INC. Lab Prep Batch: V1122001

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix Spike - Sample No.: V1122011LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Acetone	100.0		90.08	90	59-151
Acetonitrile	1000		1142	114	57-143
Acrolein	100.0		54.22	54*	59-134
Acrylonitrile	100.0		93.65	94	60-146
Allyl chloride	100.0		99.59	100	74-120
Benzene	100.0		98.95	99	72-124
Bromobenzene	100.0		100.6	101	77-120
Bromochloromethane	100.0		103.5	104	74-120
Bromodichloromethane	100.0		87.53	88	68-119
Bromoform	100.0		97.54	98	66-136
Bromomethane	100.0		128.3	128	40-134
2-Butanone	100.0		115.5	116	55-151
n-Butylbenzene	100.0		88.15	88	69-129
sec-Butylbenzene	100.0		84.02	84	72-127
tert-Butylbenzene	100.0		90.58	90	73-126
Carbon Disulfide	100.0		105.3	105	60-133
Carbon Tetrachloride	100.0		87.26	87	64-123
Chlorobenzene	100.0		95.33	95	77-112
Chlorodibromomethane	100.0		103.0	103	72-118
Chloroethane	100.0		107.8	108	64-142
2-Chloroethyl vinyl Eth	100.0		102.0	102	22-165
Chloroform	100.0		91.36	91	70-115
Chloromethane	100.0		115.6	116	58-139
Chloroprene	100.0		93.06	93	73-118
2-Chlorotoluene	100.0		81.64	82	65-132
4-Chlorotoluene	100.0		84.48	84	67-127
1,2-Dibromo-3-chloropro	100.0		73.97	74	56-134
1,2-Dibromoethane	100.0		107.4	107	74-118

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: V1122001

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix Spike - Sample No.: V1122011LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Dibromomethane	100.0		89.79	90	75-114
1,2-Dichlorobenzene	100.0		92.31	92	80-113
1,3-Dichlorobenzene	100.0		98.13	98	77-119
1,4-Dichlorobenzene	100.0		94.98	95	78-116
cis-1,4-Dichloro-2-bute	100.0		98.17	98	62-138
trans-1,4-Dichloro-2-bu	100.0		94.31	94	62-138
Dichlorodifluoromethane	100.0		75.73	76	48-145
1,1-Dichloroethane	100.0		89.31	89	76-118
1,2-Dichloroethane	100.0		86.66	87	62-124
1,1-Dichloroethene	100.0		89.35	89	69-121
cis-1,2-Dichloroethene	100.0		97.28	97	76-114
trans-1,2-Dichloroethen	100.0		96.52	96	72-121
1,2-Dichloropropane	100.0		102.0	102	64-133
1,3-Dichloropropane	100.0		105.8	106	68-128
2,2-Dichloropropane	100.0		87.44	87	67-132
1,1-Dichloropropene	100.0		98.89	99	76-117
cis-1,3-Dichloropropene	100.0		98.77	99	77-120
trans-1,3-Dichloroprope	100.0		99.19	99	73-124
Di isopropyl ether	100.0		105.3	105	62-160
1,4-Dioxane	2000		2157	108	56-131
Ethyl Acetate	100.0		66.95	67	52-151
Ethylbenzene	100.0		81.15	81	77-111
Ethyl methacrylate	200.0		199.7	100	57-140
Furan	100.0		98.20	98	52-124
Hexachlorobutadiene	100.0		101.0	101	69-137
Hexane	100.0		122.9	123	70-130
2-Hexanone	100.0		109.2	109	53-144
Iodomethane	100.0		158.6	159*	51-153

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: V1122001

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix Spike - Sample No.: V1122011LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Isobutyl Alcohol	2000		2017	101	60-134
Isopropylbenzene	100.0		85.86	86	74-125
4-Isopropyltoluene	100.0		83.34	83	72-127
Methacrylonitrile	1000		951.2	95	70-125
Methylene Chloride	100.0		104.3	104	76-115
Methyl methacrylate	200.0		197.4	99	57-147
4-Methyl-2-Pentanone	100.0		109.0	109	42-144
Methyl-tertbutyl-Ether	100.0		82.86	83	62-122
Naphthalene	100.0		99.56	100	53-124
Pentachloroethane	100.0		108.4	108	78-126
Propionitrile	1000		1089	109	58-139
n-Propyl Acetate	100.0		109.3	109	88-170
n-Propylbenzene	100.0		80.42	80	75-125
Styrene	100.0		93.17	93	77-117
1,1,1,2-Tetrachloroetha	100.0		92.71	93	79-113
1,1,2,2-Tetrachloroetha	100.0		91.38	91	67-126
Tetrachloroethene	100.0		101.1	101	77-115
Tetrahydrofuran	100.0		98.32	98	76-181
Toluene	100.0		98.26	98	77-115
1,2,3-Trichlorobenzene	100.0		104.7	105	62-132
1,2,4-Trichlorobenzene	100.0		103.4	103	68-132
1,1,1-Trichloroethane	100.0		85.12	85	63-122
1,1,2-Trichloroethane	100.0		104.7	105	69-117
1,1,2-trichloro-1,2,2-t	100.0		89.08	89	70-130
Trichloroethene	100.0		93.83	94	75-113
Trichlorofluoromethane	100.0		81.11	81	55-130
1,2,3-Trichloropropane	100.0		92.73	93	62-130
1,2,4-Trimethylbenzene	100.0		82.02	82	69-126

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 1 775 152 CLIENT SAMPLE NO.

VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

9912-495-2

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0901010

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 12/20/99

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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ENVIRONMENTAL TESTING & CONSULTING, INC.

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2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #
FID #

Site ID: Memphis Depot Dunn Field
Dunnfield System O&M

Date Arrived 12/17/99
ETC Order Number 9912495

ETC Lab ID **9912495-03**
Sample ID: Trip Blank

Matrix :AQUEOUS
Sample Date :12/16/99

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							8260B
QC Batch	V1122001				12/20/99	LS	
Acetone	ND	ug/L	20.0				
Benzene	ND	ug/L	1.00				
Bromodichloromethane	ND	ug/L	1.00				
Bromoform	ND	ug/L	1.00				
Bromomethane	ND	ug/L	1.00				
Carbon Disulfide	ND	ug/L	1.00				
Carbon Tetrachloride	ND	ug/L	1.00				
Chlorobenzene	ND	ug/L	1.00				
Chlorodibromomethane	ND	ug/L	1.00				
Chloroethane	ND	ug/L	1.00				
Chloroform	ND	ug/L	1.00				
Chloromethane	ND	ug/L	1.00				
1,1-Dichloroethane	ND	ug/L	1.00				
1,2-Dichloroethane	ND	ug/L	1.00				
1,1-Dichloroethene	ND	ug/L	1.00				
trans-1,2-Dichloroethene	ND	ug/L	1.00				
1,2-Dichloropropane	ND	ug/L	1.00				
cis-1,3-Dichloropropene	ND	ug/L	1.00				
trans-1,3-Dichloropropene	ND	ug/L	1.00				
Ethylbenzene	ND	ug/L	1.00				
2-Hexanone (MBK)	ND	ug/L	1.00				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00				
2-Butanone (MEK)	ND	ug/L	5.00				
Methylene Chloride	ND	ug/L	20.0				
Styrene	ND	ug/L	5.00				
1,1,2,2-Tetrachloroethane	ND	ug/L	1.00				
Tetrachloroethene	ND	ug/L	1.00				
Toluene	ND	ug/L	1.00				
1,1,1-Trichloroethane	ND	ug/L	1.00				
1,1,2-Trichloroethane	ND	ug/L	1.00				
Trichloroethene	ND	ug/L	1.00				
Vinyl Acetate	ND	ug/L	1.00				
Vinyl Chloride	ND	ug/L	20.0				
o-Xylenes	ND	ug/L	1.00				
m-Xylenes	ND	ug/L	1.00				
p-Xylenes	ND	ug/L	1.00				
cis-1,2-Dichloroethene	ND	ug/L	1.00				

Surrogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	103	74	123
S2 - Toluene-d8	97	86	112
S3 - 4-Bromofluorobenzene	88	81	115

LABORATORY MANAGER

ND - Not Detected

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
9912-495-3

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0801009

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 12/20/99

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
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775 155

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **Sverdrup Corporation**
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #
FID #

Site ID Memphis Depot Dunn Field
Dunnfield System O&M

Date Arrived 12/17/99
ETC Order Number 9912495

ETC Lab ID **9912495-01**
Sample ID: ST-EFF-019

Matrix :AQUEOUS
Sample Date :12/16/99

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Base/Neutral & Acid							8270C
QC Batch	P05271	ug/L		12/17/99	12/21/99	PF	
Acenaphthene	ND	ug/L	2.00				
Acenaphthylene	ND	ug/L	2.00				
Anthracene	ND	ug/L	2.00				
Benzo(a)anthracene	ND	ug/L	2.00				
Benzo(b)fluoranthene	ND	ug/L	2.00				
Benzo(k)fluoranthene	ND	ug/L	2.00				
Benzo(g,h,i)perylene	ND	ug/L	2.00				
Benzo(a)pyrene	ND	ug/L	2.00				
Benzoic Acid	ND	ug/L	50.0				
Benzyl Alcohol	ND	ug/L	10.0				
Bis(2-chloroethoxy)methane	ND	ug/L	5.00				
Bis(2-chloroethyl)ether	ND	ug/L	5.00				
Bis(2-chloroisopropyl)ether	ND	ug/L	5.00				
Bis(2-ethylhexyl)phthalate	ND	ug/L	10.0				
4-Bromophenyl phenyl ether	ND	ug/L	5.00				
Butyl benzyl phthalate	ND	ug/L	5.00				
4-Chloroaniline	ND	ug/L	5.00				
2-Chloronaphthalene	ND	ug/L	5.00				
4-Chloro-3-methylphenol	ND	ug/L	5.00				
2-Chlorophenol	ND	ug/L	5.00				
4-Chlorophenyl phenyl ether	ND	ug/L	5.00				
Chrysene	ND	ug/L	2.00				
Dibenzo(a,h)anthracene	ND	ug/L	2.00				
Dibenzofuran	ND	ug/L	5.00				
Di-n-butyl phthalate	ND	ug/L	5.00				
1,2-Dichlorobenzene	ND	ug/L	5.00				
1,3-Dichlorobenzene	ND	ug/L	5.00				
1,4-Dichlorobenzene	ND	ug/L	5.00				
3,3'-Dichlorobenzidine	ND	ug/L	10.0				
2,4-Dichlorophenol	ND	ug/L	5.00				
2,6-Dichlorophenol	ND	ug/L	5.00				
Diethyl phthalate	ND	ug/L	5.00				
2,4-Dimethylphenol	ND	ug/L	5.00				
Dimethyl phthalate	ND	ug/L	5.00				
4,6-Dinitro-2-methylphenol	ND	ug/L	10.0				
2,4-Dinitrophenol	ND	ug/L	50.0				
2,4-Dinitrotoluene	ND	ug/L	5.00				
2,6-Dinitrotoluene	ND	ug/L	5.00				
Di-n-octyl phthalate	ND	ug/L	5.00				
Fluoranthene	ND	ug/L	2.00				
Fluorene	ND	ug/L	2.00				
Hexachlorobenzene	ND	ug/L	5.00				

LABORATORY MANAGER

ND - Not Detected

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #
FID #

Site ID: Memphis Depot Dunn Field
Dunnfield System O&M

Date Arrived 12/17/99
ETC Order Number 9912495

ETC Lab ID **9912495-01**
Sample ID: ST-EFF-019

Matrix :AQUEOUS
Sample Date :12/16/99

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Base/Neutral & Acid				12/17/99	12/21/99	PF	8270C
Hexachlorobutadiene	ND	ug/L	5.00				
Hexachlorocyclopentadiene	ND	ug/L	5.00				
Hexachloroethane	ND	ug/L	5.00				
Indeno(1,2,3-cd)pyrene	ND	ug/L	2.00				
Isophorone	ND	ug/L	5.00				
2-Methylnaphthalene	ND	ug/L	2.00				
2-Methylphenol (o-cresol)	ND	ug/L	5.00				
3-Methylphenol (m-cresol)	ND	ug/L	5.00				
Methylphenol (p-cresol)	ND	ug/L	5.00				
Naphthalene	ND	ug/L	2.00				
Nitrobenzene	ND	ug/L	5.00				
2-Nitroaniline	ND	ug/L	5.00				
3-Nitroaniline	ND	ug/L	10.0				
4-Nitroaniline	ND	ug/L	5.00				
2-Nitrophenol	ND	ug/L	5.00				
4-Nitrophenol	ND	ug/L	5.00				
N-Nitrosodiphenylamine	ND	ug/L	5.00				
N-Nitrosodipropylamine	ND	ug/L	5.00				
Pentachlorophenol	ND	ug/L	10.0				
Phenanthrene	ND	ug/L	2.00				
Phenol	ND	ug/L	5.00				
Pyrene	ND	ug/L	2.00				
1,2,4-Trichlorobenzene	ND	ug/L	5.00				
2,4,5-Trichlorphenol	ND	ug/L	5.00				
2,4,6-Trichlorophenol	ND	ug/L	5.00				

Surrogate Standard	% Recovery	QC Limits	
S1 - Nitrobenzene-d5	79	29	110
S2 - 2-Fluorobiphenyl	73	38	107
S3 - 4-Terphenyl-d14	102	33	122
S4 - Phenol-d6	30	7	58
S5 - 2,4,6-Tribromophenol	70	16	138
S6 - 2-Fluorophenol	38	8	88

LABORATORY MANAGER

ND - Not Detected

775 157

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
9912-495-1

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 0801008

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/21/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	127-18-4	TETRACHLOROETHYLENE	3.70	6.76	NJ
2.	1629-58-9	1-PENTEN-3-ONE	4.53	5.18	NJ
3.	79-34-5	ETHANE, 1,1,2,2-TETRACHLORO-	4.55	53.89	NJ
4.	2207-03-6	CYCLOHEXANE, 1,3-DIMETHYL-,	4.73	5.61	NJ
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FORM I BNA-GCMS-TIC

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

775 158

ent Name Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #
FID #

Site ID Memphis Depot Dunn Field
Dunnfield System O&M

Date Arrived 12/17/99
ETC Order Number 9912495

ETC Lab ID **9912495-02**
Sample ID: ST-EFF-117

Matrix :AQUEOUS
Sample Date :12/16/99

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Base/Neutral & Acid				12/17/99	12/21/99	PF	8270C
QC Batch	P05271	ug/L					
Acenaphthene	ND	ug/L	2.00				
Acenaphthylene	ND	ug/L	2.00				
Anthracene	ND	ug/L	2.00				
Benzo(a)anthracene	ND	ug/L	2.00				
Benzo(b)fluoranthene	ND	ug/L	2.00				
Benzo(k)fluoranthene	ND	ug/L	2.00				
enzo(g,h,i)perylene	ND	ug/L	2.00				
nzo(a)pyrene	ND	ug/L	2.00				
enzoic Acid	ND	ug/L	50.0				
Benzyl Alcohol	ND	ug/L	10.0				
Bis(2-chloroethoxy)methane	ND	ug/L	5.00				
Bis(2-chloroethyl)ether	ND	ug/L	5.00				
Bis(2-chloroisopropyl)ether	ND	ug/L	5.00				
Bis(2-ethylhexyl)phthalate	13.7B	ug/L	10.0				
4-Bromophenyl phenyl ether	ND	ug/L	5.00				
Butyl benzyl phthalate	ND	ug/L	5.00				
4-Chloroaniline	ND	ug/L	5.00				
2-Chloronaphthalene	ND	ug/L	5.00				
4-Chloro-3-methylphenol	ND	ug/L	5.00				
2-Chlorophenol	ND	ug/L	5.00				
4-Chlorophenyl phenyl ether	ND	ug/L	5.00				
Chrysene	ND	ug/L	2.00				
Dibenzo(a,h)anthracene	ND	ug/L	2.00				
Dibenzofuran	ND	ug/L	5.00				
Di-n-butyl phthalate	ND	ug/L	5.00				
1,2-Dichlorobenzene	ND	ug/L	5.00				
1,3-Dichlorobenzene	ND	ug/L	5.00				
1,4-Dichlorobenzene	ND	ug/L	5.00				
3,3'-Dichlorobenzidine	ND	ug/L	10.0				
2,4-Dichlorophenol	ND	ug/L	5.00				
2,6-Dichlorophenol	ND	ug/L	5.00				
Diethyl phthalate	ND	ug/L	5.00				
2,4-Dimethylphenol	ND	ug/L	5.00				
Dimethyl phthalate	ND	ug/L	5.00				
4,6-Dinitro-2-methylphenol	ND	ug/L	10.0				
2,4-Dinitrophenol	ND	ug/L	50.0				
2,4-Dinitrotoluene	ND	ug/L	5.00				
6-Dinitrotoluene	ND	ug/L	5.00				
-n-octyl phthalate	ND	ug/L	5.00				
Fluoranthene	ND	ug/L	2.00				
Fluorene	ND	ug/L	2.00				
Hexachlorobenzene	ND	ug/L	5.00				

LABORATORY MANAGER

ND - Not Detected

775 159

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **Sverdrup Corporation**
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #
FID #

Site ID Memphis Depot Dunn Field
Dunnfield System O&M

Date Arrived 12/17/99
ETC Order Number 9912495

ETC Lab ID **9912495-02**
Sample ID: ST-EFF-117

Matrix :AQUEOUS
Sample Date :12/16/99

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Base/Neutral & Acid				12/17/99	12/21/99	PF	8270C
Hexachlorobutadiene	ND	ug/L	5.00				
Hexachlorocyclopentadiene	ND	ug/L	5.00				
Hexachloroethane	ND	ug/L	5.00				
Indeno(1,2,3-cd)pyrene	ND	ug/L	2.00				
Isophorone	ND	ug/L	5.00				
2-Methylnaphthalene	ND	ug/L	2.00				
2-Methylphenol (o-cresol)	ND	ug/L	5.00				
3-Methylphenol (m-cresol)	ND	ug/L	5.00				
4-Methylphenol (p-cresol)	ND	ug/L	5.00				
Naphthalene	ND	ug/L	2.00				
Nitrobenzene	ND	ug/L	5.00				
2-Nitroaniline	ND	ug/L	5.00				
3-Nitroaniline	ND	ug/L	10.0				
4-Nitroaniline	ND	ug/L	5.00				
2-Nitrophenol	ND	ug/L	5.00				
4-Nitrophenol	ND	ug/L	5.00				
N-Nitrosodiphenylamine	ND	ug/L	5.00				
N-Nitrosodipropylamine	ND	ug/L	5.00				
Pentachlorophenol	ND	ug/L	10.0				
Phenanthrene	ND	ug/L	2.00				
Phenol	ND	ug/L	5.00				
Pyrene	ND	ug/L	2.00				
1,2,4-Trichlorobenzene	ND	ug/L	5.00				
2,4,5-Trichlorphenol	ND	ug/L	5.00				
2,4,6-Trichlorophenol	ND	ug/L	5.00				

Surrogate Standard	% Recovery	QC Limits	
S1 - Nitrobenzene-d5	76	29	110
S2 - 2-Fluorobiphenyl	69	38	107
S3 - 4-Terphenyl-d14	117	33	122
S4 - Phenol-d6	29	7	58
S5 - 2,4,6-Tribromophenol	70	16	138
S6 - 2-Fluorophenol	38	8	88

LABORATORY MANAGER

ND - Not Detected

FORM 1 775 160 CLIENT SAMPLE NO.

BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

9912-495-2

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 1101011

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 12/21/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	127-18-4	TETRACHLOROETHYLENE	3.70	7.13	NJ
2.	19780-60-0	3-ETHYL-2-METHYL-1-HEPTENE	4.53	4.63	NJ
3.	79-34-5	ETHANE, 1,1,2,2-TETRACHLORO-	4.55	52.25	NJ
4.	2207-04-7	CYCLOHEXANE, 1,4-DIMETHYL-,	4.73	5.09	NJB
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775 161

Environmental Testing & Consulting, Inc.

Quality Control Reports
Level III
Metals (ICP/GFAA/CV)

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
METALS - AQUEOUS

'775 162

Client Name Sverdrup Corporation
Project Name Memphis Depot Dunn Field

ETC Order# 9912-495

HOLDING TIMES

QC Batch(s) for this order	ICP/GFAA	V18-AQ-27
	Mercury	V6-AQ-20
Sample Analysis	All samples digested and analyzed within 180 days of collection.	
Mercury Analysis	All samples analyzed within 28 days of collection.	

CALIBRATION

Initial Calibration	All criteria met.
Continuing Calibration	All criteria met.

SAMPLE ANALYSIS

Instrumentation: Thermo Jarrell Ash Enviro-I ICP
Varian 640Z Zeeman Graphite Furnace
Perkin Elmer 5100ZL Graphite Furnace
Perkin Elmer 6000 Graphite Furnace
Thermo Jarrell Ash AA-Scan 4 Graphite Furnace
CETAC M-6000A Mercury Analyzer

Dilutions Required No dilutions required.

QUALITY CONTROL

9912-495.MQCBLANK
Method Blank

V18-AQ-27BLK	ICP/GFAA Metals
V6-AQ-20BLK	Mercury

No analytes detected in the Method Blank

9912-495.MQCLCS
Laboratory Control Sample(s)

V18-AQ-27LCS	ICP/GFAA Metals
V6-AQ-20LCS	Mercury

All criteria met.

9912-495.MQCMSMSD
Matrix Spike / Matrix Spike Dup - ICP Metals

9912-495-01	RPD	All analytes within QC limits.
ST-EFF-019	Spike Recovery	All analytes within QC limits, except as listed below.

Recoveries for Sodium were flagged as outside QC Limits due to the level of this analyte present relative to the spike amount. A Dilution Test was performed for verification:

Analyte	No Dilution	1:5 Dilution	% Difference	QA Evaluation
Sodium	23.1 mg/L	23.0 mg/L	0	Pass

Refer to Laboratory Control Sample(s) for system verification.

775 163

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
METALS - AQUEOUS

Client Name	Sverdrup Corporation
Project Name	Memphis Depot Dunn Field
ETC Order#	9912-495

QUALITY CONTROL

Matrix Spike / Matrix Spike Dup - Graphite Metals

9912-495-01	RPD	All analytes within QC limits.
ST-EFF-019	Spike Recovery	All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Matrix Spike / Matrix Spike Dup - Hg

9912-495-01	RPD	All analytes within QC limits.
ST-EFF-019	Spike Recovery	All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Dilution Test Dilution result must agree within 10% of original result when sample is diluted by a factor of 5.

Post Digestion Spike Recovery must be +/-15% of expected value.

Laboratory Manager

WATER METHOD BLANK
METALS

Lab Name: Environmental Testing and Consulting, Inc

		QC Batch
Laboratory ID ICP/GFAA Metals	V18-AQ-27 BLK	V18-AQ-27
Laboratory ID Mercury	V6-AQ-20 BLK	V6-AQ-20
Date Sample Prepared	12/20/99	ICP/GFAA Metals
	12/21/99	Mercury

Metals	Concentration mg/L	Detection Limit mg/L	Date Analyzed	Method
Silver	ND	0.009	12/20/99	200.7
Aluminum	0.082	0.060	12/20/99	200.7
Arsenic	ND	0.003	12/22/99	206.2
Barium	ND	0.003	12/20/99	200.7
Beryllium	ND	0.002	12/20/99	200.7
Calcium	0.032	0.015	12/20/99	200.7
Cadmium	ND	0.005	12/20/99	200.7
Cobalt	ND	0.009	12/20/99	200.7
Chromium	ND	0.009	12/20/99	200.7
Copper	ND	0.008	12/20/99	200.7
Iron	ND	0.009	12/20/99	200.7
Potassium	ND	0.250	12/20/99	200.7
Magnesium	ND	0.040	12/20/99	200.7
Manganese	ND	0.003	12/20/99	200.7
Sodium	ND	0.050	12/20/99	200.7
Nickel	ND	0.020	12/20/99	200.7
Lead	ND	0.060	12/20/99	200.7
Antimony	ND	0.040	12/20/99	200.7
Selenium	ND	0.100	12/20/99	200.7
Thallium	ND	0.065	12/20/99	200.7
Vanadium	ND	0.010	12/20/99	200.7
Zinc	ND	0.010	12/20/99	200.7
Mercury	ND	0.0002	12/21/99	245.1

QC REVIEWED _____

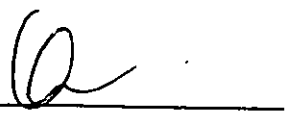
WATER LABORATORY CONTROL SAMPLE
METALS

Lab Name: Environmental Testing and Consulting, Inc

			QC Batch
Laboratory Control ID	ICP/GFAA Metals	V18-AQ-27 LCS	V18-AQ-27
	Mercury	V6-AQ-20 LCS	V6-AQ-20
Date Prepared	ICP/GFAA Metals	12/20/99	
	Mercury	12/21/99	

Metals	Spike Added mg/L	Found mg/L	% R #	QC Limits	
Silver	0.250	0.267	107	80	120
Aluminum	2.50	2.65	106	80	120
Arsenic	0.063	0.061	97	85	115
Barium	2.50	2.59	104	80	120
Beryllium	0.250	0.263	105	80	120
Calcium	5.00	5.35	107	80	120
Cadmium	0.250	0.267	107	80	120
Cobalt	1.25	1.32	106	80	120
Chromium	0.500	0.526	105	80	120
Copper	0.500	0.535	107	80	120
Iron	2.50	2.69	108	80	120
Potassium	5.00	5.45	109	80	120
Magnesium	5.00	5.24	105	80	120
Manganese	0.250	0.264	106	80	120
Sodium	5.00	5.31	106	80	120
Nickel	1.25	1.34	107	80	120
Lead	1.25	1.34	107	80	120
Antimony	2.50	2.61	104	80	120
Selenium	1.25	1.27	102	80	120
Thallium	1.25	1.32	106	80	120
Vanadium	1.25	1.31	105	80	120
Zinc	0.250	0.277	111	80	120
Mercury	0.0050	0.0057	114	80	120

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits

QC REVIEWED 

WATER MATRIX SPIKE
METALS

Lab Name Environmental Testing and Consulting, Inc

		QC Batch
Laboratory ID MS ICP/GFAA Metals	9912-495-01	V18-AQ-27
Laboratory ID MS Mercury	9912-495-01	V6-AQ-20

Date Sample Prepared	12/20/99	ICP/GFAA Metals
	12/21/99	Mercury

Metals	SPIKE Added mg/L	SAMPLE Conc mg/L	MS Conc mg/L	RPD <20% #	MS % Rec #	QC Limits	
Silver	0.250	ND	0.252	0	101	75	125
Aluminum	2.50	ND	2.59	1	104	75	125
Arsenic	0.063	ND	0.066	3	105	85	115
Barium	2.50	0.099	2.59	0	100	75	125
Beryllium	0.250	ND	0.257	1	103	75	125
Calcium	5.00	20.1	25.0	1	98	75	125
Cadmium	0.250	ND	0.257	0	103	75	125
Cobalt	1.25	ND	1.30	1	104	75	125
Chromium	0.500	ND	0.518	1	104	75	125
Copper	0.500	ND	0.516	1	103	75	125
Iron	2.50	0.019	2.64	1	105	75	125
Potassium	5.00	0.840	5.94	1	102	75	125
Magnesium	5.00	10.3	15.2	1	98	75	125
Manganese	0.250	0.007	0.262	0	102	75	125
Sodium	5.00	23.1	25.9	3	56 *	75	125
Nickel	1.25	ND	1.31	1	105	75	125
Lead	1.250	ND	1.30	1	104	75	125
Antimony	2.50	0.040	2.60	1	102	75	125
Selenium	1.25	ND	1.27	1	102	75	125
Thallium	1.25	ND	1.26	2	101	75	125
Vanadium	1.25	ND	1.28	1	102	75	125
Zinc	0.250	0.047	0.308	1	104	75	125
Mercury	0.0050	ND	0.0057	0	114	75	125

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits
ND - Not Detected

QC REVIEWED _____

WATER MATRIX SPIKE DUPLICATE
METALS

Lab Name Environmental Testing and Consulting, Inc

		QC Batch
Laboratory ID MS ICP/GFAA Metals	9912-495-01	V18-AQ-27
Laboratory ID MS Mercury	9912-495-01	V6-AQ-20

Date Sample Prepared	12/20/99	ICP/GFAA Metals
	12/21/99	Mercury

Metals	SPIKE Added mg/L	SAMPLE Conc mg/L	MSD Conc mg/L		MSD % Rec	#	QC Limits	
Silver	0.250	ND	0.252		101		75	125
Aluminum	2.50	ND	2.57		103		75	125
Arsenic	0.063	ND	0.068		108		85	115
Barium	2.50	0.099	2.59		100		75	125
Beryllium	0.250	ND	0.259		104		75	125
Calcium	5.00	20.1	25.2		102		75	125
Cadmium	0.250	ND	0.258		103		75	125
Cobalt	1.25	ND	1.29		103		75	125
Chromium	0.500	ND	0.515		103		75	125
Copper	0.500	ND	0.519		104		75	125
Iron	2.50	0.019	2.62		104		75	125
Potassium	5.00	0.840	5.88		101		75	125
Magnesium	5.00	10.3	15.3		100		75	125
Manganese	0.250	0.007	0.262		102		75	125
Sodium	5.00	23.1	26.7		72	*	75	125
Nickel	1.25	ND	1.30		104		75	125
Lead	1.25	ND	1.31		105		75	125
Antimony	2.50	0.040	2.58		102		75	125
Selenium	1.25	ND	1.28		102		75	125
Thallium	1.25	ND	1.28		102		75	125
Vanadium	1.25	ND	1.27		102		75	125
Zinc	0.250	0.047	0.311		106		75	125
Mercury	0.0050	ND	0.0057		114		75	125

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits
ND - Not Detected

QC REVIEWED 

Environmental Testing & Consulting, Inc.

Quality Control Reports
Level III
GC/MS Volatiles

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
GC/MS VOLATILE COMPOUNDS - AQUEOUS

Client Name	Sverdrup Corporation
Project Name	Memphis Depot Dunn Field
ETC Order#	9912-495
Method (SW-846)	8260B/5030B

SAMPLE PRESERVATION (Verified at time of analysis)

All aqueous samples preserved to pH < 2.

HOLDING TIMES

Sample Analysis — All samples analyzed within 14 days of collection.

QUALITY CONTROL

QC Batch	Form 4 Summary
V1122001	V1122011LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.

Method Blank FORM 4
V1122011LB

Target Analytes were not detected in the Method Blanks, except as listed below.

Methylene Chloride detected at 3.85J ug/L. This analyte was not identified in associated project samples.

Laboratory Control Sample FORM 3
V1122011LCS

All acceptance criteria met, except as listed below.

Acrolein was flagged for slightly low recovery. This slightly low recovery does not affect sample data.

Iodomethane was flagged for high recovery. This analyte was not identified in associated project samples. There is no effect on the data.

Matrix Spike / Matrix Spike Dup. FORM 3
Batch V1122001

9912-495-01	RPD	All analytes within QC limits.
ST-EFF-019	Spike Recovery	All analytes within QC limits, except as listed below.

Trichloroethene was flagged for low recovery in the MS/MSD. LCS recovery was within QC Limits. This analyte was not identified in associated project samples. There is no effect on the data.

Refer to Laboratory Control Sample(s) for system verification.

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
GC/MS VOLATILE COMPOUNDS - AQUEOUS

Client Name	Sverdrup Corporation
Project Name	Memphis Depot Dunn Field
ETC Order#	9912-495
Method (SW-846)	8260B/5030B

CALIBRATION

BFB Daily 12-Hour Tune	All criteria met. FORM 5
Initial Calibration	All criteria met. FORM 6
Calibration Verification	All criteria met. FORM 7

Volatile Internal Standard Area and RT FORM 8

Daily Check Standard(s) Internal Standard Areas and Retention Times within QC limits.

SAMPLE ANALYSIS

Instrumentation	HP 5890 Series II GC, 5971MSD
Dilutions Required	No dilutions required.

CDS

Project Manager

FORM 2
WATER VOA-GCMS SYSTEM MONITORING COMPOUND RECOVERY

775 171

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

	CLIENT SAMPLE NO.	SMC1 #	SMC2 (TOL) #	SMC3 (BFB) #	OTHER	TOT OUT
01	V1122011LCS	91	101	85		0
02	V1122011LB	102	97	87		0
03	9912-495-3	103	97	88		0
04	9912-495-2	99	94	86		0
05	9912-495-1	101	96	92		0
06	9912-495-1MS	105	96	94		0
07	9912-495-1MS	105	96	89		0
08						
09						
10						
11						
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		QC LIMITS
SMC1	= Dibromofluoromethane	(74-123)
SMC2 (TOL)	= Toluene-d8	(86-112)
SMC3 (BFB)	= Bromofluorobenzene	(81-115)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

775 172
CLIENT SAMPLE NO.

FORM 4
VOA-GCMS METHOD BLANK SUMMARY

V1122011LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Lab File ID: 0301004 Lab Prep Batch: V1122001

Date Analyzed: 12/20/99 Time Analyzed: 1122

GC Column: ID: 2 (mm) Heated Purge: (Y/N) Y

Instrument ID: VOC1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	V1122011LCS	V1122001	0201002LCS	0941
02	9912-495-3	V1122001	0801009	1457
03	9912-495-2	V1122001	0901010	1541
04	9912-495-1	V1122001	1001011	1624
05	9912-495-1MS	V1122001	1501016	1957
06	9912-495-1MS	V1122001	1601017	2040
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
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29				
30				

COMMENTS:

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
V1122011LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix: (soil/water) WATER Lab Prep Batch: V1122001

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0301004

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 12/20/99

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	20.00	U
75-05-8	Acetonitrile	50.00	U
107-02-8	Acrolein	20.00	U
107-13-1	Acrylonitrile	20.00	U
107-05-1	Allyl chloride	1.00	U
71-43-2	Benzene	1.00	U
108-86-1	Bromobenzene	1.00	U
74-97-5	Bromochloromethane	1.00	U
75-27-4	Bromodichloromethane	1.00	U
75-25-2	Bromoform	1.00	U
74-83-9	Bromomethane	1.00	U
78-93-3	2-Butanone	20.00	U
104-51-8	n-Butylbenzene	1.00	U
135-98-8	sec-Butylbenzene	1.00	U
98-06-6	tert-Butylbenzene	1.00	U
75-15-0	Carbon Disulfide	1.00	U
56-23-5	Carbon Tetrachloride	1.00	U
108-90-7	Chlorobenzene	1.00	U
124-48-1	Chlorodibromomethane	1.00	U
75-00-3	Chloroethane	1.00	U
110-75-8	2-Chloroethyl vinyl Ether	5.00	U
67-66-3	Chloroform	1.00	U
74-87-3	Chloromethane	1.00	U
126-99-8	Chloroprene	1.00	U
95-49-8	2-Chlorotoluene	1.00	U
106-43-4	4-Chlorotoluene	1.00	U
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U
106-93-4	1,2-Dibromoethane	1.00	U
74-95-3	Dibromomethane	1.00	U
95-50-1	1,2-Dichlorobenzene	1.00	U
541-73-1	1,3-Dichlorobenzene	1.00	U
106-46-7	1,4-Dichlorobenzene	1.00	U
1476-11-5	cis-1,4-Dichloro-2-butene	1.00	U

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
V1122011LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix: (soil/water) WATER Lab Prep Batch: V1122001

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0301004

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 12/20/99

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.00	U
75-71-8	Dichlorodifluoromethane	1.00	U
75-34-3	1,1-Dichloroethane	1.00	U
107-06-2	1,2-Dichloroethane	1.00	U
75-35-4	1,1-Dichloroethene	1.00	U
156-59-2	cis-1,2-Dichloroethene	1.00	U
156-60-5	trans-1,2-Dichloroethene	1.00	U
78-87-5	1,2-Dichloropropane	1.00	U
142-28-9	1,3-Dichloropropane	1.00	U
594-20-7	2,2-Dichloropropane	1.00	U
563-58-6	1,1-Dichloropropene	1.00	U
10061-01-5	cis-1,3-Dichloropropene	1.00	U
10061-02-6	trans-1,3-Dichloropropene	1.00	U
108-20-3	Di isopropyl ether	5.00	U
123-91-1	1,4-Dioxane	100.0	U
141-78-6	Ethyl Acetate	10.00	U
100-41-4	Ethylbenzene	1.00	U
97-63-2	Ethyl methacrylate	1.00	U
110-00-9	Furan	1.00	U
87-68-3	Hexachlorobutadiene	1.00	U
110-54-3	Hexane	20.00	U
591-78-6	2-Hexanone	5.00	U
74-88-4	Iodomethane	1.00	U
78-83-1	Isobutyl Alcohol	100.0	U
98-82-8	Isopropylbenzene	1.00	U
99-87-6	4-Isopropyltoluene	1.00	U
126-98-7	Methacrylonitrile	10.00	U
75-09-2	Methylene Chloride	3.85	J
80-62-6	Methyl methacrylate	2.00	U
108-10-1	4-Methyl-2-Pentanone	5.00	U
1634-04-4	Methyl-tertbutyl-Ether	1.00	U
91-20-3	Naphthalene	1.00	U
76-01-7	Pentachloroethane	1.00	U

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FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V1122011LB

Lab Name: ETC,INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix: (soil/water) WATER Lab Prep Batch: V1122001

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0301004

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 12/20/99

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
107-12-0	Propionitrile	10.00	U
109-60-4	n-Propyl Acetate	1.00	U
103-65-1	n-Propylbenzene	1.00	U
100-42-5	Styrene	1.00	U
630-20-6	1,1,1,2-Tetrachloroethane	1.00	U
79-34-5	1,1,2,2-Tetrachloroethane	1.00	U
127-18-4	Tetrachloroethene	1.00	U
109-99-9	Tetrahydrofuran	20.00	U
108-88-3	Toluene	1.00	U
87-61-6	1,2,3-Trichlorobenzene	1.00	U
120-82-1	1,2,4-Trichlorobenzene	1.00	U
71-55-6	1,1,1-Trichloroethane	1.00	U
79-00-5	1,1,2-Trichloroethane	1.00	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	1.00	U
79-01-6	Trichloroethene	1.00	U
75-69-4	Trichlorofluoromethane	1.00	U
96-18-4	1,2,3-Trichloropropane	1.00	U
95-63-6	1,2,4-Trimethylbenzene	1.00	U
108-67-8	1,3,5-Trimethylbenzene	1.00	U
108-05-4	Vinyl Acetate	20.00	U
75-01-4	Vinyl Chloride	1.00	U
108-38-3	Xylene-mp	2.00	U
95-47-6	Xylene-o	1.00	U

Environmental Testing & Consulting, Inc.

Sample Reports

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ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #

Site ID: Memphis Depot Dunn Field
Dunnfield System O&M

Date Arrived 12/17/99
ETC Order Number 9912495

ETC Lab ID 9912495-01
Sample ID: ST-EFF-019

Matrix :AQUEOUS
Sample Date :12/16/99

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED	BY	METHOD
pH	5.9	SU		0830	12/17/99	RB	150.1

LABORATORY MANAGER

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name **Sverdrup Corporation**
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #

Site ID Memphis Depot Dunn Field
Dunnfield System O&M

Date Arrived 12/17/99
ETC Order Number 9912495

ETC Lab ID **9912495-02**
Sample ID: ST-EFF-117

Matrix :AQUEOUS
Sample Date :12/16/99

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED	BY	METHOD
pH	5.7	SU		0830	12/17/99	RB	150.1

ABORATORY MANAGER

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ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #

Site ID: Memphis Depot Dunn Field
Dunnfield System O&M

Date Arrived 12/17/99
ETC Order Number 9912495

ETC Lab ID **9912495-01**
Sample ID: ST-EFF-019

Matrix :AQUEOUS
Sample Date :12/16/99

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED	BY	METHOD
Mercury Digestion Batch	V6-AQ-20						
Metals Digestion Batch	V18-AQ-27					NR	245.1
Silver	<0.009	mg/L	0.009	1208	12/20/99	TB	3030K
Aluminum	<0.060	mg/L	0.060	1208	12/20/99	SH	200.7
Arsenic	<0.003	mg/L	0.003	1051	12/22/99	JF	206.2
Barium	0.099	mg/L	0.003	1208	12/20/99	SH	200.7
Beryllium	<0.002	mg/L	0.002	1208	12/20/99	SH	200.7
Calcium	20.1	mg/L	0.015	1208	12/20/99	SH	200.
Cadmium	<0.005	mg/L	0.005	1208	12/20/99	SH	200.7
Cobalt	<0.009	mg/L	0.009	1208	12/20/99	SH	200.7
Chromium	<0.009	mg/L	0.009	1208	12/20/99	SH	200.7
Copper	<0.008	mg/L	0.008	1208	12/20/99	SH	200.7
Iron	0.019	mg/L	0.009	1208	12/20/99	SH	200.7
Mercury	<0.0002	mg/L	0.0002	1707	12/21/99	NR	245.1
Potassium	0.840	mg/L	0.250	1208	12/20/99	SH	200.7
Magnesium	10.3	mg/L	0.040	1208	12/20/99	SH	200.7
Manganese	0.007	mg/L	0.003	1208	12/20/99	SH	200.7
Sodium	23.1	mg/L	0.050	1208	12/20/99	SH	200.7
Nickel	<0.020	mg/L	0.020	1208	12/20/99	SH	200.7
Lead	<0.060	mg/L	0.060	1208	12/20/99	SH	200.7
Antimony	<0.040	mg/L	0.040	1208	12/20/99	SH	200.7
Selenium	<0.100	mg/L	0.100	1208	12/20/99	SH	200.7
Thallium	<0.065	mg/L	0.065	1208	12/20/99	SH	200.7
Vanadium	<0.010	mg/L	0.010	1208	12/20/99	SH	200.7
Zinc	0.047	mg/L	0.010	1208	12/20/99	SH	200.7

LABORATORY MANAGER

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #

Site ID: Memphis Depot Dunn Field
Dunnfield System O&M

Date Arrived 12/17/99
STC Order Number 9912495

STC Lab ID **9912495-02**
Sample ID: ST-EFF-117

Matrix :AQUEOUS
Sample Date :12/16/99

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED	BY	METHOD
Mercury Digestion Batch	V6-AQ-20					NR	245.1
Metals Digestion Batch	V18-AQ-27					TB	3030K
Silver	<0.009	mg/L	0.009	1208	12/20/99	SH	200.7
Aluminum	<0.060	mg/L	0.060	1208	12/20/99	SH	200.7
Arsenic	<0.003	mg/L	0.003	1051	12/22/99	JF	206.2
Barium	0.097	mg/L	0.003	1208	12/20/99	SH	200.7
Beryllium	<0.002	mg/L	0.002	1208	12/20/99	SH	200.7
Calcium	19.8	mg/L	0.015	1208	12/20/99	SH	200.7
Cadmium	<0.005	mg/L	0.005	1208	12/20/99	SH	200.7
Cobalt	<0.009	mg/L	0.009	1208	12/20/99	SH	200.7
Chromium	<0.009	mg/L	0.009	1208	12/20/99	SH	200.7
Copper	<0.008	mg/L	0.008	1208	12/20/99	SH	200.7
Iron	0.015	mg/L	0.009	1208	12/20/99	SH	200.7
Mercury	<0.0002	mg/L	0.0002	1707	12/21/99	NR	245.1
Potassium	0.764	mg/L	0.250	1208	12/20/99	SH	200.7
Magnesium	10.2	mg/L	0.040	1208	12/20/99	SH	200.7
Manganese	0.007	mg/L	0.003	1208	12/20/99	SH	200.7
Sodium	21.8	mg/L	0.050	1208	12/20/99	SH	200.7
Nickel	<0.020	mg/L	0.020	1208	12/20/99	SH	200.7
Lead	<0.060	mg/L	0.060	1208	12/20/99	SH	200.7
Antimony	<0.040	mg/L	0.040	1208	12/20/99	SH	200.7
Selenium	<0.100	mg/L	0.100	1208	12/20/99	SH	200.7
Thallium	<0.065	mg/L	0.065	1208	12/20/99	SH	200.7
Vanadium	<0.010	mg/L	0.010	1208	12/20/99	SH	200.7
Zinc	0.045	mg/L	0.010	1208	12/20/99	SH	200.7

LABORATORY MANAGER

775 181

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **Sverdrup Corporation**
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #
FID #

Site ID Memphis Depot Dunn Field
Dunnfield System O&M

Date Arrived 12/17/99
ETC Order Number 9912495

ETC Lab ID **9912495-01**
Sample ID: ST-EFF-019

Matrix :AQUEOUS
Sample Date :12/16/99

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							8260B
QC Batch	V1122001	ug/L			12/20/99	LS	
Acetone	ND	ug/L	20.0				
Benzene	ND	ug/L	1.00				
Bromodichloromethane	ND	ug/L	1.00				
Bromoform	ND	ug/L	1.00				
Bromomethane	ND	ug/L	1.00				
Carbon Disulfide	ND	ug/L	1.00				
Carbon Tetrachloride	1.18	ug/L	1.00				
Chlorobenzene	ND	ug/L	1.00				
Chlorodibromomethane	ND	ug/L	1.00				
Chloroethane	ND	ug/L	1.00				
Chloroform	8.81	ug/L	1.00				
Chloromethane	ND	ug/L	1.00				
1,1-Dichloroethane	0.49J	ug/L	1.00				
1,2-Dichloroethane	ND	ug/L	1.00				
1,1-Dichloroethene	15.7	ug/L	1.00				
trans-1,2-Dichloroethene	12.6	ug/L	1.00				
1,2-Dichloropropane	ND	ug/L	1.00				
cis-1,3-Dichloropropene	ND	ug/L	1.00				
trans-1,3-Dichloropropene	ND	ug/L	1.00				
Ethylbenzene	ND	ug/L	1.00				
2-Hexanone (MBK)	ND	ug/L	5.00				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00				
2-Butanone (MEK)	ND	ug/L	20.0				
Methylene Chloride	ND	ug/L	5.00				
Styrene	ND	ug/L	1.00				
1,1,2,2-Tetrachloroethane	137	ug/L	1.00				
Tetrachloroethene	19.1	ug/L	1.00				
Toluene	ND	ug/L	1.00				
1,1,1-Trichloroethane	0.61J	ug/L	1.00				
1,1,2-Trichloroethane	0.89J	ug/L	1.00				
Trichloroethene	174	ug/L	1.00				
Vinyl Acetate	ND	ug/L	20.0				
Vinyl Chloride	ND	ug/L	1.00				
o-Xylenes	ND	ug/L	1.00				
m-Xylenes	ND	ug/L	1.00				
p-Xylenes	ND	ug/L	1.00				
cis-1,2-Dichloroethene	47.0	ug/L	1.00				

Surrogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	101	74	123
S2 - Toluene-d8	96	86	112
S3 - 4-Bromofluorobenzene	92	81	115

C.D.S
LABORATORY MANAGER

ND - Not Detected

775 182

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

9912-495-1

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9912-495

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 1001011

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 12/20/99

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
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19.					
20.					
21.					
22.					
23.					
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25.					
26.					
27.					
28.					
29.					
30.					

775 183

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **Sverdrup Corporation**
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #
FID #

Site ID Memphis Depot Dunn Field
Dunnfield System O&M

Date Arrived 12/17/99
ETC Order Number 9912495

ETC Lab ID **9912495-02**
Sample ID: ST-EFF-117

Matrix :AQUEOUS
Sample Date :12/16/99

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							8260B
QC Batch	V1122001	ug/L			12/20/99	LS	
Acetone	ND	ug/L	20.0				
Benzene	ND	ug/L	1.00				
Bromodichloromethane	ND	ug/L	1.00				
Bromoform	ND	ug/L	1.00				
Bromomethane	ND	ug/L	1.00				
Carbon Disulfide	ND	ug/L	1.00				
Carbon Tetrachloride	0.81J	ug/L	1.00				
Chlorobenzene	ND	ug/L	1.00				
Chlorodibromomethane	ND	ug/L	1.00				
Chloroethane	ND	ug/L	1.00				
Chloroform	6.40	ug/L	1.00				
Chloromethane	ND	ug/L	1.00				
1,1-Dichloroethane	ND	ug/L	1.00				
1,2-Dichloroethane	ND	ug/L	1.00				
1,1-Dichloroethene	10.2	ug/L	1.00				
trans-1,2-Dichloroethene	8.39	ug/L	1.00				
1,2-Dichloropropane	ND	ug/L	1.00				
cis-1,3-Dichloropropene	ND	ug/L	1.00				
trans-1,3-Dichloropropene	ND	ug/L	1.00				
Ethylbenzene	ND	ug/L	1.00				
2-Hexanone (MBK)	ND	ug/L	5.00				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00				
2-Butanone (MEK)	ND	ug/L	20.0				
Methylene Chloride	ND	ug/L	5.00				
Styrene	ND	ug/L	1.00				
1,1,2,2-Tetrachloroethane	144	ug/L	1.00				
Tetrachloroethene	14.2	ug/L	1.00				
Toluene	ND	ug/L	1.00				
1,1,1-Trichloroethane	0.43J	ug/L	1.00				
1,1,2-Trichloroethane	ND	ug/L	1.00				
Trichloroethene	135	ug/L	1.00				
Vinyl Acetate	ND	ug/L	20.0				
Vinyl Chloride	ND	ug/L	1.00				
o-Xylenes	ND	ug/L	1.00				
m-Xylenes	ND	ug/L	1.00				
p-Xylenes	ND	ug/L	1.00				
cis-1,2-Dichloroethene	32.5	ug/L	1.00				

Surrogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	99	74	123
S2 - Toluene-d8	94	86	112
S3 - 4-Bromofluorobenzene	86	81	115

CDS

LABORATORY MANAGER

ND - Not Detected

Environmental Testing and Consulting, Inc.
2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

Cross Reference Table

Project : Memphis Depot Dunn Field

Sample ID	Laboratory ID
ST-EFF-019	9912-495-01
ST-EFF-117	9912-495-02
Trip Blank	9912-495-03

Environmental Testing & Consulting, Inc.

Login
Chain-of-Custody

CHAIN OF CUSTODY RECORD

Environmental Testing & Consulting, Inc.
2924 Walnut Grove Rd.
Memphis, TN 38111
(901)327-2750 FAX (901)327-6334

ETC Work Order : ~~991451~~ 992495

775 186

Company Name	Phone #	Fax Results
Syerdrup	314-7704025	
	Fax # : 314 770 5108	RUSH
Project/Site	FID # :	Ice
Memphis Depot, Dunn Field	PO # :	
Project #	Matrix	
Dunn Field system O&M	(1) Wastewater 4 Sludge	
Project Manager/Contact	2 Aqueous 5 Oil/Solvent	
Virgil Janson	3 Soil/Sediment 6 Other	

# of cont.	Sample ID/ Number	Depth	Sample Date	Sample Time	Matrix	Type Grab/Comp	Analysis Requested (Note special detection limits or methods) TCL VOCs 8260	TCL SVOCs 8270	TAL metals 200	As-206.2	Hg-245.1						Comments
6	ST-EFF 019	Eff	12-16-99	15.00	W	G	X	X	X	X	X						← MS/MSD
6	ST-EFF 117	Eff	12-16-99	1500	W	G	X	X	X	X	X						
3	Trip blank		12-16-99		W	G	X										
																	Temp 15.1
																	pH 6.96

Sampled By	Method of Shipment	Blank/Cooler Temp	Remarks
mAtkins	Hand Delivery	4°C	Totalized 4382500 Gallons / Flow 71.49

RELINQUISHED BY (sign)	DATE	TIME	RECEIVED BY (sign)	DATE	TIME	Sample Delivery Group ID
mAtkins	12/16/99	1635				
RELINQUISHED BY (sign)	DATE	TIME	RECEIVED BY (sign)	DATE	TIME	
RELINQUISHED BY (sign)	DATE	TIME	RECEIVED BY LAB (print/sign)	DATE	TIME	
			RBaker	12/16/99	1635	

Distribution: Original and Yellow accompany samples to the laboratory. Pink copy for Crew. [illegible] copy returned with results. Yellow copy for ETC, Inc. files.

775 187

Environmental Testing & Consulting, Inc.
Cooler Receipt Form

CEFMS # _____ LIMS # 9912-495

Date Received 12/16/99 MIPR # _____

Date/Time Checked In 12/17/99 0800* Project Mphs. Depot _____

By (sign) _____ District _____

Carrier/Bill # ____ Hand-Delivered _____

1. Custody Seals?/Location _____ NA _____ NO
2. Samples were non-radioactive..... YES
3. Chain of Custody in plastic..... YES
4. Temperature at receipt _____ <4oC _____ (OK=4 +/- 2°C) OK
5. Ice & Packing _____ Bagged Ice, Bubble Wrap _____
6. Chain of Custody filled out properly?..... YES
7. All containers in separate bags?..... NO
8. Sample containers intact?..... YES
9. Label(s) complete & in good condition?..... YES
10. Label(s) agree with Chain of Custody?..... YES
11. Correct containers used?..... YES
12. Sufficient sample?..... YES
13. VOA vials bubble-free (H20) or no head space (soil)?..... YES
14. Preservation OK? TM pH____; TRPH pH____; TOC pH____; TOX pH____; CN pH ____; N/P pH____; Other pH____ YES

Comments _____

*Validated Date and Time of Sample Receipt (VDTSR).

INTERNATIONAL TECHNOLOGY CORPORATION

775 188

Chemical Analytical Data Review/Evaluation/Validation

..Type: [ ] Preliminary [✓] Final Date Received: _____ Project Number: 801370

ject Name: Memphis Depot Analysis/Method: VOA, SVOA, Metals

oratory: ETC Lab Project/Case Number: 9911451

mple Number(s): ST-EFF-018, ST-EFF-116, TB

aluated By: Betsy McDaniel Date Evaluated: 1/5/00

m Package Deliverables Requirement: [ ] OHM Minimum [✓] OHM Standard [ ] OHM Maximum

[ ] Other, please describe _____

Quality Control Deliverables	Required	Received	Passed	Failed
QL, MDL, RL, etc meets DQOs				
omment:				
Holding Times			✓	
Comment:				
ample Condition (preservatives, containers, temperature, etc) / Case Narrative	X		✓	
ment:				
Surrogate Recoveries	X		✓	
Comment: one high BN both samples, all results BDL				
Lab Control Sample Recoveries	X		✓	
Comment: some non-target failures on VOA, SVOA high 4,6-Dinitro-2-mp, 3-Nitroa, 4-Nitroa - samples BDL				
Lab Control Sample Duplicate or Other Spike Recoveries	X		✓	
Comment: high Bis(2-ethylhexyl)phthalate, 4,6-Dinitro-2-mp, 3-Nitroa - samples BDL				
Lab Control Sample Duplicate or Other Laboratory Duplicate RPD	X		✓	
Comment: high Bis(2-eh)phthalate				
Matrix Spike Recoveries	X		✓	
Comment: spiked ST-EFF-018 for ICP, GF, VOA Ig on different sample No sample for BN				
atrix Spike Duplicate Recoveries	X		✓	
omment:				
trix Spike / Matrix Spike Duplicate RPD	X		✓	
mment:				
boratory Blanks (daily, method, instrument)	X		✓	
nment: hit of methylene chloride - samples BDL hit of Na - sample results much higher than blank - no effect				
Blanks (trip, eqpt rinsate, ambient, matrix)	X			
mment: in 4				

hit of bis(2-ethylhexyl)phthalate - sample - BDL
hit of methylphthalate - sample - BDL

Data Validation Level III

FIELD DUPLICATES

$$RPD = \frac{[orig-dup] \times 100}{orig + dup/2}$$

Report No.: 801370

Analyte	Original Sample ID	Result	Duplicate Sample ID	Result	RPD
Barium	ST-EFF-018	0.1	ST-EFF-116	0.101	-1
Calcium		21.1		21.3	-1
Copper		0.011		<0.008	NC
Iron		0.025		0.034	-31
Potassium		1.16		0.82	34
Magnesium		10.5		10.6	-1
Manganese		0.022		0.022	0
Sodium		22.8		22.4	2
Nickel		0.066		<0.02	NC
Zinc		0.07		0.055	24
Carbon tetrachloride		1.77		1.69	5
Chloroform		7.41		7.49	-1
1,1-Dichloroethene		16.6		16.7	-1
trans-1,2-Dichloroethene		12.7		13	-2
1,1,2,2-Tetrachloroethane		120		118	2
Tetrachloroethene		17.9		17.8	1
Trichloroethene		177		181	-2
cis-1,2-Dichloroethene		48.9		49.4	-1

775 190

ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road • Memphis, TN 38111 • (901) 327-2750 • FAX (901) 327-6334
Founded 1972

November 24, 1999

Mr. Virgil Jansen
Sverdrup Corporation
13723 Riverport Drive
Maryland Heights, MO 63043

Ref: Analytical Testing
ETC Order # 9911451
Project Description Memphis Depot
Dunn Field System O&M

The above referenced project has been analyzed per your instructions. The analyses were performed in accordance with Standard Methods 17th/18th Edition; The Solid Waste Manual SW-846; EPA Methods for the Analysis of Water and Wastes and/or 40 CFR part 136.

The results are shown on the attached analysis sheet(s).

Please do not hesitate to contact our office if you have any questions.

Sincerely,,

for CPS Schreiber
Nathan A. Pera, IV
Chief Executive Officer

rt
Attachment

SVE_MHDDMT

Certifications

Tennessee	*#TN02027*	*Mississippi*	
Arkansas		*Oklahoma*	*#9311*
Alabama	*#40730*	*Virginia*	*#00106*
Kentucky	*#90047*	*Washington*	*#C248*
North Carolina	*#415*	*US Army Corps of Engineers*	
South Carolina	*#84002002*		

Environmental Testing & Consulting, Inc.

Data Qualifiers for Organic Reporting

Within the attached report, some analytical data may be reported as "Qualified Data" as indicated by a "Data Qualifier" next to the result. This table summarizes the possible "Data Qualifiers" that may be associated with this report.

Q	Surrogate Recovery Outside QC Limits
J	Estimated Value. Presence of the compound was confirmed but less than the reported detection limit.
E	Concentration exceeds the established method calibration range but is within the working range of the instrument.
B	Analyte detected in the associated Method Blank.
U	Reported result was unconfirmed. Refer to Case Narrative.
N	Non-Compliance Report associated with this sample or project.
C	Result reported from GC/MS confirmation analysis.
M	Result reported represents a minimum value. Refer to Case Narrative.
NC	Result reported from Primary Column. Result did not confirm.
*	QC Data (percent recovery/RPD for a particular analyte was outside QC Limits)

Environmental Testing and Consulting, Inc.
2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

Cross Reference Table

Project : Memphis Depot

Sample ID	Laboratory ID
ST-EFF-018	9911-451-01
ST-EFF-116	9911-451-02
Trip Blank	9911-451-03

Environmental Testing & Consulting, Inc.

Login
Chain-of-Custody

CHAIN OF CUSTODY RECORD

000004

Environmental Testing & Consulting, Inc.
2924 Walnut Grove Rd.
Memphis, TN 38111
(901)327-2750 FAX (901)327-6334

ETC Work Order : 9911451

775 194

Company Name	Phone #	Fax Results
Sverdrup	314.770.4025	
	Fax # : 314.770.5108	RUSH
Project/Site: Memphis Depot, Dunn Field	FID # :	Ice
	PO # :	
Project #: Dunn Field System O+M	Matrix: (1) Wastewater, 2 Aqueous, 3 Soil/Sediment, 4 Sludge, 5 Oil/Solvent, 6 Other	
Project Manager/Contact: Virgil Jonson/Sverdrup		

# of cont.	Sample ID/ Number	Depth	Sample Date	Sample Time	Matrix	Type Grab/Comp	Analysis Requested (Note special detection limits or methods): TCL VOCs 8260B	TCL SVOCs 8270C	TAL Metals 200.7	As - 206.2	Hg - 245.1	Comments
6	ST-EFF-018	Effluent	11/16/99	1310	W	G	X	X	X	X	X	
6	ST-EFF-116	Effluent	11/16/99	1310	W	G	X	X	X	X	X	
3	Trip Blank	—	11/16/99	1030	W	G	X					
												Temp 18.8°C
												pH 6.1
												Turbidity 0.6 NTU
												SpCond. 298 uS/cm

Sampled By	Method of Shipment	Blank/Cooler Temp	Remarks
S. Offner	Hand Delivery	<4°C (18)	Totalized Flow - 1,513,220 Gallons / Flow - 76.2 gpm

RELINQUISHED BY (sign)	DATE	TIME	RECEIVED BY (sign)	DATE	TIME	Sample Delivery Group ID
S. Offner	11/16/99	1545				
RELINQUISHED BY (sign)	DATE	TIME	RECEIVED BY (sign)	DATE	TIME	
RELINQUISHED BY (sign)	DATE	TIME	RECEIVED BY LAB (print/sign)	DATE	TIME	
			Rebekah Barger	11/16/99	1545	

ompany samples to the laboratory. Pink copy for Field

775 195

Environmental Testing & Consulting, Inc.
Cooler Receipt Form

CEFMS # _____ LIMS # 9911-451

Date Received 11/16/99 MIPR # _____

Date/Time Checked In 11/16/99 1545* Project Memphis Depot Dunn Field System

By (sign) _____ District _____

Carrier/Bill # ____ Hand-Delivered _____

1. Custody Seals?/Location _____ NA _____ NO
2. Samples were non-radioactive..... YES
3. Chain of Custody in plastic..... NO
4. Temperature at receipt _____ <4oC _____ (OK=4 +/- 2°C) OK
5. Ice & Packing _____ Ice, Bubble Wrap _____
6. Chain of Custody filled out properly?..... YES
7. All containers in separate bags?..... NO
8. Sample containers intact?..... YES
9. Label(s) complete & in good condition?..... YES
10. Label(s) agree with Chain of Custody?..... YES
11. Correct containers used?..... YES
12. Sufficient sample?..... YES
13. VOA vials bubble-free (H20) or no head space (soil)?..... YES
14. Preservation OK? TM pH____; TRPH pH____; TOC pH____; TOX pH____; CN pH ____; N/P pH____; Other pH____ YES

Comments _____

*Validated Date and Time of Sample Receipt (VDTSR).

Environmental Testing & Consulting, Inc.

Sample Reports

775 197

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #

Site ID: Memphis Depot
Dunn Field System O&M

Date Arrived 11/16/99
ETC Order Number 9911451

ETC Lab ID **9911451-01**
Sample ID: ST-EFF-018

Matrix :AQUEOUS
Sample Date :11/16/99

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED	BY	METHOD
Mercury Digestion Batch	V6-AQ-10				11/19/99	NR	245.1
Metals Digestion Batch	V17-AQ-94				11/18/99	TD	3030K
Silver	<0.009	mg/L	0.009	1044	11/23/99	SH	200.7
Aluminum	<0.060	mg/L	0.060	1044	11/23/99	SH	200.7
Arsenic	<0.003	mg/L	0.003	1318	11/23/99	JF	206.2
Barium	0.100	mg/L	0.003	1044	11/23/99	SH	200.7
Beryllium	<0.002	mg/L	0.002	1044	11/23/99	SH	200.7
Calcium	21.1	mg/L	0.015	1044	11/23/99	SH	200.7
Cadmium	<0.005	mg/L	0.005	1044	11/23/99	SH	200.7
Cobalt	<0.009	mg/L	0.009	1044	11/23/99	SH	200.7
Chromium	<0.009	mg/L	0.009	1044	11/23/99	SH	200.7
Copper	0.011	mg/L	0.008	1044	11/23/99	SH	200.7
Iron	0.025	mg/L	0.009	1044	11/23/99	SH	200.7
Mercury	<0.0002	mg/L	0.0002	1230	11/19/99	NR	245.1
Potassium	1.16	mg/L	0.250	1044	11/23/99	SH	200.7
Magnesium	10.5	mg/L	0.040	1044	11/23/99	SH	200.7
Manganese	0.022	mg/L	0.003	1044	11/23/99	SH	200.7
Sodium	22.8	mg/L	0.050	1044	11/23/99	SH	200.7
Nickel	0.066	mg/L	0.020	1044	11/23/99	SH	200.7
Lead	<0.060	mg/L	0.060	1044	11/23/99	SH	200.7
Antimony	<0.040	mg/L	0.040	1044	11/23/99	SH	200.7
Selenium	<0.100	mg/L	0.100	1044	11/23/99	SH	200.7
Thallium	<0.065	mg/L	0.065	1044	11/23/99	SH	200.7
Vanadium	<0.010	mg/L	0.010	1044	11/23/99	SH	200.7
Zinc	0.070	mg/L	0.010	1044	11/23/99	SH	200.7

LABORATORY MANAGER

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

ent Name Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #

ite ID Memphis Depot
Dunn Field System O&M

)ate Arrived 11/16/99
JTC Order Number 9911451

ETC Lab ID **9911451-02**
Sample ID: ST-EFF-116

Matrix :AQUEOUS
Sample Date :11/16/99

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED	BY	METHOD
Mercury Digestion Batch	V6-AQ-10				11/19/99	NR	245.1
Metals Digestion Batch	V17-AQ-94				11/18/99	TD	3030K
Silver	<0.009	mg/L	0.009	1044	11/23/99	SH	200.7
Aluminum	<0.060	mg/L	0.060	1044	11/23/99	SH	200.7
Arsenic	<0.003	mg/L	0.003	1318	11/23/99	JF	206.2
Barium	0.101	mg/L	0.003	1044	11/23/99	SH	200.7
Beryllium	<0.002	mg/L	0.002	1044	11/23/99	SH	200.7
Calcium	21.3	mg/L	0.015	1044	11/23/99	SH	200.7
- ium	<0.005	mg/L	0.005	1044	11/23/99	SH	200.7
lt	<0.009	mg/L	0.009	1044	11/23/99	SH	200.7
.romium	<0.009	mg/L	0.009	1044	11/23/99	SH	200.7
:opper	<0.008	mg/L	0.008	1044	11/23/99	SH	200.7
Iron	0.034	mg/L	0.009	1044	11/23/99	SH	200.7
Mercury	<0.0002	mg/L	0.0002	1230	11/19/99	NR	245.1
Potassium	0.820	mg/L	0.250	1044	11/23/99	SH	200.7
Magnesium	10.6	mg/L	0.040	1044	11/23/99	SH	200.7
Manganese	0.022	mg/L	0.003	1044	11/23/99	SH	200.7
Sodium	22.4	mg/L	0.050	1044	11/23/99	SH	200.7
Nickel	<0.020	mg/L	0.020	1044	11/23/99	SH	200.7
Lead	<0.060	mg/L	0.060	1044	11/23/99	SH	200.7
Antimony	<0.040	mg/L	0.040	1044	11/23/99	SH	200.7
Selenium	<0.100	mg/L	0.100	1044	11/23/99	SH	200.7
Thallium	<0.065	mg/L	0.065	1044	11/23/99	SH	200.7
Vanadium	<0.010	mg/L	0.010	1044	11/23/99	SH	200.7
Zinc	0.055	mg/L	0.010	1044	11/23/99	SH	200.7

ABORATORY MANAGER

775 199

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #
FID #

Site ID: Memphis Depot
Dunn Field System O&M

Date Arrived 11/16/99
ETC Order Number 9911451

ETC Lab ID **9911451-01**
Sample ID: ST-EFF-018

Matrix :AQUEOUS
Sample Date :11/16/99

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							8260B
QC Batch	V4112301	ug/L			11/23/99	LS	
Acetone	ND	ug/L	20.0				
Benzene	ND	ug/L	1.00				
Bromodichloromethane	ND	ug/L	1.00				
Bromoform	ND	ug/L	1.00				
Bromomethane	ND	ug/L	1.00				
Carbon Disulfide	ND	ug/L	1.00				
Carbon Tetrachloride	1.77	ug/L	1.00				
Chlorobenzene	ND	ug/L	1.00				
Chlorodibromomethane	ND	ug/L	1.00				
Chloroethane	ND	ug/L	1.00				
Chloroform	7.41	ug/L	1.00				
Chloromethane	ND	ug/L	1.00				
1,1-Dichloroethane	ND	ug/L	1.00				
1,2-Dichloroethane	ND	ug/L	1.00				
1,1-Dichloroethene	16.6	ug/L	1.00				
trans-1,2-Dichloroethene	12.7	ug/L	1.00				
1,2-Dichloropropane	ND	ug/L	1.00				
cis-1,3-Dichloropropene	ND	ug/L	1.00				
trans-1,3-Dichloropropene	ND	ug/L	1.00				
Ethylbenzene	ND	ug/L	1.00				
2-Hexanone (MBK)	ND	ug/L	5.00				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00				
2-Butanone (MEK)	ND	ug/L	20.0				
Methylene Chloride	ND	ug/L	5.00				
Styrene	ND	ug/L	1.00				
1,1,2,2-Tetrachloroethane	120	ug/L	1.00				
Tetrachloroethene	17.9	ug/L	1.00				
Toluene	ND	ug/L	1.00				
1,1,1-Trichloroethane	ND	ug/L	1.00				
1,1,2-Trichloroethane	ND	ug/L	1.00				
Trichloroethene	177	ug/L	1.00				
Vinyl Acetate	ND	ug/L	20.0				
Vinyl Chloride	ND	ug/L	1.00				
o-Xylenes	ND	ug/L	1.00				
m-Xylenes	ND	ug/L	1.00				
p-Xylenes	ND	ug/L	1.00				
cis-1,2-Dichloroethene	48.9	ug/L	1.00				

Surrogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	102	74	123
S2 - Toluene-d8	101	86	112
S3 - 4-Bromofluorobenzene	97	81	115

LABORATORY MANAGER

ND - Not Detected

FORM 1 775 200

VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

9911-451-1

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0601007

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 11/23/99

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
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ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

775 201

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #
FID #

Site ID: Memphis Depot
Dunn Field System O&M

Date Arrived 11/16/99
ETC Order Number 9911451

ETC Lab ID **9911451-02**
Sample ID: ST-EFF-116

Matrix :AQUEOUS
Sample Date :11/16/99

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							8260B
QC Batch	V4112301				11/23/99	LS	
Acetone	ND	ug/L	20.0				
Benzene	ND	ug/L	1.00				
Bromodichloromethane	ND	ug/L	1.00				
Bromoform	ND	ug/L	1.00				
Bromomethane	ND	ug/L	1.00				
Carbon Disulfide	ND	ug/L	1.00				
Carbon Tetrachloride	1.69	ug/L	1.00				
Chlorobenzene	ND	ug/L	1.00				
Chlorodibromomethane	ND	ug/L	1.00				
Chloroethane	ND	ug/L	1.00				
Chloroform	7.49	ug/L	1.00				
Chloromethane	ND	ug/L	1.00				
1,1-Dichloroethane	ND	ug/L	1.00				
1,2-Dichloroethane	ND	ug/L	1.00				
1,1-Dichloroethene	16.7	ug/L	1.00				
trans-1,2-Dichloroethene	13.0	ug/L	1.00				
1,2-Dichloropropane	ND	ug/L	1.00				
cis-1,3-Dichloropropene	ND	ug/L	1.00				
trans-1,3-Dichloropropene	ND	ug/L	1.00				
Ethylbenzene	ND	ug/L	1.00				
2-Hexanone (MBK)	ND	ug/L	5.00				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00				
2-Butanone (MEK)	ND	ug/L	20.0				
Methylene Chloride	ND	ug/L	5.00				
Styrene	ND	ug/L	1.00				
1,1,2,2-Tetrachloroethane	118	ug/L	1.00				
Tetrachloroethene	17.8	ug/L	1.00				
Toluene	ND	ug/L	1.00				
1,1,1-Trichloroethane	ND	ug/L	1.00				
1,1,2-Trichloroethane	ND	ug/L	1.00				
Trichloroethene	181	ug/L	1.00				
Vinyl Acetate	ND	ug/L	20.0				
Vinyl Chloride	ND	ug/L	1.00				
o-Xylenes	ND	ug/L	1.00				
m-Xylenes	ND	ug/L	1.00				
p-Xylenes	ND	ug/L	1.00				
cis-1,2-Dichloroethene	49.4	ug/L	1.00				

Surrogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	100	74	123
S2 - Toluene-d8	99	86	112
S3 - 4-Bromofluorobenzene	95	81	115

ABORATORY MANAGER

ND - Not Detected

FORM 1 775 202

VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

9911-451-2

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0701008

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 11/23/99

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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775 203

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #
FID #

Site ID: Memphis Depot
Dunn Field System O&M

Date Arrived 11/16/99
ETC Order Number 9911451

ETC Lab ID **9911451-03**
Sample ID: Trip Blank

Matrix :AQUEOUS
Sample Date :11/16/99

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							8260B
QC Batch	V4112301	ug/L			11/23/99	LS	
Acetone	ND	ug/L	20.0				
Benzene	ND	ug/L	1.00				
Bromodichloromethane	ND	ug/L	1.00				
Bromoform	ND	ug/L	1.00				
Bromomethane	ND	ug/L	1.00				
Carbon Disulfide	ND	ug/L	1.00				
Carbon Tetrachloride	ND	ug/L	1.00				
Chlorobenzene	ND	ug/L	1.00				
Chlorodibromomethane	ND	ug/L	1.00				
Chloroethane	ND	ug/L	1.00				
Chloroform	ND	ug/L	1.00				
Chloromethane	ND	ug/L	1.00				
1,1-Dichloroethane	ND	ug/L	1.00				
1,2-Dichloroethane	ND	ug/L	1.00				
1,1-Dichloroethene	ND	ug/L	1.00				
trans-1,2-Dichloroethene	ND	ug/L	1.00				
1,2-Dichloropropane	ND	ug/L	1.00				
cis-1,3-Dichloropropene	ND	ug/L	1.00				
trans-1,3-Dichloropropene	ND	ug/L	1.00				
Ethylbenzene	ND	ug/L	1.00				
2-Hexanone (MBK)	ND	ug/L	5.00				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00				
2-Butanone (MEK)	ND	ug/L	20.0				
Methylene Chloride	ND	ug/L	5.00				
Styrene	ND	ug/L	1.00				
1,1,2,2-Tetrachloroethane	ND	ug/L	1.00				
Tetrachloroethene	ND	ug/L	1.00				
Toluene	ND	ug/L	1.00				
1,1,1-Trichloroethane	ND	ug/L	1.00				
1,1,2-Trichloroethane	ND	ug/L	1.00				
Trichloroethene	ND	ug/L	1.00				
Vinyl Acetate	ND	ug/L	20.0				
Vinyl Chloride	ND	ug/L	1.00				
o-Xylenes	ND	ug/L	1.00				
m-Xylenes	ND	ug/L	1.00				
p-Xylenes	ND	ug/L	1.00				
cis-1,2-Dichloroethene	ND	ug/L	1.00				

Surrogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	100	74	123
S2 - Toluene-d8	99	86	112
S3 - 4-Bromofluorobenzene	98	81	115

LABORATORY MANAGER

ND - Not Detected

FORM 1 775 204. CLIENT SAMPLE NO.

VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

9911-451-3

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0501006

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 11/23/99

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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775 205

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #
FID #

Site ID: Memphis Depot
Dunn Field System O&M

Date Arrived 11/16/99
ETC Order Number 9911451

ETC Lab ID **9911451-01**
Sample ID: ST-EFF-018

Matrix :AQUEOUS
Sample Date :11/16/99

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Base/Neutral & Acid							8270C
QC Batch	P05257	ug/L		11/18/99	11/23/99	PF	
Acenaphthene	ND	ug/L	2.00				
Acenaphthylene	ND	ug/L	2.00				
Anthracene	ND	ug/L	2.00				
Benzo(a)anthracene	ND	ug/L	2.00				
Benzo(b)fluoranthene	ND	ug/L	2.00				
Benzo(k)fluoranthene	ND	ug/L	2.00				
Benzo(g,h,i)perylene	ND	ug/L	2.00				
Benzo(a)pyrene	ND	ug/L	2.00				
Benzoic Acid	ND	ug/L	50.0				
Benzyl Alcohol	ND	ug/L	10.0				
Bis(2-chloroethoxy)methane	ND	ug/L	5.00				
Bis(2-chloroethyl)ether	ND	ug/L	5.00				
Bis(2-chloroisopropyl)ether	ND	ug/L	5.00				
Bis(2-ethylhexyl)phthalate	ND	ug/L	10.0				
4-Bromophenyl phenyl ether	ND	ug/L	5.00				
Butyl benzyl phthalate	ND	ug/L	5.00				
4-Chloroaniline	ND	ug/L	5.00				
2-Chloronaphthalene	ND	ug/L	5.00				
4-Chloro-3-methylphenol	ND	ug/L	5.00				
2-Chlorophenol	ND	ug/L	5.00				
4-Chlorophenyl phenyl ether	ND	ug/L	5.00				
Chrysene	ND	ug/L	2.00				
Dibenzo(a,h)anthracene	ND	ug/L	2.00				
Dibenzofuran	ND	ug/L	5.00				
Di-n-butyl phthalate	ND	ug/L	5.00				
1,2-Dichlorobenzene	ND	ug/L	5.00				
1,3-Dichlorobenzene	ND	ug/L	5.00				
1,4-Dichlorobenzene	ND	ug/L	5.00				
3,3'-Dichlorobenzidine	ND	ug/L	10.0				
2,4-Dichlorophenol	ND	ug/L	5.00				
2,6-Dichlorophenol	ND	ug/L	5.00				
Diethyl phthalate	ND	ug/L	5.00				
2,4-Dimethylphenol	ND	ug/L	5.00				
Dimethyl phthalate	ND	ug/L	5.00				
4,6-Dinitro-2-methylphenol	ND	ug/L	10.0				
2,4-Dinitrophenol	ND	ug/L	50.0				
2,4-Dinitrotoluene	ND	ug/L	5.00				
2,6-Dinitrotoluene	ND	ug/L	5.00				
Di-n-octyl phthalate	ND	ug/L	5.00				
Fluoranthene	ND	ug/L	2.00				
Fluorene	ND	ug/L	2.00				
Hexachlorobenzene	ND	ug/L	5.00				

ABORATORY MANAGER

ND - Not Detected

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #
FID #

Site ID: Memphis Depot
Dunn Field System O&M

Date Arrived 11/16/99
STC Order Number 9911451

STC Lab ID **9911451-01**
Sample ID: ST-EFF-018

Matrix :AQUEOUS
Sample Date :11/16/99

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
C/MS Base/Neutral & Acid				11/18/99	11/23/99	PF	8270C
Hexachlorobutadiene	ND	ug/L	5.00				
Hexachlorocyclopentadiene	ND	ug/L	5.00				
Hexachloroethane	ND	ug/L	5.00				
Indeno(1,2,3-cd)pyrene	ND	ug/L	2.00				
Isophorone	ND	ug/L	5.00				
2-Methylnaphthalene	ND	ug/L	2.00				
2-Methylphenol (o-cresol)	ND	ug/L	5.00				
3-Methylphenol (m-cresol)	ND	ug/L	5.00				
4-Methylphenol (p-cresol)	ND	ug/L	5.00				
ohthalene	ND	ug/L	2.00				
robenzene	ND	ug/L	5.00				
2-Nitroaniline	ND	ug/L	5.00				
3-Nitroaniline	ND	ug/L	10.0				
4-Nitroaniline	ND	ug/L	5.00				
2-Nitrophenol	ND	ug/L	5.00				
4-Nitrophenol	ND	ug/L	5.00				
N-Nitrosodiphenylamine	ND	ug/L	5.00				
N-Nitrosodipropylamine	ND	ug/L	5.00				
Pentachlorophenol	ND	ug/L	10.0				
Phenanthrene	ND	ug/L	2.00				
Phenol	ND	ug/L	5.00				
Pyrene	ND	ug/L	2.00				
1,2,4-Trichlorobenzene	ND	ug/L	5.00				
2,4,5-Trichlorphenol	ND	ug/L	5.00				
2,4,6-Trichlorophenol	ND	ug/L	5.00				

Surrogate Standard	% Recovery		QC Limits	
S1 - Nitrobenzene-d5	89		29	110
S2 - 2-Fluorobiphenyl	84		38	107
S3 - 4-Terphenyl-d14	158	Q	33	122
S4 - Phenol-d6	32		7	58
S5 - 2,4,6-Tribromophenol	100		16	138
S6 - 2-Fluorophenol	49		8	88

BORATORY MANAGER

ND - Not Detected

775 207

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

9911-451-1

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 0401006

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 11/23/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 7

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	79-01-6	TRICHLOROETHYLENE	2.72	18.08	NJ
2.	127-18-4	TETRACHLOROETHYLENE	3.67	6.29	NJ
3.	627-97-4	2-METHYL-2-HEPTENE	4.28	4.43	NJ
4.	760-21-4	PENTANE, 3-METHYLENE-	4.52	8.32	NJ
5.	79-34-5	ETHANE, 1,1,2,2-TETRACHLORO-	4.55	62.32	NJ
6.	13151-05-8	1-HEPTENE, 4-METHYL-	4.61	5.21	NJ
7.	4291-79-6	CYCLOHEXANE, 1-METHYL-2-PROP	4.73	11.71	NJ
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ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #
FID #

Site ID: Memphis Depot
Dunn Field System O&M

Date Arrived 11/16/99
ETC Order Number 9911451

ETC Lab ID **9911451-02**
Sample ID: ST-EFF-116

Matrix :AQUEOUS
Sample Date :11/16/99

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Base/Neutral & Acid							8270C
				11/18/99	11/23/99	PF	
QC Batch	P05257	ug/L					
Acenaphthene	ND	ug/L	2.00				
Acenaphthylene	ND	ug/L	2.00				
Anthracene	ND	ug/L	2.00				
Benzo(a)anthracene	ND	ug/L	2.00				
Benzo(b)fluoranthene	ND	ug/L	2.00				
Benzo(k)fluoranthene	ND	ug/L	2.00				
Benzo(g,h,i)perylene	ND	ug/L	2.00				
Benzo(a)pyrene	ND	ug/L	2.00				
Benzoic Acid	ND	ug/L	50.0				
Benzyl Alcohol	ND	ug/L	10.0				
Bis(2-chloroethoxy)methane	ND	ug/L	5.00				
Bis(2-chloroethyl)ether	ND	ug/L	5.00				
Bis(2-chloroisopropyl)ether	ND	ug/L	5.00				
Bis(2-ethylhexyl)phthalate	ND	ug/L	10.0				
4-Bromophenyl phenyl ether	ND	ug/L	5.00				
Butyl benzyl phthalate	ND	ug/L	5.00				
4-Chloroaniline	ND	ug/L	5.00				
2-Chloronaphthalene	ND	ug/L	5.00				
4-Chloro-3-methylphenol	ND	ug/L	5.00				
2-Chlorophenol	ND	ug/L	5.00				
4-Chlorophenyl phenyl ether	ND	ug/L	5.00				
Chrysene	ND	ug/L	2.00				
Dibenzo(a,h)anthracene	ND	ug/L	2.00				
Dibenzofuran	ND	ug/L	5.00				
Di-n-butyl phthalate	ND	ug/L	5.00				
1,2-Dichlorobenzene	ND	ug/L	5.00				
1,3-Dichlorobenzene	ND	ug/L	5.00				
1,4-Dichlorobenzene	ND	ug/L	5.00				
3,3'-Dichlorobenzidine	ND	ug/L	10.0				
2,4-Dichlorophenol	ND	ug/L	5.00				
2,6-Dichlorophenol	ND	ug/L	5.00				
Diethyl phthalate	ND	ug/L	5.00				
2,4-Dimethylphenol	ND	ug/L	5.00				
Dimethyl phthalate	ND	ug/L	5.00				
4,6-Dinitro-2-methylphenol	ND	ug/L	10.0				
2,4-Dinitrophenol	ND	ug/L	50.0				
2,4-Dinitrotoluene	ND	ug/L	5.00				
2,6-Dinitrotoluene	ND	ug/L	5.00				
Di-n-octyl phthalate	ND	ug/L	5.00				
Fluoranthene	ND	ug/L	2.00				
Fluorene	ND	ug/L	2.00				
Hexachlorobenzene	ND	ug/L	5.00				

LABORATORY MANAGER

ND - Not Detected

775 209

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #
FID #

Site ID: Memphis Depot
Dunn Field System O&M

Date Arrived 11/16/99
ETC Order Number 9911451

ETC Lab ID **9911451-02**
Sample ID: ST-EFF-116

Matrix :AQUEOUS
Sample Date :11/16/99

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Base/Neutral & Acid				11/18/99	11/23/99	PF	8270C
Hexachlorobutadiene	ND	ug/L	5.00				
Hexachlorocyclopentadiene	ND	ug/L	5.00				
Hexachloroethane	ND	ug/L	5.00				
Indeno(1,2,3-cd)pyrene	ND	ug/L	2.00				
Isophorone	ND	ug/L	5.00				
2-Methylnaphthalene	ND	ug/L	2.00				
2-Methylphenol (o-cresol)	ND	ug/L	5.00				
3-Methylphenol (m-cresol)	ND	ug/L	5.00				
4-Methylphenol (p-cresol)	ND	ug/L	5.00				
Naphthalene	ND	ug/L	2.00				
Nitrobenzene	ND	ug/L	5.00				
2-Nitroaniline	ND	ug/L	5.00				
3-Nitroaniline	ND	ug/L	10.0				
4-Nitroaniline	ND	ug/L	5.00				
2-Nitrophenol	ND	ug/L	5.00				
4-Nitrophenol	ND	ug/L	5.00				
N-Nitrosodiphenylamine	ND	ug/L	5.00				
N-Nitrosodipropylamine	ND	ug/L	5.00				
Pentachlorophenol	ND	ug/L	10.0				
Phenanthrene	ND	ug/L	2.00				
Phenol	ND	ug/L	5.00				
Pyrene	ND	ug/L	2.00				
1,2,4-Trichlorobenzene	ND	ug/L	5.00				
2,4,5-Trichlorphenol	ND	ug/L	5.00				
2,4,6-Trichlorophenol	ND	ug/L	5.00				

Surrogate Standard	% Recovery	QC Limits	
S1 - Nitrobenzene-d5	81	29	110
S2 - 2-Fluorobiphenyl	75	38	107
S3 - 4-Terphenyl-d14	139 Q	33	122
S4 - Phenol-d6	29	7	58
S5 - 2,4,6-Tribromophenol	96	16	138
S6 - 2-Fluorophenol	43	8	88

LABORATORY MANAGER

ND - Not Detected

FORM 1 775 210 CLIENT SAMPLE NO.

BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

9911-451-2

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix: (soil/water) WATER Lab Sample ID: ;

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 0501007

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 11/23/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 6

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	79-01-6	TRICHLOROETHYLENE	2.71	15.56	NJ
2.	127-18-4	TETRACHLOROETHYLENE	3.67	5.47	NJ
3.	7642-09-3	3-HEXENE, (Z)-	4.52	7.08	NJ
4.	79-34-5	ETHANE, 1,1,2,2-TETRACHLORO-	4.55	54.00	NJ
5.	13151-05-8	1-HEPTENE, 4-METHYL-	4.61	4.50	NJ
6.	4291-79-6	CYCLOHEXANE, 1-METHYL-2-PROP	4.73	7.64	NJ
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8.					
9.					
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775 211

Environmental Testing & Consulting, Inc.

Quality Control Reports
Level III
Metals (ICP/GFAA/CV)

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
METALS - AQUEOUS

Client Name	Sverdrup Corporation
oject Name	Memphis Depot – Dunn Field System O&M
ETC Order #	9911-451

HOLDING TIMES

QC Batch(s) for this order	ICP/GFAA	V17-AQ-94
	Mercury	V6-AQ-10
Sample Analysis	All samples digested and analyzed within 180 days of collection.	
Mercury Analysis	All samples analyzed within 28 days of collection.	

CALIBRATION

Initial Calibration	All criteria met.
Continuing Calibration	All criteria met.

SAMPLE ANALYSIS

Instrumentation:	Thermo Jarrell Ash Enviro-I ICP CETAC M-6000A Mercury Analyzer
Dilutions Required	No dilutions required.

QUALITY CONTROL

9911-451.MQC BLANK

Method Blank

V17-AQ-94BLK	ICP/GFAA Metals
V6-AQ-10BLK	Mercury

Sodium detected in the Method Blank at 0.092 mg/L.

9911-451.MQC LCS

Laboratory Control Sample(s)

V17-AQ-94LCS	ICP/GFAA Metals
V6-AQ-10LCS	Mercury

All criteria met.

9911-451.MQC MSMSD

Matrix Spike / Matrix Spike Dup - ICP Metals

9911-451-01	RPD	All analytes within QC limits.
ST-EFF-018	Spike Recovery	All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
METALS - AQUEOUS

Client Name Sverdrup Corporation
Project Name Memphis Depot – Dunn Field System O&M

ETC Order # 9911-451

QUALITY CONTROL

Matrix Spike / Matrix Spike Dup - Hg

9911-438-01	RPD	All analytes within QC limits.
Holding Tank Sludge	Spike Recovery	All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Laboratory Manager

WATER METHOD BLANK
METALS

Lab Name: Environmental Testing and Consulting, Inc

		QC Batch
Laboratory ID ICP/GFAA Metals	V17-AQ-94 BLK	V17-AQ-94
Laboratory ID Mercury	V6-AQ-10 BLK	V6-AQ-10
Date Sample Prepared	11/18/99	ICP/GFAA Metals
	11/19/99	Mercury

Metals	Concentration mg/L	Detection Limit mg/L	Date Analyzed	Method
Silver	ND	0.009	11/23/99	200.7
Aluminum	ND	0.060	11/23/99	200.7
Arsenic	ND	0.003	11/23/99	206.2
Barium	ND	0.003	11/23/99	200.7
Beryllium	ND	0.002	11/23/99	200.7
Calcium	ND	0.015	11/23/99	200.7
Cadmium	ND	0.005	11/23/99	200.7
Cobalt	ND	0.009	11/23/99	200.7
Chromium	ND	0.009	11/23/99	200.7
Copper	ND	0.008	11/23/99	200.7
Iron	ND	0.009	11/23/99	200.7
Potassium	ND	0.250	11/23/99	200.7
Magnesium	ND	0.040	11/23/99	200.7
Manganese	ND	0.003	11/23/99	200.7
Sodium	0.092	0.050	11/23/99	200.7
Nickel	ND	0.020	11/23/99	200.7
Lead	ND	0.060	11/23/99	200.7
Antimony	ND	0.040	11/23/99	200.7
Selenium	ND	0.100	11/23/99	200.7
Thallium	ND	0.065	11/23/99	200.7
Vanadium	ND	0.010	11/23/99	200.7
Zinc	ND	0.010	11/23/99	200.7
Mercury	ND	0.0002	11/19/99	245.1

QC REVIEWED _____

775 215

WATER LABORATORY CONTROL SAMPLE
METALS

Lab Name: Environmental Testing and Consulting, Inc

			QC Batch
Laboratory Control ID	ICP/GFAA Metals	V17-AQ-94 LCS	V17-AQ-94
	Mercury	V6-AQ-10 LCS	V6-AQ-10
Date Prepared	ICP/GFAA Metals	11/18/99	
	Mercury	11/19/99	

Metals	Spike Added mg/L	Found mg/L	% R	#	QC Limits	
Silver	0.250	0.266	106		80	120
Aluminum	2.50	2.65	106		80	120
Arsenic	0.063	0.066	105		85	115
Barium	2.50	2.55	102		80	120
Beryllium	0.250	0.265	106		80	120
Calcium	5.00	5.36	107		80	120
Cadmium	0.250	0.276	110		80	120
Cobalt	1.25	1.34	107		80	120
Chromium	0.500	0.534	107		80	120
Copper	0.500	0.533	107		80	120
Iron	2.50	2.76	110		80	120
Potassium	5.00	5.10	102		80	120
Magnesium	5.00	5.21	104		80	120
Manganese	0.250	0.263	105		80	120
Sodium	5.00	5.46	109		80	120
Nickel	1.25	1.35	108		80	120
Lead	1.25	1.38	110		80	120
Antimony	2.50	2.76	110		80	120
Selenium	1.25	1.36	109		80	120
Thallium	1.25	1.35	108		80	120
Vanadium	1.25	1.35	108		80	120
Zinc	0.250	0.272	109		80	120
Mercury	0.0050	0.0056	112		80	120

\# Column to be used to flag recovery values with an asterisk
* Values outside of QC limits

QC REVIEWED _____

WATER MATRIX SPIKE
METALS

Lab Name: Environmental Testing and Consulting, Inc

		QC Batch
Laboratory ID MS ICP/GFAA Metals	9911-451-01	V17-AQ-94
Laboratory ID MS Mercury	9911-438-01	V6-AQ-10

Date Sample Prepared	11/18/99	ICP/GFAA Metals
	11/19/99	Mercury

Metals	SPIKE Added mg/L	SAMPLE Conc mg/L	MS Conc mg/L	RPD <20% #	MS % Rec #	QC Limits	
Silver	0.250	ND	0.213	3	85	75	125
Aluminum	2.50	ND	2.64	0	106	75	125
Arsenic	0.063	ND	0.067	3	106	85	115
Barium	2.50	0.100	2.64	0	102	75	125
Beryllium	0.250	ND	0.264	0	106	75	125
Calcium	5.00	21.1	25.9	1	96	75	125
Cadmium	0.250	ND	0.264	0	106	75	125
Cobalt	1.25	ND	1.31	0	105	75	125
Chromium	0.500	ND	0.530	2	106	75	125
Copper	0.500	0.011	0.533	1	104	75	125
Iron	2.50	0.025	2.73	1	108	75	125
Potassium	5.00	1.16	5.92	2	95	75	125
Magnesium	5.00	10.5	15.6	1	102	75	125
Manganese	0.250	0.022	0.280	1	103	75	125
Sodium	5.00	22.8	27.6	0	96	75	125
Nickel	1.25	0.066	1.32	1	100	75	125
Lead	1.250	ND	1.34	2	107	75	125
Antimony	2.50	ND	2.74	1	110	75	125
Selenium	1.25	ND	1.33	0	106	75	125
Thallium	1.25	ND	1.33	4	106	75	125
Vanadium	1.25	ND	1.33	1	106	75	125
Zinc	0.250	0.070	0.321	1	100	75	125
Mercury	0.0050	0.0010	0.0064	0	108	75	125

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits
ND - Not Detected

QC REVIEWED _____

WATER MATRIX SPIKE DUPLICATE
METALS

Lab Name Environmental Testing and Consulting, Inc

		QC Batch
Laboratory ID MS ICP/GFAA Metals	9911-451-01	V17-AQ-94
Laboratory ID MS Mercury	9911-438-01	V6-AQ-10

Date Sample Prepared	11/18/99	ICP/GFAA Metals
	11/19/99	Mercury

Metals	SPIKE Added mg/L	SAMPLE Conc mg/L	MSD Conc mg/L		MSD % Rec #	QC Limits	
Silver	0.250	ND	0.207		83	75	125
Aluminum	2.50	ND	2.63		105	75	125
Arsenic	0.063	ND	0.065		103	85	115
Barium	2.50	0.100	2.64		102	75	125
Beryllium	0.250	ND	0.263		105	75	125
Calcium	5.00	21.1	25.7		92	75	125
Cadmium	0.250	ND	0.264		106	75	125
Cobalt	1.25	ND	1.31		105	75	125
Chromium	0.500	ND	0.519		104	75	125
Copper	0.500	0.011	0.528		103	75	125
Iron	2.50	0.025	2.71		107	75	125
Potassium	5.00	1.16	5.80		93	75	125
Magnesium	5.00	10.5	15.5		100	75	125
Manganese	0.250	0.022	0.278		102	75	125
Sodium	5.00	22.8	27.5		94	75	125
Nickel	1.25	0.066	1.31		100	75	125
Lead	1.25	ND	1.32		106	75	125
Antimony	2.50	ND	2.70		108	75	125
Selenium	1.25	ND	1.33		106	75	125
Thallium	1.25	ND	1.28		102	75	125
Vanadium	1.25	ND	1.32		106	75	125
Zinc	0.250	0.070	0.318		99	75	125
Mercury	0.0050	0.0010	0.0064		108	75	125

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits
ND - Not Detected

QC REVIEWED _____

Environmental Testing & Consulting, Inc.

Quality Control Reports
Level III
GC/MS Volatiles

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
GC/MS VOLATILE COMPOUNDS - AQUEOUS

775 219

Client Name Sverdrup Corporation
Project Name Memphis Depot – Dunn Field System O&M

ETC Order # 9911-451
Method (SW-846) 8260B/5030B

SAMPLE PRESERVATION (Verified at time of analysis)

All aqueous samples preserved to pH < 2.

HOLDING TIMES

Sample Analysis — All samples analyzed within 14 days of collection.

QUALITY CONTROL

QC Batch	Form 4 Summary
V4112301	V4112311LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.

Method Blank FORM 4
V4112311LB

Method Blank data had no affect on sample results.

Laboratory Control Sample FORM 3
V4112311LCS

All criteria met.*
*
Recoveries for non-target analytes were flagged outside QC Limits. The data was not affected.

Matrix Spike / Matrix Spike Dup. FORM 3

9911-451-01	RPD	All analytes within QC limits.
ST-EFF-018	Spike Recovery	All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

CALIBRATION

BFB Daily 12-Hour Tune	All criteria met. FORM 5
Initial Calibration	All criteria met. FORM 6
Calibration Verification	All criteria met. FORM 7

Volatile Internal Standard Area and RT FORM 8
Daily Check Standard(s) Internal Standard Areas and Retention Times within QC limits.

SAMPLE ANALYSIS

Instrumentation	HP 5890 Series II GC, 5971MSD
Dilutions Required	No dilutions required.

CPS
Laboratory Manager

FORM 2
WATER VOA-GCMS SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

	CLIENT SAMPLE NO.	SMC1 #	SMC2 (TOL) #	SMC3 (BFB) #	OTHER	TOT OUT
01	V4112311LCS	98	101	86		0
02	V4112311LB	98	100	96		0
03	9911-451-3	100	99	98		0
04	9911-451-1	102	101	97		0
05	9911-451-2	100	99	95		0
06	9911-451-1MS	100	104	85		0
07	9911-451-1MS	101	104	85		0
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30						

		QC LIMITS
SMC1	= Dibromofluoromethane	(74-123)
SMC2 (TOL)	= Toluene-d8	(86-112)
SMC3 (BFB)	= Bromofluorobenzene	(81-115)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

775 221

FORM 4
VOA-GCMS METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

V4112311LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Lab File ID: 0302004 Lab Prep Batch: V4112301

Date Analyzed: 11/23/99 Time Analyzed: 1106

GC Column: ID: 2 (mm) Heated Purge: (Y/N) Y

Instrument ID: VOC4

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	V4112311LCS	V4112301	0201002LCS	0842
02	9911-451-3	V4112301	0501006	1220
03	9911-451-1	V4112301	0601007	1257
04	9911-451-2	V4112301	0701008	1334
05	9911-451-1MS	V4112301	1401015	1753
06	9911-451-1MS	V4112301	1501016	1830
07				
08				
09				
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COMMENTS:

FORM 1 775 222 CLIENT SAMPLE NO.
VOA-GCMS ORGANICS ANALYSIS DATA SHEET

V4112311LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix: (soil/water) WATER Lab Prep Batch: V4112301

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0302004

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 11/23/99

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	20.00	U
75-05-8	Acetonitrile	25.00	U
107-02-8	Acrolein	20.00	U
107-13-1	Acrylonitrile	20.00	U
107-05-1	Allyl chloride	1.00	U
71-43-2	Benzene	1.00	U
108-86-1	Bromobenzene	1.00	U
74-97-5	Bromochloromethane	1.00	U
75-27-4	Bromodichloromethane	1.00	U
75-25-2	Bromoform	1.00	U
74-83-9	Bromomethane	1.00	U
78-93-3	2-Butanone	10.00	U
104-51-8	n-Butylbenzene	1.00	U
135-98-8	sec-Butylbenzene	1.00	U
98-06-6	tert-Butylbenzene	1.00	U
75-15-0	Carbon Disulfide	1.00	U
56-23-5	Carbon Tetrachloride	1.00	U
108-90-7	Chlorobenzene	1.00	U
124-48-1	Chlorodibromomethane	1.00	U
75-00-3	Chloroethane	1.00	U
87-61-6	1,2,3-Trichlorobenzene	1.00	U
110-75-0	2-Chloroethyl vinyl ether	20.00	U
67-66-3	Chloroform	1.00	U
74-87-3	Chloromethane	1.00	U
126-99-8	Chloroprene	1.00	U
95-49-8	2-Chlorotoluene	1.00	U
106-43-4	4-Chlorotoluene	1.00	U
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U
106-93-4	1,2-Dibromoethane	1.00	U
74-95-3	Dibromomethane	1.00	U
95-50-1	1,2-Dichlorobenzene	1.00	U
541-73-1	1,3-Dichlorobenzene	1.00	U
106-46-7	1,4-Dichlorobenzene	1.00	U

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V4112311LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix: (soil/water) WATER Lab Prep Batch: V4112301

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0302004

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 11/23/99

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.00	U
67-64-1	Dichlorodifluoromethane	1.00	U
1476-11-5	cis-1,4-Dichloro-2-butene	1.00	U
107-06-2	1,2-Dichloroethane	1.00	U
75-35-4	1,1-Dichloroethene	1.00	U
75-34-3	1,1-Dichloroethane	1.00	U
156-59-4	cis-1,2-Dichloroethene	1.00	U
156-60-5	trans-1,2-Dichloroethene	1.00	U
78-87-5	1,2-Dichloropropane	1.00	U
142-28-9	1,3-Dichloropropane	1.00	U
590-20-7	2,2-Dichloropropane	1.00	U
563-58-6	1,1-Dichloropropene	1.00	U
10061-01-5	cis-1,3-Dichloropropene	1.00	U
10061-02-6	trans-1,3-Dichloropropene	1.00	U
123-91-1	1,4-Dioxane	100.0	U
108-20-3	dipe	1.00	U
141-78-6	Ethyl Acetate	10.00	U
100-41-4	Ethylbenzene	1.00	U
97-63-2	Ethyl methacrylate	1.00	U
110-00-9	Furan	1.00	U
87-63-3	Hexachlorobutadiene	1.00	U
110-54-3	Hexane	1.00	U
591-78-6	2-Hexanone	5.00	U
74-88-4	Iodomethane	1.00	U
78-83-1	Isobutyl Alcohol	100.0	U
98-82-8	Isopropylbenzene	1.00	U
99-87-6	4-Isopropyltoluene	1.00	U
126-98-7	Methacrylonitrile	1.00	U
75-09-2	Methylene Chloride	2.16	J
80-62-6	Methyl methacrylate	1.00	U
108-10-1	4-Methyl-2-Pentanone	5.00	U
1634-04-4	Methyl-tertbutyl-Ether	1.00	U
91-20-3	Naphthalene	1.00	U

FORM 1 775 224 CLIENT SAMPLE NO.
VOA-GCMS ORGANICS ANALYSIS DATA SHEET

V4112311LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix: (soil/water) WATER Lab Prep Batch: V4112301

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0302004

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 11/23/99

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
76-01-7	Pentachloroethane	1.00	U
107-12-0	Propionitrile	10.00	U
109-60-4	n-Propyl Acetate	1.00	U
103-65-1	n-Propylbenzene	1.00	U
100-42-5	Styrene	1.00	U
630-20-6	1,1,1,2-Tetrachloroethane	1.00	U
79-34-5	1,1,2,2-Tetrachloroethane	1.00	U
127-18-4	Tetrachloroethene	1.00	U
109-99-9	Tetrahydrofuran	1.00	U
108-88-3	Toluene	1.00	U
120-82-1	1,2,4-Trichlorobenzene	1.00	U
71-55-6	1,1,1-Trichloroethane	1.00	U
79-00-5	1,1,2-Trichloroethane	1.00	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	1.00	U
79-01-6	Trichloroethene	0.500	U
75-69-4	Trichlorofluoromethane	1.00	U
96-18-4	1,2,3-Trichloropropane	1.00	U
95-63-6	1,2,4-Trimethylbenzene	1.00	U
108-67-8	1,3,5-Trimethylbenzene	1.00	U
108-05-4	Vinyl Acetate	10.00	U
75-01-4	Vinyl Chloride	1.00	U
1330-20-7	Xylene-mp	1.00	U
95-47-6	Xylene-o	1.00	U

775 225

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

V4112311LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0302004

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 11/23/99

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
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FORM 3
WATER VOA-GCMS LAB CONTROL SAMPLE

775 226

Lab Name: ETC, INC. Lab Prep Batch: V4112301

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix Spike - Sample No.: V4112311LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Acetone	100.0		98.16	98	59-151
Acetonitrile	1000		944.1	94	57-143
Acrolein	100.0		113.7	114	59-134
Acrylonitrile	100.0		106.6	107	60-146
Allyl chloride	100.0		104.6	105	74-120
Benzene	100.0		99.33	99	72-124
Bromobenzene	100.0		89.42	89	77-120
Bromochloromethane	100.0		106.4	106	74-120
Bromodichloromethane	100.0		81.39	81	68-119
Bromoform	100.0		102.3	102	66-136
Bromomethane	100.0		106.0	106	40-134
2-Butanone	100.0		113.8	114	55-151
n-Butylbenzene	100.0		86.25	86	69-129
sec-Butylbenzene	100.0		92.50	92	72-127
tert-Butylbenzene	100.0		93.92	94	73-126
Carbon Disulfide	100.0		96.07	96	60-133
Carbon Tetrachloride	100.0		92.47	92	64-123
Chlorobenzene	100.0		91.32	91	77-112
Chlorodibromomethane	100.0		96.32	96	72-118
Chloroethane	100.0		103.4	103	64-142
1,2,3-Trichlorobenzene	100.0		79.78	80	62-132
2-Chloroethyl vinyl eth	100.0		56.86	57	22-165
Chloroform	100.0		87.91	88	70-115
Chloromethane	100.0		90.84	91	58-139
Chloroprene	100.0		95.91	96	73-118
2-Chlorotoluene	100.0		89.05	89	65-132
4-Chlorotoluene	100.0		87.73	88	67-127
1,2-Dibromo-3-chloropro	100.0		76.38	76	56-134

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: V4112301

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix Spike - Sample No.: V4112311LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,2-Dibromoethane	100.0		97.94	98	74-118
Dibromomethane	100.0		95.68	96	75-114
1,2-Dichlorobenzene	100.0		92.08	92	80-113
1,3-Dichlorobenzene	100.0		93.46	93	77-119
1,4-Dichlorobenzene	100.0		94.41	94	78-116
trans-1,4-Dichloro-2-bu	100.0		93.36	93	62-138
Dichlorodifluoromethane	100.0		73.12	73	48-145
cis-1,4-Dichloro-2-bute	100.0		114.5	114	62-138
1,2-Dichloroethane	100.0		88.47	88	62-124
1,1-Dichloroethene	100.0		106.0	106	69-121
1,1-Dichloroethane	100.0		95.79	96	76-118
cis-1,2-Dichloroethene	100.0		102.0	102	76-114
trans-1,2-Dichloroethen	100.0		104.5	104	72-121
1,2-Dichloropropane	100.0		96.50	96	64-133
1,3-Dichloropropane	100.0		88.78	89	68-128
2,2-Dichloropropane	100.0		90.58	90	67-132
1,1-Dichloropropene	100.0		96.67	97	76-117
cis-1,3-Dichloropropene	100.0		85.32	85	77-120
trans-1,3-Dichloroprope	100.0		90.14	90	73-124
1,4-Dioxane	2000		2229	111	56-131
Ethyl Acetate	100.0		99.10	99	52-151
Ethylbenzene	100.0		92.51	92	77-111
Ethyl methacrylate	200.0		201.6	101	57-140
Furan	100.0		76.89	77	52-124
Hexachlorobutadiene	100.0		81.17	81	69-137
Hexane	100.0		67.70	68*	70-130
2-Hexanone	100.0		97.03	97	53-144
Iodomethane	100.0		155.2	155*	51-153

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOA-GCMS LAB CONTROL SAMPLE

775 228

Lab Name: ETC, INC. Lab Prep Batch: V4112301

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix Spike - Sample No.: V4112311LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Isobutyl Alcohol	2000		2246	112	60-134
Isopropylbenzene	100.0		88.82	89	74-125
4-Isopropyltoluene	100.0		99.69	100	72-127
Methacrylonitrile	1000		987.8	99	70-125
Methylene Chloride	100.0		96.98	97	76-115
Methyl methacrylate	200.0		200.6	100	57-147
4-Methyl-2-Pentanone	100.0		90.93	91	42-144
Methyl-tertbutyl-Ether	100.0		91.87	92	62-122
Naphthalene	100.0		75.30	75	53-124
Pentachloroethane	100.0		125.8	126	78-126
Propionitrile	1000		1120	112	58-139
n-Propyl Acetate	100.0		87.26	87*	88-170
n-Propylbenzene	100.0		98.32	98	75-125
Styrene	100.0		89.75	90	77-117
1,1,1,2-Tetrachloroetha	100.0		94.23	94	79-113
1,1,2,2-Tetrachloroetha	100.0		98.99	99	67-126
Tetrachloroethene	100.0		90.98	91	77-115
Tetrahydrofuran	100.0		160.1	160	76-181
Toluene	100.0		93.61	94	77-115
1,2,4-Trichlorobenzene	100.0		81.36	81	68-132
1,1,1-Trichloroethane	100.0		92.57	92	63-122
1,1,2-Trichloroethane	100.0		96.37	96	69-117
1,1,2-trichloro-1,2,2-t	100.0		92.42	92	70-130
Trichloroethene	100.0		93.65	94	75-113
Trichlorofluoromethane	100.0		74.18	74	55-130
1,2,3-Trichloropropane	100.0		95.32	95	62-130
1,2,4-Trimethylbenzene	100.0		86.17	86	69-126
1,3,5-Trimethylbenzene	100.0		99.43	99	69-128

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: V4112301

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix Spike - Sample No.: V4112311LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Vinyl Acetate	100.0		84.03	84	28-146
Vinyl Chloride	100.0		105.4	105	65-134
Xylene-mp	200.0		184.1	92	77-115
Xylene-o	100.0		99.63	100	77-115

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 3 out of 88 outside limits

COMMENTS: _____

FORM 3
WATER VOA-GCMS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

775 230

Lab Name: ETC, INC. Lab Prep Batch: V4112301

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix Spike - Sample No.: 9911-451-1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Benzene	100.0	0.000	109.7	110	72-124
Chlorobenzene	100.0	0.000	97.02	97	77-112
1,1-Dichloroethene	100.0	16.59	123.9	107	69-121
Toluene	100.0	0.000	105.7	106	77-115
Trichloroethene	100.0	177.3	286.0	109	75-113

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Benzene	100.0	112.6	113	3	20	72-124
Chlorobenzene	100.0	99.35	99	2	20	77-112
1,1-Dichloroethene	100.0	124.7	108	1	20	69-121
Toluene	100.0	105.5	106	0	20	77-115
Trichloroethene	100.0	278.9	102	7	20	75-113

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

Environmental Testing & Consulting, Inc.

Quality Control Reports
Level III
GC/MS Semi-Volatiles

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - AQUEOUS

Client Name Sverdrup Corporation
roject Name Memphis Depot – Dunn Field System O&M

ETC Order # 9911-451
Method (SW-846) 8270C/3510C

HOLDING TIMES

Sample Extraction	All aqueous samples extracted within 7 days.
Sample Analysis	All samples analyzed within 40 days of extraction.

QUALITY CONTROL

QC Batch	Form 4 Summary
P05257	P05257LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.*
*

Surrogate recoveries for Terphenyl-d14 were flagged for high recovery in the Method Blank P05257LB and samples 9911-451-01(ST-EFF-018) and 9911-451-02 (ST-EFF-116). Review of extraction information and the raw data showed no obvious matrix interference.

Method Blank FORM 4
P05257LB

Bis(2-ethylhexyl)phthalate identified in the Method Blank at 13.08 ug/L. Method Blank data had no affect on sample results.

Laboratory Control Sample FORM 3
P05257LCS/LCSD

All criteria met.*
*

RPD for Bis(2-ethylhexyl)phthalate was flagged as outside QC Limits due to high recovery in P05257LCSD. LCS recovery was within QC Limits.

Recoveries for 4,6-Dinitro-2-methylphenol and 3-Nitroaniline were flagged outside QC Limits in P05257LCS/LCSD.

Recovery for 4-Nitroaniline was flagged outside QC Limits in P05257LCS. LCSD recovery was within QC Limits.

Matrix Spike / Matrix Spike Dup FORM 3

RPD	NA*
Spike Recovery	NA*

Due to the limited amount of sample available, no MS/MSD were extracted.

Refer to Laboratory Control Sample(s) for system verification.

775 233

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - AQUEOUS

Client Name Sverdrup Corporation
Project Name Memphis Depot – Dunn Field System O&M

ETC Order # 9911-451
Method (SW-846) 8270C/3510C

CALIBRATION

DFTPP Daily 12 Hour Tune	All criteria met. FORM 5
Initial Calibration	All criteria met. FORM 6
Calibration Verification *	All criteria met. FORM 7*

Calibration Verification(CV) : Date 11/23/99 Time: 10:24

Analyte	%Diff(30% Max)	Response
Fluoranthene	35.3	High
Indeno(1,2,3-cd)pyrene	19.7	Low

Calibration Verification(CV) : Date 11/23/99 Time: 11:08

Analyte	%Diff(30% Max)	Response
Hexachloropentadiene	61.2	High

Calibration Verification(CV) : Date 11/23/99 Time: 12:27

Analyte	%Diff(30% Max)	Response
Hexachloropentadiene	57.1	High

Calibration Verification(CV) : Date 11/29/99 Time: 15:08

Analyte	%Diff(30% Max)	Response
4-Nitroaniline	30.8	High

Low response indicates that reported levels for this analyte may be biased low and detection limits may be affected. High responses indicate that reported levels for these analytes may be biased high. These analytes were not identified in associated project samples. The data was not affected.

Semi-Volatile Internal Standard Area and RT FORM 8
Daily Check Standard(s) Internal Standard Areas and Retention Times within QC limits.

SAMPLE ANALYSIS

Instrumentation	HP 5890 Series II GC, 5971MSD
Dilutions Required	No dilutions required.

Laboratory Manager

FORM 2
WATER BNA-GCMS SURROGATE RECOVERY

775 234

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

	CLIENT SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 #	S5 (TBP) #	S6 (2FP) #	S7 #	S8 #	TOT OUT
01	9911-451-1	89	84	158*	32	100	49			1
02	9911-451-2	81	75	139*	29	96	43			1
03	P05257LB	88	81	181*	35	96	54			1
04	P05257LCS	89	81	89	39	100	54			0
05	P05257LCSD	90	82	94	37	103	53			0
06										
07										
08										
09										
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		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(29-110)
S2 (FBP)	= 2-Fluorobiphenyl	(38-107)
S3 (TPH)	= Terphenyl-d14	(33-122)
S4	= Phenol-d6	(7- 58)
S5 (TBP)	= 2,4,6-Tribromophenol	(16-138)
S6 (2FP)	= 2-Fluorophenol	(8- 88)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 4
BNA-GCMS METHOD BLANK SUMMARY

CLIENT SAMPLE NO.
P05257LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Lab File ID: 0601006 Lab Prep Batch: P05257

Instrument ID: BNA2 Date Extracted:

Matrix: (soil/water) WATER Date Analyzed: 11/29/99

Level: (low/med) LOW Time Analyzed: 1723

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	9911-451-1	P05257	0401006	11/23/99
02	9911-451-2	P05257	0501007	11/23/99
03	P05257LCS	P05257	0901009	11/29/99
04	P05257LCSD	P05257	1001010	11/29/99
05				
06				
07				
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COMMENTS:

FORM 1 775 236 CLIENT SAMPLE NO.

BNA-GCMS ORGANICS ANALYSIS DATA SHEET

P05257LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix: (soil/water) WATER Lab Prep Batch: P05257

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 0601006

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 11/29/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
83-32-9	Acenaphthene	2.00	U
208-96-8	Acenaphthylene	2.00	U
98-86-2	Acetophenone	5.00	U
53-96-3	2-Acetylaminofluorene	10.00	U
92-67-1	4-Aminobiphenyl	10.00	U
62-53-3	Aniline	5.00	U
120-12-7	Anthracene	2.00	U
140-57-8	Aramite	10.00	U
92-87-5	Benzidine	20.00	U
56-55-3	Benz(a)Anthracene	2.00	U
205-99-2	Benzo(b)fluoranthene	2.00	U
207-08-9	Benzo(k)fluoranthene	2.00	U
191-24-2	Benzo(ghi)perylene	2.00	U
50-32-8	Benzo(a)pyrene	2.00	U
65-85-0	Benzoic acid	50.00	U
100-51-6	Benzyl alcohol	5.00	U
111-91-1	Bis(2-chloroethoxy)methane	5.00	U
111-44-4	Bis(2-chloroethyl)ether	5.00	U
108-60-1	Bis(2-chloroisopropyl)ether	5.00	U
117-81-7	Bis(2-ethylhexyl)phthalate	13.08	
101-55-3	4-Bromophenyl phenyl ether	5.00	U
85-68-7	Butyl benzyl phthalate	5.00	U
86-74-8	Carbazole	10.00	U
106-47-8	4-Chloroaniline	5.00	U
510-15-6	Chlorobenzilate	5.00	U
59-50-7	4-Chloro-3-methylphenol	5.00	U
91-58-7	2-Chloronaphthalene	5.00	U
95-57-8	2-Chlorophenol	5.00	U
7005-72-3	4-Chlorophenyl phenyl ether	5.00	U
218-01-9	Chrysene	2.00	U
2303-16-4	Diallate	5.00	U
53-70-3	Dibenz(a,h)anthracene	2.00	U
132-64-9	Dibenzofuran	5.00	U

FORM I BNA-GCMS

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

P05257LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix: (soil/water) WATER Lab Prep Batch: P05257

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 0601006

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 11/29/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
84-74-2	Di-n-butyl phthalate	5.00	U
95-50-1	1,2-Dichlorobenzene	5.00	U
541-73-1	1,3-Dichlorobenzene	5.00	U
106-46-7	1,4-Dichlorobenzene	5.00	U
91-94-1	3,3'-Dichlorobenzidine	10.00	U
120-83-2	2,4-Dichlorophenol	5.00	U
87-65-0	2,6-Dichlorophenol	5.00	U
84-66-2	Diethyl phthalate	0.389	J
60-11-7	Dimethylaminoazobenzene	5.00	U
57-97-6	7,12-Dimethylbenz(a)anthrace	5.00	U
119-93-7	3,3-Dimethylbenzidine	10.00	U
60-51-5	Dimethoate	5.00	U
122-09-8	a,a-Dimethylphenethylamine	10.00	U
105-67-9	2,4-Dimethyphenol	5.00	U
131-11-3	Dimethyl phthalate	5.00	U
99-65-0	1,3-Dinitrobenzene	5.00	U
534-52-1	4,6-Dinitro-2-methylphenol	10.00	U
51-28-5	2,4-Dinitrophenol	20.00	U
121-14-2	2,4-Dinitrotoluene	5.00	U
606-20-2	2,6-Dinitrotoluene	5.00	U
88-85-7	Dinoseb	5.00	U
122-39-4	Diphenylamine	5.00	U
117-84-0	Di-n-octyl phthalate	5.00	U
298-04-4	Disulfoton	5.00	U
62-50-0	Ethyl methanesulfonate	5.00	U
56-38-2	Ethyl parathion	5.00	U
52-85-7	Famphur	10.00	U
206-44-0	Fluoranthene	2.00	U
86-73-7	Fluorene	2.00	U
118-74-1	Hexachlorobenzene	5.00	U
87-68-3	Hexachlorobutadiene	5.00	U
77-47-4	Hexachlorocyclopentadiene	5.00	U
67-72-1	Hexachloroethane	5.00	U

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

P05257LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix: (soil/water) WATER Lab Prep Batch: P05257

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 0601006

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 11/29/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
70-30-4	Hexachlorophene	5.00	U
1888-71-7	Hexachloropropene	5.00	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.00	U
465-73-6	Isodrin	5.00	U
78-59-1	Isophorone	5.00	U
120-58-1	Isosafrole	5.00	U
143-50-0	Kepone	5.00	U
91-80-5	Methapyrilene	10.00	U
56-49-5	3-Methylcholanthrene	5.00	U
66-27-3	Methyl methanesulfonate	5.00	U
91-57-6	2-Methylnaphthalene	5.00	U
298-00-0	Methyl parathion	5.00	U
95-48-7	2-Methylphenol	5.00	U
108-39-4	3&4-Methylphenol	5.00	U
91-20-3	Naphthalene	5.00	U
130-15-4	1,4-Naphthoquinone	10.00	U
134-32-7	1-Naphthylamine	5.00	U
91-59-8	2-Naphthylamine	5.00	U
88-74-4	2-Nitroaniline	10.00	U
99-09-2	3-Nitroaniline	10.00	U
100-01-6	4-Nitroaniline	10.00	U
98-95-3	Nitrobenzene	5.00	U
99-55-8	5-Nitro-o-toluidine	5.00	U
88-75-5	2-Nitrophenol	10.00	U
100-02-7	4-Nitrophenol	5.00	U
56-57-5	Nitroquinoline-1-oxide	20.00	U
924-16-3	N-Nitrosodibutylamine	5.00	U
55-18-5	N-Nitrosodiethylamine	5.00	U
62-75-9	N-Nitrosodimethylamine	5.00	U
621-64-7	N-Nitrosodi-n-propylamine	5.00	U
10595-95-6	N-Nitrosomethylethylamine	5.00	U
59-89-2	N-Nitrosomorhpholine	5.00	U
100-75-4	N-Nitrosopiperidine	5.00	U

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FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

P05257LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix: (soil/water) WATER Lab Prep Batch: P05257

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 0601006

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 11/29/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
930-55-2	N-Nitrosopyrrolidine	5.00	U
608-93-5	Pentachlorobenzene	5.00	U
76-01-7	Pentachloroethane	5.00	U
82-68-8	Pentachloronitrobenzene	10.00	U
87-86-5	Pentachlorophenol	5.00	U
62-44-2	Phenacetin	5.00	U
85-01-8	Phenanthrene	2.00	U
108-95-2	Phenol	5.00	U
106-50-3	1,4-Phenylenediamine	5.00	U
298-02-2	Phorate	5.00	U
109-06-8	2-Picoline	5.00	U
23950-58-5	Pronamide	5.00	U
129-00-0	Pyrene	2.00	U
110-86-1	Pyridine	5.00	U
94-59-7	Safrole	5.00	U
95-94-3	1,2,4,5-Tetrachlorobenzene	5.00	U
58-90-2	2,3,4,6-Tetrachlorophenol	5.00	U
3689-24-5	Tetraethyl dithiopyrophospha	5.00	U
297-97-2	Thionazine	5.00	U
95-53-4	2-Toluidine	5.00	U
120-82-1	1,2,4-Trichlorobenzene	5.00	U
95-95-4	2,4,5-Trichlorophenol	5.00	U
88-06-2	2,4,6-Trichlorophenol	5.00	U
126-68-1	O,O,O-Triethylphosphorothioa	5.00	U
99-35-4	1,3,5,-Trinitrobenzene	10.00	U
122-66-7	1,2-Diphenylhydrazine/Azoben	5.00	U

FORM 1 775 240 CLIENT SAMPLE NO.

BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

P05257LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 0601006

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 11/29/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	7145-23-5	3-HEXENE, 2,3-DIMETHYL-	4.24	4.12	NJ
2.	19780-60-0	3-ETHYL-2-METHYL-1-HEPTENE	4.48	7.10	NJ
3.	0-00-0	4-ETHYL-1-HEXENE	4.57	5.38	NJ
4.	4291-79-6	CYCLOHEXANE, 1-METHYL-2-PROP	4.69	9.43	NJ
5.					
6.					
7.					
8.					
9.					
10.					
11.					
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17.					
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27.					
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29.					
30.					

FORM 3
WATER BNA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: P05257

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix Spike - Sample No.: P05257LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Acenaphthene	50.00		47.27	94	37-123
Acenaphthylene	50.00		47.38	95	67-118
Acetophenone	50.00		43.17	86	70-130
Aniline	50.00		30.79	62	25-102
Anthracene	50.00		49.55	99	68-124
Benzidine	50.00		1.39	-3*	22-127
Benz(a)Anthracene	50.00		50.60	101	69-125
Benzo(b)fluoranthene	50.00		49.01	98	68-127
Benzo(k)fluoranthene	50.00		48.38	97	73-128
Benzo(ghi)perylene	50.00		45.66	91	53-138
Benzo(a)pyrene	50.00		49.68	99	73-125
Benzoic acid	50.00		30.94	62	0-100
Benzyl alcohol	50.00		38.50	77	23-142
Bis(2-chloroethoxy)meth	50.00		42.17	84	45-135
Bis(2-chloroethyl)ether	50.00		41.87	84	51-120
Bis(2-chloroisopropyl)e	50.00		39.02	78	34-137
Bis(2-ethylhexyl)phthal	50.00		55.07	110	61-151
4-Bromophenyl phenyl et	50.00		40.29	80	70-130
Butyl benzyl phthalate	50.00		56.33	113	70-130
Carbazole	50.00		44.90	90	37-156
4-Chloroaniline	50.00		43.59	87	20-120
4-Chloro-3-methylphenol	50.00		52.26	104	33-134
2-Chloronaphthalene	50.00		40.99	82	63-121
2-Chlorophenol	50.00		38.70	77	17-134
4-Chlorophenyl phenyl e	50.00		47.76	96	70-130
Chrysene	50.00		50.94	102	70-124
Dibenz(a,h)anthracene	50.00		48.20	96	57-136
Dibenzofuran	50.00		45.36	91	64-122

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER BNA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: P05257

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix Spike - Sample No.: P05257LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Di-n-butyl phthalate	50.00		49.72	99	70-130
1,2-Dichlorobenzene	50.00		37.13	74	39-101
1,3-Dichlorobenzene	50.00		35.65	71	38- 98
1,4-Dichlorobenzene	50.00		35.81	72	31- 97
3,3'-Dichlorobenzidine	50.00		45.65	91	35-165
2,4-Dichlorophenol	50.00		43.90	88	13-146
2,6-Dichlorophenol	50.00		42.00	84	70-130
Diethyl phthalate	50.00		50.04	100	70-130
3,3-Dimethylbenzidine	50.00		5.96	12*	70-130
2,4-Dimethyphenol	50.00		41.83	84	51-118
Dimethyl phthalate	50.00		47.00	94	70-130
1,3-Dinitrobenzene	50.00		54.58	109	70-130
4,6-Dinitro-2-methylphe	50.00		59.21	118*	0-100
2,4-Dinitrophenol	50.00		73.94	148	12-182
2,4-Dinitrotoluene	50.00		59.75	120	34-130
2,6-Dinitrotoluene	50.00		52.23	104	62-135
Diphenylamine	50.00		41.82	84	76-131
Di-n-octyl phthalate	50.00		47.75	96	70-130
Fluoranthene	50.00		49.32	99	55-135
Fluorene	50.00		51.74	103	66-121
Hexachlorobenzene	50.00		38.39	77	65-133
Hexachlorobutadiene	50.00		36.94	74	50-112
Hexachlorocyclopentadie	50.00		34.81	70	21-141
Hexachloroethane	50.00		35.40	71	37-100
Indeno(1,2,3-cd)pyrene	50.00		46.43	93	57-140
Isophorone	50.00		42.16	84	13-146
2-Methylnaphthalene	50.00		42.12	84	50-124
2-Methylphenol	50.00		40.18	80	48-117

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER BNA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: P05257

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix Spike - Sample No.: P05257LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
3&4-Methylphenol	50.00		35.56	71	46- 99
Naphthalene	50.00		45.58	91	55-113
2-Nitroaniline	50.00		51.86	104	63-129
3-Nitroaniline	50.00		68.79	138*	61-120
4-Nitroaniline	50.00		66.87	134*	60-126
Nitrobenzene	50.00		44.21	88	57-120
2-Nitrophenol	50.00		40.60	81	27-137
4-Nitrophenol	50.00		23.00	46	20- 75
N-Nitrosodibutylamine	50.00		41.08	82	70-130
N-Nitrosodiethylamine	50.00		37.24	74	70-130
N-Nitrosodimethylamine	50.00		25.34	51	30- 96
N-Nitrosodi-n-propylami	50.00		39.23	78	70-130
Pentachlorophenol	50.00		48.25	96	22-171
Phenanthrene	50.00		47.44	95	65-126
Phenol	50.00		18.89	38	12- 57
Pyrene	50.00		59.99	120	40-149
Pyridine	50.00		18.63	37	10- 82
1,2,4,5-Tetrachlorobenz	50.00		40.85	82	70-130
2,3,4,6-Tetrachlorophen	50.00		50.67	101	70-130
1,2,4-Trichlorobenzene	50.00		38.37	77	29-116
2,4,5-Trichlorophenol	50.00		49.69	99	31-147
2,4,6-Trichlorophenol	50.00		42.73	85	31-147
1,3,5,-Trinitrobenzene	50.00		63.92	128	70-130

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER BNA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: P05257

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix Spike - Sample No.: P05257LCS

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Acenaphthene	50.00	46.52	93	1	20	37-123
Acenaphthylene	50.00	46.33	93	2	20	67-118
Acetophenone	50.00	43.04	86	0	20	70-130
Aniline	50.00	28.44	57	8	20	25-102
Anthracene	50.00	50.17	100	1	20	68-124
Benzidine	50.00	2.46	5*	50*	20	22-127
Benz(a)Anthracene	50.00	52.21	104	3	20	69-125
Benzo(b)fluoranthene	50.00	51.34	103	5	20	68-127
Benzo(k)fluoranthene	50.00	49.71	99	2	20	73-128
Benzo(ghi)perylene	50.00	50.26	100	9	20	53-138
Benzo(a)pyrene	50.00	52.02	104	5	20	73-125
Benzoic acid	50.00	33.37	67	8	20	0-100
Benzyl alcohol	50.00	37.73	75	3	20	23-142
Bis(2-chloroethoxy)meth	50.00	42.68	85	1	20	45-135
Bis(2-chloroethyl)ether	50.00	39.06	78	7	20	51-120
Bis(2-chloroisopropyl)e	50.00	37.54	75	4	20	34-137
Bis(2-ethylhexyl)phthal	50.00	96.56	193*	55*	20	61-151
4-Bromophenyl phenyl et	50.00	41.74	83	4	20	70-130
Butyl benzyl phthalate	50.00	55.73	111	2	20	70-130
Carbazole	50.00	45.48	91	1	20	37-156
4-Chloroaniline	50.00	40.76	82	6	20	20-120
4-Chloro-3-methylphenol	50.00	53.26	106	2	20	33-134
2-Chloronaphthalene	50.00	40.87	82	0	20	63-121
2-Chlorophenol	50.00	37.77	76	1	20	17-134
4-Chlorophenyl phenyl e	50.00	47.49	95	1	20	70-130
Chrysene	50.00	51.06	102	0	20	70-124
Dibenz(a,h)anthracene	50.00	52.46	105	9	20	57-136
Dibenzofuran	50.00	44.29	88	3	20	64-122

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER BNA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: P05257

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix Spike - Sample No.: P05257LCS

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Di-n-butyl phthalate	50.00	50.63	101	2	20	70-130
1,2-Dichlorobenzene	50.00	36.27	72	3	20	39-101
1,3-Dichlorobenzene	50.00	35.90	72	1	20	38- 98
1,4-Dichlorobenzene	50.00	35.14	70	3	20	31- 97
3,3'-Dichlorobenzidine	50.00	51.55	103	12	20	35-165
2,4-Dichlorophenol	50.00	44.61	89	1	20	13-146
2,6-Dichlorophenol	50.00	44.15	88	5	20	70-130
Diethyl phthalate	50.00	49.05	98	2	20	70-130
3,3-Dimethylbenzidine	50.00	11.46	23*	63*	20	70-130
2,4-Dimethyphenol	50.00	43.88	88	5	20	51-118
Dimethyl phthalate	50.00	47.17	94	0	20	70-130
1,3-Dinitrobenzene	50.00	55.52	111	2	20	70-130
4,6-Dinitro-2-methylphe	50.00	62.96	126*	6	20	0-100
2,4-Dinitrophenol	50.00	76.58	153	3	20	12-182
2,4-Dinitrotoluene	50.00	58.52	117	2	20	34-130
2,6-Dinitrotoluene	50.00	53.40	107	3	20	62-135
Diphenylamine	50.00	43.45	87	4	20	76-131
Di-n-octyl phthalate	50.00	56.61	113	16	20	70-130
Fluoranthene	50.00	50.25	100	1	20	55-135
Fluorene	50.00	50.35	101	2	20	66-121
Hexachlorobenzene	50.00	39.03	78	1	20	65-133
Hexachlorobutadiene	50.00	37.01	74	0	20	50-112
Hexachlorocyclopentadie	50.00	32.74	65	7	20	21-141
Hexachloroethane	50.00	34.53	69	3	20	37-100
Indeno(1,2,3-cd)pyrene	50.00	49.81	100	7	20	57-140
Isophorone	50.00	42.63	85	1	20	13-146
2-Methylnaphthalene	50.00	41.02	82	2	20	50-124
2-Methylphenol	50.00	39.51	79	1	20	48-117

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM III BNA-GCMS

FORM 3
WATER BNA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: P05257

Lab Code: Case No.: SAS No.: SDG No.: 9911-451

Matrix Spike - Sample No.: P05257LCS

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
3&4-Methylphenol	50.00	36.25	72	1	20	46- 99
Naphthalene	50.00	44.60	89	2	20	55-113
2-Nitroaniline	50.00	52.47	105	1	20	63-129
3-Nitroaniline	50.00	66.91	134*	3	20	61-120
4-Nitroaniline	50.00	62.41	125	7	20	60-126
Nitrobenzene	50.00	44.30	89	1	20	57-120
2-Nitrophenol	50.00	42.52	85	5	20	27-137
4-Nitrophenol	50.00	21.67	43	7	20	20- 75
N-Nitrosodibutylamine	50.00	42.23	84	2	20	70-130
N-Nitrosodiethylamine	50.00	36.18	72	3	20	70-130
N-Nitrosodimethylamine	50.00	26.27	52	2	20	30- 96
N-Nitrosodi-n-propylami	50.00	39.42	79	1	20	70-130
Pentachlorophenol	50.00	50.81	102	6	20	22-171
Phenanthrene	50.00	49.28	98	3	20	65-126
Phenol	50.00	18.37	37	3	20	12- 57
Pyrene	50.00	53.10	106	12	20	40-149
Pyridine	50.00	22.18	44	17	20	10- 82
1,2,4,5-Tetrachlorobenz	50.00	42.12	84	2	20	70-130
2,3,4,6-Tetrachlorophen	50.00	50.87	102	1	20	70-130
1,2,4-Trichlorobenzene	50.00	38.08	76	1	20	29-116
2,4,5-Trichlorophenol	50.00	49.10	98	1	20	31-147
2,4,6-Trichlorophenol	50.00	42.87	86	1	20	31-147
1,3,5,-Trinitrobenzene	50.00	60.39	121	6	20	70-130

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 3 out of 79 outside limits
Spike Recovery: 10 out of 158 outside limits

COMMENTS: _____

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INTERNATIONAL TECHNOLOGY CORPORATION

Chemical Analytical Data Review/Evaluation/Validation

Type: [ ] Preliminary [✓] Final Date Received: _____ Proj

Project Name: Memphis Depot Analysis/Method: VOA,

Laboratory: ETC Lab Project/Cas

Sample Number(s): ST-EFF-019, ST-EFF-117, ...

Evaluated By: Betsy McDaniel Date Evaluated: 1/5/00

Data Package Deliverables Requirement: [ ] OHM Minimum [✓] OHM Standard [ ] OHM Maximum

[ ] Other, please describe _____

Quality Control Deliverables	Required	Received	Passed	Failed
PQL, MDL, RL, etc meets DQOs				
Comment:				
Holding Times			✓	
Comment:				
Sample Condition (preservatives, containers, temperature, etc) / Case Narrative	X		✓	
Comment:				
Surrogate Recoveries	X		✓	
Comment:				
Lab Control Sample Recoveries	X			✓
Comment: some non-target failures on VOA high Bis(2-eh)phthalate				
Lab Control Sample Duplicate or Other Spike Recoveries	X		✓	
Comment:				
Lab Control Sample Duplicate or Other Laboratory Duplicate RPD	X			✓
Comment: high Bis(2-el)phthalate 2,4-DNP, 4-Nitroa.				
Matrix Spike Recoveries	X			✓
Comment: low Na, low TCE piked ST-EFF-019 for ICP, GF, Hg, VOA, SVOA				
Matrix Spike Duplicate Recoveries	X			✓
Comment: low Na, low TCE				
Matrix Spike / Matrix Spike Duplicate RPD	X		✓	
Comment: high 4-Chloro-3-mp				
Laboratory Blanks (daily, method, instrument)	X			✓
Comment: hits of Al, Ca two low to affect samples 2 of methylene chloride, BDL in samples				
Blanks (trip, eqpt rinsate, ambient, matrix)	X			
Comment: NA				

high bis(2-eh)phthalate

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Data Validation Level III

FIELD DUPLICATES

RPD = [orig-dup] x 100
orig + dup/2

Report No.: 801370

Analyte	Original Sample ID	Result	Duplicate Sample ID	Result	RPD	
pH	ST-EFF-019	5.9	ST-EFF-117	5.7	3	
Barium		0.099		0.097	2	
Calcium		20.1		19.8	2	
Iron		0.019		0.015	24	
Potassium		0.84		0.764	9	
Magnesium		10.3		10.2	1	
Manganese		0.007		0.007	0	
Sodium		23.1		21.8	6	
Zinc		0.047		0.045	4	
Carbon tetrachloride		1.18		0.81	37	*
Chloroform		8.81		6.4	32	*
1,1-Dichloroethane		0.49		<1	NC	
1,1-Dichloroethene		15.7		10.2	42	*
trans-1,2-Dichloroethene		12.6		8.39	40	*
1,1,2,2-Tetrachloroethane		137		144	-5	
Tetrachloroethene		19.1		14.2	29	
1,1,1-Trichloroethane		0.61		0.43	35	*
1,1,2-Trichloroethane		0.89		<1	NC	
Trichloroethene		174		135	25	
cis-1,2-Dichloroethene		47		32.5	36	*

ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road • Memphis, TN 38111 • (901) 327-2750 • FAX (901) 327-6334
Founded 1972

December 23, 1999

Mr. Virgil Jansen
Sverdrup Corporation
13723 Riverport Drive
Maryland Heights, MO 63043

Ref: Analytical Testing
ETC Order # 9912495
Project Description Memphis Depot Dunn Field
Dunnfield System O&M

The above referenced project has been analyzed per your instructions. The analyses were performed in accordance with Standard Methods 17th/18th Edition; The Solid Waste Manual SW-846; EPA Methods for the Analysis of Water and Wastes and/or 40 CFR part 136.

The results are shown on the attached analysis sheet(s).

Please do not hesitate to contact our office if you have any questions.

Sincerely,

Nathan A. Pera, IV
Chief Executive Officer

rt
Attachment

SVE_MHDDMT

Certifications

Tennessee	*#TN02027*	*Mississippi*	
Arkansas		*Oklahoma*	*#9311*
Alabama	*#40730*	*Virginia*	*#00106*
Kentucky	*#90047*	*Washington*	*#C248*
North Carolina	*#415*	*US Army Corps of Engineers*	
South Carolina	*#84002002*		

Environmental Testing & Consulting, Inc.

Data Qualifiers for Organic Reporting

Within the attached report, some analytical data may be reported as "Qualified Data" as indicated by a "Data Qualifier" next to the result. This table summarizes the possible "Data Qualifiers" that may be associated with this report.

Q	Surrogate Recovery Outside QC Limits
J	Estimated Value. Presence of the compound was confirmed but less than the reported detection limit.
E	Concentration exceeds the established method calibration range but is within the working range of the instrument.
B	Analyte detected in the associated Method Blank.
U	Reported result was unconfirmed. Refer to Case Narrative.
N	Non-Compliance Report associated with this sample or project.
C	Result reported from GC/MS confirmation analysis.
M	Result reported represents a minimum value. Refer to Case Narrative.
NC	Result reported from Primary Column. Result did not confirm.
*	QC Data (percent recovery/RPD for a particular analyte was outside QC Limits)

INTERNATIONAL TECHNOLOGY CORPORATION

775 251

Chemical Analytical Data Review/Evaluation/Validation

t Type: [ ] Preliminary [✓] Final Date Received: 1/00 Project Number: 801370

oject Name: DDMT Analysis/Method: VOA, SVOA, Metals

.boratory: ETC Lab Project/Case Number: 000169

ample Number(s): ST-EFF-020, TB

Evaluated By: Betsy McDaniel Date Evaluated: 1/26/00

Data Package Deliverables Requirement: [✓] OHM Minimum [ ] OHM Standard [ ] OHM Maximum

[ ] Other, please describe

Quality Control Deliverables	Required	Received	Passed	Failed
PQL, MDL, RL, etc meets DQOs				
Comment:				
Holding Times			✓	
Comment:				
Sample Condition (preservatives, containers, temperature, etc) / Case Narrative	X		✓	
Comment:				
S...ogate Recoveries	X		✓	
Comment: one low VOA surr. on dilution, report original results				
Lab Control Sample Recoveries	X		-	✓
Comment: 2 high VOA, BDL in sample low Chrysene				
Lab Control Sample Duplicate or Other Spike Recoveries	X			
Comment: NA				
Lab Control Sample Duplicate or Other Laboratory Duplicate RPD	X			
Comment: NA				
Matrix Spike Recoveries	X		✓	
Comment: A... ow TCE, pass on RPD and LCS				
Matrix Spike Duplicate Recoveries	X		✓	
Comment: ow TCE, pass on RPD and LCS				
Matrix Spike / Matrix Spike Duplicate RPD	X		✓	
Comment:				
Laboratory Blanks (daily, method, instrument)	X			✓
Comment: hit of bis(2-ethylhexyl)phthalate, BDL in sample hit of methylene chloride, BDL in sample				
...d Blanks (trip, ...cept rinsate, ambient, matrix)	X		✓	
Comment:				

775 252

ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road • Memphis, TN 38111 • (901) 327-2750 • FAX (901) 327-6334
Founded 1972

January 13, 2000

Mr. Virgil Jansen
Sverdrup Corporation
13723 Riverport Drive
Maryland Heights, MO 63043

Ref: Analytical Testing
ETC Order # 0001169
Project Description Memphis Depot Dunnfield

Project # Memphis Defense Depot

The above referenced project has been analyzed per your instructions. The analyses were performed in our laboratory in accordance with Standard Methods 17th/18th Edition; The Solid Waste Manual SW-846; EPA Methods for the Analysis of Water and Wastes and/or 40 CFR part 136.

The results are shown on the attached analysis sheet(s).

Please do not hesitate to contact our office if you have any questions.

Sincerely,

Chester D. Sheibel
Project Manager

rt
Attachment

SVE_MHDDMT

Environmental Testing & Consulting, Inc.

Data Qualifiers for Organic Reporting

Within the attached report, some analytical data may be reported as "Qualified Data" as indicated by a "Data Qualifier" next to the result. This table summarizes the possible "Data Qualifiers" that may be associated with this report.

Q	Surrogate Recovery Outside QC Limits
J	Estimated Value. Presence of the compound was confirmed but less than the
	reported detection limit.
E	Concentration exceeds the established method calibration range but is within
	the working range of the instrument.
B	Analyte detected in the associated Method Blank.
U	Reported result was unconfirmed. Refer to Case Narrative.
N	Non-Compliance Report associated with this sample or project.
C	Result reported from GC/MS confirmation analysis.
M	Result reported represents a minimum value. Refer to Case Narrative.
NC	Result reported from Primary Column. Result did not confirm.
*	QC Data (percent recovery/RPD for a particular analyte was outside QC Limits)

Environmental Testing & Consulting, Inc.

Login
Chain-of-Custody

CHAIN OF CUSTODY RECORD

000003

Environmental Testing & Consulting, Inc.
2924 Walnut Grove Rd.
Memphis, TN 38111
(901)327-2750 FAX (901)327-6334

ETC Work Order : 0001169

775 255

Company Name	Phone # : 314-770-4025	Fax Results
Syverdrup	Fax # : 314-770-5108	RUSH
Project/Site	FID # :	Ice
Memphis Depot, Dunnfield	PO # :	
Project #	Matrix	
Dunnfield System O&M	(1) Wastewater 4 Sludge	
Project Manager/Contact	2 Aqueous 5 Oil/Solvent	
Virgil Janson	3 Soil/Sediment 6 Other	

Analysis Requested
(Note special detection limits or methods)

# of cont.	Sample ID/ Number	Depth	Sample Date	Sample Time	Matrix	Type Grab/Comp	TCL VOCs 8260.3	TCL SVOCs 8270	TAL metals 200	As-206.2	Hg-245.1	Comments
11	ST-Eff-020	Eff	1/10/00		W	G	X	X	X	X	X	
3	Trip Blank											
												Temp 18.7
												PH 6.95

Sampled By: M. Akins
Method of Shipment: Hand Delivery
Blank/Cooler Temp: 4°C
Remarks: (18) Total Flow 6651180 64.92 GPM

	DATE	TIME		DATE	TIME	Sample Delivery Group ID
RELINQUISHED BY (sign) M. Akins	1-10-2000		RECEIVED BY (sign)			
RELINQUISHED BY (sign)			RECEIVED BY (sign)			
RELINQUISHED BY (sign) Chad Coughlin	1-10-00	1210	RECEIVED BY LAB (print/sign) P. Bailey	1/10/00	1210	

Distribution Original and Yellow accompany samples to the laboratory. Pink copy for Crew.

Environmental Testing & Consulting, Inc.
Cooler Receipt Form

Date Received 1/10/00
Date/Time Checked In _____*
Carrier/Bill# Hand-Delivered _____

LIMS# 0001-169
Project Mphs. Depot
Dunnfield Syst.
By RBarge

1. Custody Seals?/Location-NA	No
2. Samples are non-radioactive?	Yes
3. Chain of Custody in plastic?	Yes
4. Temperature at receipt (ok = 4 ± 2 °C)-<4oC	OK
5. Ice & Packing-Loose Ice, Bubble Wrap	Yes
6. Chain of Custody filled out properly?	Yes
7. All containers in separate bags?	Yes
8. Sample containers intact?	Yes
9. Label(s) complete and in good condition?	Yes
10. Label(s) agree with Chain of Custody?	Yes
11. Correct containers used?	Yes
12. Sufficient sample?	Yes
13. VOA vials bubble-free (H_2O) or no head space (soil)?	Yes
14. Preservation OK? TM pH____; TRPH pH____; TOC pH____; TOX pH____; CN pH____; N/P pH____; Other pH____	Yes

Comments

*Validated Date and Time of Sample Receipt (VDTSR)

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ANALYTICAL SUMMARY TABLE

.ent Name Sverdrup Corporation
ite ID Memphis Depot Dunnfield
Dunnfield System O&M

TC ample ID	Field ID	Matrix	Method	Method Description
000116901	ST-EFF-020	AQUEOUS	200.7	Silver
000116901	ST-EFF-020	AQUEOUS	200.7	Aluminum
000116901	ST-EFF-020	AQUEOUS	206.2	Arsenic
000116901	ST-EFF-020	AQUEOUS	8270C	GC/MS Base/Neutral & Acid
000116901	ST-EFF-020	AQUEOUS	200.7	Barium
000116901	ST-EFF-020	AQUEOUS	200.7	Beryllium
000116901	ST-EFF-020	AQUEOUS	200.7	Calcium
000116901	ST-EFF-020	AQUEOUS	200.7	Cadmium
000116901	ST-EFF-020	AQUEOUS	200.7	Cobalt
000116901	ST-EFF-020	AQUEOUS	200.7	Chromium
000116901	ST-EFF-020	AQUEOUS	200.7	Copper
000116901	ST-EFF-020	AQUEOUS	200.7	Iron
000116901	ST-EFF-020	AQUEOUS	245.1	Mercury
000116901	ST-EFF-020	AQUEOUS	200.7	Potassium
000116901	ST-EFF-020	AQUEOUS	200.7	Magnesium
000116901	ST-EFF-020	AQUEOUS	200.7	Manganese
000116901	ST-EFF-020	AQUEOUS	200.7	Sodium
000116901	ST-EFF-020	AQUEOUS	200.7	Nickel
000116901	ST-EFF-020	AQUEOUS	200.7	Lead
000116901	ST-EFF-020	AQUEOUS	200.7	Antimony
000116901	ST-EFF-020	AQUEOUS	200.7	Selenium
000116901	ST-EFF-020	AQUEOUS	200.7	Thallium
16901	ST-EFF-020	AQUEOUS	8260B	GC/MS Volatile Organics
116901	ST-EFF-020	AQUEOUS	200.7	Vanadium
000116901	ST-EFF-020	AQUEOUS	200.7	Zinc
000116902	Trip Blank	AQUEOUS	8260B	GC/MS Volatile Organics

Environmental Testing & Consulting, Inc.

Sample Reports

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #

Site ID: Memphis Depot Dunnfield
Dunnfield System O&M

Date Arrived 01/10/00
ETC Order Number 0001169

ETC Lab ID **0001169-01**
Sample ID: ST-EFF-020

Matrix :AQUEOUS
Sample Date :01/10/00

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED	BY	METHOD
Mercury Digestion Batch	V6-AQ-24					NR	245.1
Metals Digestion Batch	V18-AQ-44					TB	3030K
Silver	<0.009	mg/L	0.009	1255	01/11/00	SH	200.7
Aluminum	<0.060	mg/L	0.060	1255	01/11/00	SH	200.7
Arsenic	<0.003	mg/L	0.003	0904	01/11/00	JF	206.2
Barium	0.099	mg/L	0.003	1255	01/11/00	SH	200.7
Beryllium	<0.002	mg/L	0.002	1255	01/11/00	SH	200.7
Calcium	19.9	mg/L	0.015	1255	01/11/00	SH	200.7
Cadmium	<0.005	mg/L	0.005	1255	01/11/00	SH	200.7
Cobalt	<0.009	mg/L	0.009	1255	01/11/00	SH	200.7
Chromium	<0.009	mg/L	0.009	1255	01/11/00	SH	200.7
Copper	<0.008	mg/L	0.008	1255	01/11/00	SH	200.7
Iron	0.021	mg/L	0.009	1255	01/11/00	SH	200.7
Mercury	<0.0002	mg/L	0.0002	1351	01/12/00	NR	245.1
Potassium	0.752	mg/L	0.250	1255	01/11/00	SH	200.7
Magnesium	10.6	mg/L	0.040	1255	01/11/00	SH	200.7
Manganese	<0.003	mg/L	0.003	1255	01/11/00	SH	200.7
Sodium	22.8	mg/L	0.050	1255	01/11/00	SH	200.7
Nickel	<0.020	mg/L	0.020	1255	01/11/00	SH	200.7
Lead	<0.060	mg/L	0.060	1255	01/11/00	SH	200.7
Antimony	<0.040	mg/L	0.040	1255	01/11/00	SH	200.7
Selenium	<0.100	mg/L	0.100	1255	01/11/00	SH	200.7
Thallium	<0.065	mg/L	0.065	1255	01/11/00	SH	200.7
Vanadium	<0.010	mg/L	0.010	1255	01/11/00	SH	200.7
Zinc	0.038	mg/L	0.010	1255	01/11/00	SH	200.7

CLS
LABORATORY MANAGER

775 260

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #
FID #

Site ID: Memphis Depot Dunnfield
Dunnfield System O&M

Date Arrived 01/10/00
ETC Order Number 0001169

ETC Lab ID **0001169-01**
Sample ID: ST-EFF-020

Matrix :AQUEOUS
Sample Date :01/10/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							
QC Batch	V1011101				01/11/00	LS	8260B
Acetone	ND	ug/L	20.0				
Benzene	ND	ug/L	1.00				
Bromodichloromethane	ND	ug/L	1.00				
Bromoform	ND	ug/L	1.00				
Bromomethane	ND	ug/L	1.00				
Carbon Disulfide	ND	ug/L	1.00				
Carbon Tetrachloride	1.14	ug/L	1.00				
Chlorobenzene	ND	ug/L	1.00				
Chlorodibromomethane	ND	ug/L	1.00				
Chloroethane	ND	ug/L	1.00				
Chloroform	8.34	ug/L	1.00				
Chloromethane	ND	ug/L	1.00				
1,1-Dichloroethane	ND	ug/L	1.00				
1,2-Dichloroethane	ND	ug/L	1.00				
1,1-Dichloroethene	14.7	ug/L	1.00				
trans-1,2-Dichloroethene	13.4	ug/L	1.00				
1,2-Dichloropropane	ND	ug/L	1.00				
cis-1,3-Dichloropropene	ND	ug/L	1.00				
trans-1,3-Dichloropropene	ND	ug/L	1.00				
Ethylbenzene	ND	ug/L	1.00				
2-Hexanone (MBK)	ND	ug/L	5.00				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00				
2-Butanone (MEK)	ND	ug/L	20.0				
Methylene Chloride	ND	ug/L	5.00				
Styrene	ND	ug/L	1.00				
1,1,2,2-Tetrachloroethane	218	ug/L	1.00				
Tetrachloroethene	17.7	ug/L	1.00				
Toluene	ND	ug/L	1.00				
1,1,1-Trichloroethane	ND	ug/L	1.00				
1,1,2-Trichloroethane	ND	ug/L	1.00				
Trichloroethene	189	ug/L	1.00				
Vinyl Acetate	ND	ug/L	20.0				
Vinyl Chloride	ND	ug/L	1.00				
o-Xylenes	ND	ug/L	1.00				
m-Xylenes	ND	ug/L	1.00				
p-Xylenes	48.0	ug/L	1.00				
cis-1,2-Dichloroethene							

Surrogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	101	74	123
S2 - Toluene-d8	86	86	112
S3 - 4-Bromofluorobenzene	89	81	115

LABORATORY MANAGER

ND - Not Detected

775 261

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

0001-169-1

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0601004

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 01/11/00

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
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26.					
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28.					
29.					
30.					

775 262

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #
FID #

Site ID: Memphis Depot Dunnfield
Dunnfield System O&M

Date Arrived 01/10/00
ETC Order Number 0001169

ETC Lab ID **0001169-01**
Sample ID: ST-EFF-020-DIL

Matrix :AQUEOUS
Sample Date :01/10/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							8260B
QC Batch	V1011101				01/11/00	LS	
Acetone	ND	ug/L	1000				
Benzene	ND	ug/L	50.0				
Bromodichloromethane	ND	ug/L	50.0				
Bromoform	ND	ug/L	50.0				
Bromomethane	ND	ug/L	50.0				
Carbon Disulfide	ND	ug/L	50.0				
Carbon Tetrachloride	ND	ug/L	50.0				
Chlorobenzene	ND	ug/L	50.0				
Chlorodibromomethane	ND	ug/L	50.0				
Chloroethane	ND	ug/L	50.0				
Chloroform	ND	ug/L	50.0				
Chloromethane	ND	ug/L	50.0				
1,1-Dichloroethane	ND	ug/L	50.0				
1,2-Dichloroethane	ND	ug/L	50.0				
1,1-Dichloroethene	ND	ug/L	50.0				
trans-1,2-Dichloroethene	ND	ug/L	50.0				
1,2-Dichloropropane	ND	ug/L	50.0				
cis-1,3-Dichloropropene	ND	ug/L	50.0				
trans-1,3-Dichloropropene	ND	ug/L	50.0				
Ethylbenzene	ND	ug/L	50.0				
2-Hexanone (MBK)	ND	ug/L	250				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	250				
2-Butanone (MEK)	ND	ug/L	1000				
Methylene Chloride	ND	ug/L	250				
Styrene	ND	ug/L	50.0				
1,1,2,2-Tetrachloroethane	260	ug/L	50.0				
Tetrachloroethene	ND	ug/L	50.0				
Toluene	ND	ug/L	50.0				
1,1,1-Trichloroethane	ND	ug/L	50.0				
1,1,2-Trichloroethane	ND	ug/L	50.0				
Trichloroethene	ND	ug/L	50.0				
Vinyl Acetate	ND	ug/L	1000				
Vinyl Chloride	ND	ug/L	50.0				
o-Xylenes	ND	ug/L	50.0				
m-Xylenes	ND	ug/L	50.0				
p-Xylenes	ND	ug/L	50.0				
cis-1,2-Dichloroethene	ND	ug/L	50.0				

Surrogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	100	74	123
S2 - Toluene-d8	85 Q	86	112
S3 - 4-Bromofluorobenzene	84	81	115

COS
ABORATORY MANAGER

ND - Not Detected

775 263

CLIENT SAMPLE NO.

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

0001-169-1

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0701005

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 01/11/00

GC Column: ID: 2.00 (mm) Dilution Factor: 50.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
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30.					

775 264

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #
FID #

Site ID: Memphis Depot Dunnfield
Dunnfield System O&M

Date Arrived 01/10/00
ETC Order Number 0001169

ETC Lab ID **0001169-02**

Sample ID: Trip Blank

Matrix :AQUEOUS
Sample Date :01/10/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							
QC Batch	V1011101						8260B
Acetone	ND	ug/L	20.0		01/11/00	LS	
Benzene	ND	ug/L	1.00				
Bromodichloromethane	ND	ug/L	1.00				
Bromoform	ND	ug/L	1.00				
Bromomethane	ND	ug/L	1.00				
Carbon Disulfide	ND	ug/L	1.00				
Carbon Tetrachloride	ND	ug/L	1.00				
Chlorobenzene	ND	ug/L	1.00				
Chlorodibromomethane	ND	ug/L	1.00				
Chloroethane	ND	ug/L	1.00				
Chloroform	ND	ug/L	1.00				
Chloromethane	ND	ug/L	1.00				
1,1-Dichloroethane	ND	ug/L	1.00				
1,2-Dichloroethane	ND	ug/L	1.00				
1,1-Dichloroethene	ND	ug/L	1.00				
trans-1,2-Dichloroethene	ND	ug/L	1.00				
1,2-Dichloropropane	ND	ug/L	1.00				
cis-1,3-Dichloropropene	ND	ug/L	1.00				
trans-1,3-Dichloropropene	ND	ug/L	1.00				
Ethylbenzene	ND	ug/L	1.00				
2-Hexanone (MBK)	ND	ug/L	1.00				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	1.00				
2-Butanone (MEK)	ND	ug/L	5.00				
Methylene Chloride	ND	ug/L	5.00				
Styrene	ND	ug/L	20.0				
1,1,2,2-Tetrachloroethane	ND	ug/L	5.00				
Tetrachloroethene	ND	ug/L	1.00				
Toluene	ND	ug/L	1.00				
1,1,1-Trichloroethane	ND	ug/L	1.00				
1,1,2-Trichloroethane	ND	ug/L	1.00				
Trichloroethene	ND	ug/L	1.00				
Vinyl Acetate	ND	ug/L	1.00				
Vinyl Chloride	ND	ug/L	1.00				
o-Xylenes	ND	ug/L	20.0				
m-Xylenes	ND	ug/L	1.00				
p-Xylenes	ND	ug/L	1.00				
cis-1,2-Dichloroethene	ND	ug/L	1.00				
	ND	ug/L	1.00				

urrogate Standard	% Recovery	QC Limits	
31 - Dibromofluoromethane	108	74	123
32 - Toluene-d8	95	86	112
33 - 4-Bromofluorobenzene	87	81	115

LABORATORY MANAGER

ND - Not Detected

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

0001-169-2

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0501003

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 01/11/00

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
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775 266

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #
FID #

Site ID: Memphis Depot Dunnfield
Dunnfield System O&M

Date Arrived 01/10/00
ETC Order Number 0001169

ETC Lab ID **0001169-01**
Sample ID: ST-EFF-020

Matrix :AQUEOUS
Sample Date :01/10/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Base/Neutral & Acid							8270C
QC Batch	P05882	ug/L		01/11/00	01/12/00	PF	
Acenaphthene	ND	ug/L	2.00				
Acenaphthylene	ND	ug/L	2.00				
Anthracene	ND	ug/L	2.00				
Benzo(a)anthracene	ND	ug/L	2.00				
Benzo(b)fluoranthene	ND	ug/L	2.00				
Benzo(k)fluoranthene	ND	ug/L	2.00				
Benzo(g,h,i)perylene	ND	ug/L	2.00				
Benzo(a)pyrene	ND	ug/L	2.00				
Benzoic Acid	ND	ug/L	50.0				
Benzyl Alcohol	ND	ug/L	10.0				
Bis(2-chloroethoxy)methane	ND	ug/L	5.00				
Bis(2-chloroethyl)ether	ND	ug/L	5.00				
Bis(2-chloroisopropyl)ether	ND	ug/L	5.00				
Bis(2-ethylhexyl)phthalate	ND	ug/L	10.0				
4-Bromophenyl phenyl ether	ND	ug/L	5.00				
Butyl benzyl phthalate	ND	ug/L	5.00				
4-Chloroaniline	ND	ug/L	5.00				
2-Chloronaphthalene	ND	ug/L	5.00				
4-Chloro-3-methylphenol	ND	ug/L	5.00				
2-Chlorophenol	ND	ug/L	5.00				
4-Chlorophenyl phenyl ether	ND	ug/L	5.00				
Chrysene	ND	ug/L	2.00				
Dibenzo(a,h)anthracene	ND	ug/L	2.00				
Dibenzofuran	ND	ug/L	5.00				
Di-n-butyl phthalate	ND	ug/L	5.00				
1,2-Dichlorobenzene	ND	ug/L	5.00				
1,3-Dichlorobenzene	ND	ug/L	5.00				
1,4-Dichlorobenzene	ND	ug/L	5.00				
3,3'-Dichlorobenzidine	ND	ug/L	10.0				
2,4-Dichlorophenol	ND	ug/L	5.00				
2,6-Dichlorophenol	ND	ug/L	5.00				
Diethyl phthalate	ND	ug/L	5.00				
2,4-Dimethylphenol	ND	ug/L	5.00				
Dimethyl phthalate	ND	ug/L	5.00				
4,6-Dinitro-2-methylphenol	ND	ug/L	10.0				
2,4-Dinitrophenol	ND	ug/L	50.0				
2,4-Dinitrotoluene	ND	ug/L	5.00				
2,6-Dinitrotoluene	ND	ug/L	5.00				
Di-n-octyl phthalate	ND	ug/L	5.00				
Fluoranthene	ND	ug/L	2.00				
Fluorene	ND	ug/L	2.00				
Hexachlorobenzene	ND	ug/L	5.00				

CPS
LABORATORY MANAGER

ND - Not Detected

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

ent Name **Sverdrup Corporation**
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project #
FID #

ite ID Memphis Depot Dunnfield
Dunnfield System O&M

)ate Arrived 01/10/00
:TC Order Number 0001169

ETC Lab ID **0001169-01**
Sample ID: ST-EFF-020

Matrix :AQUEOUS
Sample Date :01/10/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Base/Neutral & Acid				01/11/00	01/12/00	PF	8270C
Hexachlorobutadiene	ND	ug/L	5.00				
Hexachlorocyclopentadiene	ND	ug/L	5.00				
Hexachloroethane	ND	ug/L	5.00				
Indeno(1,2,3-cd)pyrene	ND	ug/L	2.00				
Isophorone	ND	ug/L	5.00				
2-Methylnaphthalene	ND	ug/L	2.00				
2-Methylphenol (o-cresol)	ND	ug/L	5.00				
-Methylphenol (m-cresol)	ND	ug/L	5.00				
Methylphenol (p-cresol)	ND	ug/L	5.00				
Naphthalene	ND	ug/L	2.00				
Nitrobenzene	ND	ug/L	5.00				
2-Nitroaniline	ND	ug/L	5.00				
3-Nitroaniline	ND	ug/L	10.0				
4-Nitroaniline	ND	ug/L	5.00				
2-Nitrophenol	ND	ug/L	5.00				
4-Nitrophenol	ND	ug/L	5.00				
N-Nitrosodiphenylamine	ND	ug/L	5.00				
N-Nitrosodipropylamine	ND	ug/L	5.00				
Pentachlorophenol	ND	ug/L	10.0				
Phenanthrene	ND	ug/L	2.00				
Phenol	ND	ug/L	5.00				
Pyrene	ND	ug/L	2.00				
1,2,4-Trichlorobenzene	ND	ug/L	5.00				
2,4,5-Trichlorphenol	ND	ug/L	5.00				
2,4,6-Trichlorophenol	ND	ug/L	5.00				

urrogate Standard	% Recovery	QC Limits	
31 - Nitrobenzene-d5	88	29	110
S2 - 2-Fluorobiphenyl	75	38	107
S3 - 4-Terphenyl-d14	110	33	122
S4 - Phenol-d6	33	7	58
S5 - 2,4,6-Tribromophenol	86	16	138
S6 - 2-Fluorophenol	43	8	88

PPS
ORATORY MANAGER

ND - Not Detected

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
0001-169-1

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 0601006

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 01/12/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 7 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	127-18-4	TETRACHLOROETHYLENE	3.48	9.33	NJ
2.	692-47-7	3-HEXENE, 2,2,5,5-TETRAMETHY	4.06	5.47	NJ
3.	19780-60-0	3-ETHYL-2-METHYL-1-HEPTENE	4.30	12.10	NJ
4.	79-34-5	ETHANE, 1,1,2,2-TETRACHLORO-	4.35	63.08	NJ
5.	584-94-1	HEXANE, 2,3-DIMETHYL-	4.39	5.21	NJ
6.	565-75-3	PENTANE, 2,3,4-TRIMETHYL-	4.49	4.67	NJ
7.	2207-03-6	CYCLOHEXANE, 1,3-DIMETHYL-,	4.51	9.58	NJ
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FORM I BNA-GCMS-TIC

Environmental Testing & Consulting, Inc.

Quality Control Reports
Level III
Metals (ICP/GFAA/CV)

775 270

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
METALS - AQUEOUS

Client Name	Sverdrup Corporation
Project Name	Memphis Depot Dunnfield
ETC Order#	0001-169

HOLDING TIMES

QC Batch(s) for this order	ICP/GFAA	V18-AQ-44
	Mercury	V6-AQ-24
Sample Analysis	All samples digested and analyzed within 180 days of collection.	
Mercury Analysis	All samples analyzed within 28 days of collection.	

CALIBRATION

Initial Calibration	All criteria met.
Continuing Calibration	All criteria met.

SAMPLE ANALYSIS

Instrumentation: Thermo Jarrell Ash Enviro-I ICP
Varian 640Z Zeeman Graphite Furnace
Perkin Elmer 5100ZL Graphite Furnace
Perkin Elmer 6000 Graphite Furnace
Thermo Jarrell Ash AA-Scan 4 Graphite Furnace
CETAC M-6000A Mercury Analyzer

Dilutions Required: No dilutions required.

QUALITY CONTROL

0001-169.MQCBLANK

Method Blank

V18-AQ-44BLK	ICP/GFAA Metals
V6-AQ-24BLK	Mercury

No analytes detected in the Method Blank

0001-169.MQCLCS

Laboratory Control Sample(s)

V18-AQ-44LCS	ICP/GFAA Metals
V6-AQ-24LCS	Mercury

All criteria met.

0001-169.MQCMSMSD

Matrix Spike / Matrix Spike Dup - ICP Metals

0001-169-01	RPD	All analytes within QC limits.
ST-EFF-020	Spike Recovery	All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
METALS - AQUEOUS

Client Name Sverdrup Corporation
Project Name Memphis Depot Dunnfield

ETC Order# 0001-169

QUALITY CONTROL

Matrix Spike / Matrix Spike Dup - Graphite Metals

0001-169-01	RPD	All analytes within QC limits.
ST-EFF-020	Spike Recovery	All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Matrix Spike / Matrix Spike Dup - Hg

0001-169-01	RPD	All analytes within QC limits.
ST-EFF-020	Spike Recovery	All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Dilution Test Dilution result must agree within 10% of original result when sample is diluted by a factor of 5.

Post Digestion Spike Recovery must be +/-15% of expected value.

CD
Project Manager

WATER METHOD BLANK
METALS

Lab Name: Environmental Testing and Consulting, Inc

		QC Batch
Laboratory ID ICP/GFAA Metals	V18-AQ-44 BLK	V18-AQ-44
Laboratory ID Mercury	V6-AQ-24 BLK	V6-AQ-24
Date Sample Prepared	01/11/00	ICP/GFAA Metals
	01/12/00	Mercury

Metals	Concentration mg/L	Detection Limit mg/L	Date Analyzed	Method
Silver	ND	0.009	01/11/00	200.7
Aluminum	ND	0.060	01/11/00	200.7
Arsenic	ND	0.003	01/11/00	206.2
Barium	ND	0.003	01/11/00	200.7
Beryllium	ND	0.002	01/11/00	200.7
Calcium	ND	0.015	01/11/00	200.7
Cadmium	ND	0.005	01/11/00	200.7
Cobalt	ND	0.009	01/11/00	200.7
Chromium	ND	0.009	01/11/00	200.7
Copper	ND	0.008	01/11/00	200.7
Iron	ND	0.009	01/11/00	200.7
Potassium	ND	0.250	01/11/00	200.7
Magnesium	ND	0.040	01/11/00	200.7
Manganese	ND	0.003	01/11/00	200.7
Sodium	ND	0.050	01/11/00	200.7
Nickel	ND	0.020	01/11/00	200.7
Lead	ND	0.060	01/11/00	200.7
Antimony	ND	0.040	01/11/00	200.7
Selenium	ND	0.100	01/11/00	200.7
Thallium	ND	0.065	01/11/00	200.7
Vanadium	ND	0.010	01/11/00	200.7
Zinc	ND	0.010	01/11/00	200.7
Mercury	ND	0.0002	01/12/00	245.1

QC REVIEWED _____

WATER LABORATORY CONTROL SAMPLE
METALS

Lab Name: Environmental Testing and Consulting, Inc

			QC Batch
Laboratory Control ID	ICP/GFAA Metals	V18-AQ-44 LCS	V18-AQ-44
	Mercury	V6-AQ-24 LCS	V6-AQ-24
Date Prepared	ICP/GFAA Metals	01/11/00	
	Mercury	01/12/00	

Metals	Spike Added mg/L	Found mg/L	% R #	QC Limits	
Silver	0.250	0.267	107	80	120
Aluminum	2.50	2.58	103	80	120
Arsenic	0.063	0.063	100	85	115
Barium	2.50	2.46	98	80	120
Beryllium	0.250	0.268	107	80	120
Calcium	5.00	5.07	101	80	120
Cadmium	0.250	0.278	111	80	120
Cobalt	1.25	1.32	106	80	120
Chromium	0.500	0.536	107	80	120
Copper	0.500	0.528	106	80	120
Iron	2.50	2.69	108	80	120
Potassium	5.00	4.95	99	80	120
Magnesium	5.00	5.12	102	80	120
Manganese	0.250	0.259	104	80	120
Sodium	5.00	5.22	104	80	120
Nickel	1.25	1.33	106	80	120
Lead	1.25	1.37	110	80	120
Antimony	2.50	2.72	109	80	120
Selenium	1.25	1.41	113	80	120
Thallium	1.25	1.27	102	80	120
Vanadium	1.25	1.34	107	80	120
Zinc	0.250	0.273	109	80	120
Mercury	0.0050	0.0058	116	80	120

\# Column to be used to flag recovery values with an asterisk
* Values outside of QC limits

QC REVIEWED _____

WATER MATRIX SPIKE
METALS

Lab Name Environmental Testing and Consulting, Inc

		QC Batch
Laboratory ID MS ICP/GFAA Metals	0001-169-01	V18-AQ-44
Laboratory ID MS Mercury	0001-169-01	V6-AQ-24

Date Sample Prepared	01/11/00	ICP/GFAA Metals
	01/12/00	Mercury

Metals	SPIKE Added mg/L	SAMPLE Conc mg/L	MS Conc mg/L	RPD <20% #	MS % Rec #	QC Limits	
Silver	0.250	ND	0.268	1	107	75	125
Aluminum	2.50	ND	2.58	1	103	75	125
Arsenic	0.063	ND	0.072	1	114	85	115
Barium	2.50	0.099	2.52	0	97	75	125
Beryllium	0.250	ND	0.268	0	107	75	125
Calcium	5.00	19.9	24.4	0	90	75	125
Cadmium	0.250	ND	0.271	0	108	75	125
Cobalt	1.25	ND	1.31	2	105	75	125
Chromium	0.500	ND	0.538	1	108	75	125
Copper	0.500	ND	0.528	0	106	75	125
Iron	2.50	0.021	2.67	0	106	75	125
Potassium	5.00	0.752	5.84	1	102	75	125
Magnesium	5.00	10.6	15.4	1	96	75	125
Manganese	0.250	ND	0.255	0	102	75	125
Sodium	5.00	22.8	27.5	0	94	75	125
Nickel	1.25	ND	1.31	1	105	75	125
Lead	1.250	ND	1.34	2	107	75	125
Antimony	2.50	ND	2.70	0	108	75	125
Selenium	1.25	ND	1.39	0	111	75	125
Thallium	1.25	ND	1.25	1	100	75	125
Vanadium	1.25	ND	1.33	1	103	75	125
Zinc	0.250	0.038	0.309	1	124	75	125
Mercury	0.0050	ND	0.0060	0	120	75	125

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits
ND - Not Detected

QC REVIEWED _____

WATER MATRIX SPIKE DUPLICATE
METALS

Lab Name: Environmental Testing and Consulting, Inc

		QC Batch
Laboratory ID MS ICP/GFAA Metals	0001-169-01	V18-AQ-44
Laboratory ID MS Mercury	0001-169-01	V6-AQ-24

Date Sample Prepared	01/11/00	ICP/GFAA Metals
	01/12/00	Mercury

Metals	SPIKE Added mg/L	SAMPLE Conc mg/L	MSD Conc mg/L		MSD % Rec #	QC Limits	
Silver	0.250	ND	0.266		106	75	125
Aluminum	2.50	ND	2.55		102	75	125
Arsenic	0.063	ND	0.071		113	85	115
Barium	2.50	0.099	2.52		97	75	125
Beryllium	0.250	ND	0.267		107	75	125
Calcium	5.00	19.9	24.3		88	75	125
Cadmium	0.250	ND	0.271		108	75	125
Cobalt	1.25	ND	1.29		103	75	125
Chromium	0.500	ND	0.532		106	75	125
Copper	0.500	ND	0.526		105	75	125
Iron	2.50	0.021	2.66		106	75	125
Potassium	5.00	0.752	5.81		101	75	125
Magnesium	5.00	10.6	15.3		94	75	125
Manganese	0.250	ND	0.255		102	75	125
Sodium	5.00	22.8	27.5		94	75	125
Nickel	1.25	ND	1.30		104	75	125
Lead	1.25	ND	1.32		106	75	125
Antimony	2.50	ND	2.71		108	75	125
Selenium	1.25	ND	1.39		111	75	125
Thallium	1.25	ND	1.24		99	75	125
Vanadium	1.25	ND	1.32		103	75	125
Zinc	0.250	0.038	0.306		122	75	125
Mercury	0.0050	ND	0.0060		120	75	125

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits
ND - Not Detected

QC REVIEWED _____

Environmental Testing & Consulting, Inc.

Quality Control Reports
Level III
GC/MS Volatiles

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
GC/MS VOLATILE COMPOUNDS - AQUEOUS

Client Name	Sverdrup Corporation
Project Name	Memphis Depot Dunnfield
ETC Order#	0001-169
Method (SW-846)	8260B/5030B

SAMPLE PRESERVATION (Verified at time of analysis)

All aqueous samples preserved to pH < 2.

HOLDING TIMES

Sample Analysis — All samples analyzed within 14 days of collection.

QUALITY CONTROL

QC Batch	Form 4 Summary
V1011001	V1101111LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits, except as listed below.

Surrogate Toluene-d8 was flagged for slightly low recovery (1%) for sample 0001-169-01(ST-EFF-020-DIL). This slightly low recovery does not affect the sample results. The sample was analyzed at a lower dilution with surrogate recovery within control limits.

Method Blank FORM 4
V1011111LB

Target Analytes were not detected in the Method Blanks, except as listed below.

Methylene Chloride detected at 3.67J ug/L. This analyte was not detected in the samples. There is no effect on the data.

Laboratory Control Sample FORM 3
V1011111LCS

All acceptance criteria met, except as listed below.

Recoveries for Bromomethane and Iodomethane exceeded the control limits. These analytes were not detected in the sample. There is no effect on the data.

Matrix Spike / Matrix Spike Dup. FORM 3
Batch V1011101

0001-169-01	RPD	All analytes within QC limits.
ST-EFF-020	Spike Recovery	All analytes within QC limits, except as listed below.

Trichloroethene is flagged for slightly low recovery in the Matrix Spike and Matrix Spike Duplicate. This analyte was not detected in the samples. There is no effect on the data.

Refer to Laboratory Control Sample(s) for system verification.

CALIBRATION

BFB Daily 12-Hour Tune	All criteria met. FORM 5
Initial Calibration	All criteria met. FORM 6
Calibration Verification	All criteria met. FORM 7, except as listed below.

775 278

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
GC/MS VOLATILE COMPOUNDS - AQUEOUS

Client Name	Sverdrup Corporation
Project Name	Memphis Depot Dunnfield
ETC Order#	0001-169
Method (SW-846)	8260B/5030B

CALIBRATION

Calibration Verification (CV): Date 01/11/00 Time: 1324

Analyte	%Diff (30% Max)	Response
Bromomethane	+40.8	High
Iodomethane	+54.8	High

This CV affected all batch samples. High responses indicate that reported levels for these analytes may be bias high. These analytes were not identified in associated project samples and there is no effect on the analysis of the samples. The high recovery may account for high LCS recovery.

Volatile Internal Standard Area and RT FORM 8
Daily Check Standard(s) Internal Standard Areas and Retention Times within QC limits.

SAMPLE ANALYSIS

Instrumentation	HP 5890 Series II GC, 5971MSD
Dilutions Required	No dilutions required, except as listed below.

Dilution of 1:50 was performed on sample 0001-169-01(ST-EFF-020) to bring Target Analyte(s) within calibration range.

CDS
Project Manager

FORM 2
WATER VOA-GCMS SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

	CLIENT SAMPLE NO.	SMC1 #	SMC2 (TOL) #	SMC3 (BFB) #	OTHER	TOT OUT
01	V1011111LCS	98	95	85		0
02	V1011111LB	103	100	86		0
03	0001-169-2	108	95	87		0
04	0001-169-1	101	86	89		0
05	0001-169-1	100	85*	84		1
06	0001-169-1MS	110	96	85		0
07	0001-169-1MS	106	98	86		0
08						
09						
10						
11						
12						
13						
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		QC LIMITS
SMC1	= Dibromofluoromethane	(74-123)
SMC2 (TOL)	= Toluene-d8	(86-112)
SMC3 (BFB)	= Bromofluorobenzene	(81-115)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 4
VOA-GCMS METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

775 280

V1011111LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Lab File ID: 0401002 Lab Prep Batch: V1011101

Date Analyzed: 01/11/00 Time Analyzed: 1459

GC Column: ID: 2 (mm) Heated Purge: (Y/N) Y

Instrument ID: VOC1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	V1011111LCS	V1011101	0201002LCS	1324
02	0001-169-2	V1011101	0501003	1601
03	0001-169-1	V1011101	0601004	1643
04	0001-169-1	V1011101	0701005	1725
05	0001-169-1MS	V1011101	1501013	2302
06	0001-169-1MS	V1011101	1601014	2344
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COMMENTS:

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V1011111LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Matrix: (soil/water) WATER Lab Prep Batch: V1011101

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0401002

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 01/11/00

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	20.00	U
75-05-8	Acetonitrile	50.00	U
107-02-8	Acrolein	20.00	U
107-13-1	Acrylonitrile	20.00	U
107-05-1	Allyl chloride	1.00	U
71-43-2	Benzene	1.00	U
108-86-1	Bromobenzene	1.00	U
74-97-5	Bromochloromethane	1.00	U
75-27-4	Bromodichloromethane	1.00	U
75-25-2	Bromoform	1.00	U
74-83-9	Bromomethane	1.00	U
78-93-3	2-Butanone	20.00	U
104-51-8	n-Butylbenzene	1.00	U
135-98-8	sec-Butylbenzene	1.00	U
98-06-6	tert-Butylbenzene	1.00	U
75-15-0	Carbon Disulfide	1.00	U
56-23-5	Carbon Tetrachloride	1.00	U
108-90-7	Chlorobenzene	1.00	U
124-48-1	Chlorodibromomethane	1.00	U
75-00-3	Chloroethane	1.00	U
110-75-8	2-Chloroethyl vinyl Ether	5.00	U
67-66-3	Chloroform	1.00	U
74-87-3	Chloromethane	1.00	U
126-99-8	Chloroprene	1.00	U
95-49-8	2-Chlorotoluene	1.00	U
106-43-4	4-Chlorotoluene	1.00	U
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U
106-93-4	1,2-Dibromoethane	1.00	U
74-95-3	Dibromomethane	1.00	U
95-50-1	1,2-Dichlorobenzene	1.00	U
541-73-1	1,3-Dichlorobenzene	1.00	U
106-46-7	1,4-Dichlorobenzene	1.00	U
1476-11-5	cis-1,4-Dichloro-2-butene	1.00	U

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V1011111LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Matrix: (soil/water) WATER Lab Prep Batch: V1011101

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0401002

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 01/11/00

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.00	U
75-71-8	Dichlorodifluoromethane	1.00	U
75-34-3	1,1-Dichloroethane	1.00	U
107-06-2	1,2-Dichloroethane	1.00	U
75-35-4	1,1-Dichloroethene	1.00	U
156-59-2	cis-1,2-Dichloroethene	1.00	U
156-60-5	trans-1,2-Dichloroethene	1.00	U
78-87-5	1,2-Dichloropropane	1.00	U
142-28-9	1,3-Dichloropropane	1.00	U
594-20-7	2,2-Dichloropropane	1.00	U
563-58-6	1,1-Dichloropropene	1.00	U
10061-01-5	cis-1,3-Dichloropropene	1.00	U
10061-02-6	trans-1,3-Dichloropropene	1.00	U
108-20-3	Di isopropyl ether	5.00	U
123-91-1	1,4-Dioxane	100.0	U
141-78-6	Ethyl Acetate	10.00	U
100-41-4	Ethylbenzene	1.00	U
97-63-2	Ethyl methacrylate	1.00	U
110-00-9	Furan	1.00	U
87-68-3	Hexachlorobutadiene	1.00	U
110-54-3	Hexane	20.00	U
591-78-6	2-Hexanone	5.00	U
74-88-4	Iodomethane	1.00	U
78-83-1	Isobutyl Alcohol	100.0	U
98-82-8	Isopropylbenzene	1.00	U
99-87-6	4-Isopropyltoluene	1.00	U
126-98-7	Methacrylonitrile	10.00	U
75-09-2	Methylene Chloride	3.67	J
80-62-6	Methyl methacrylate	2.00	U
108-10-1	4-Methyl-2-Pentanone	5.00	U
1634-04-4	Methyl-tertbutyl-Ether	1.00	U
91-20-3	Naphthalene	1.00	U
76-01-7	Pentachloroethane	1.00	U

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V1011111LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Matrix: (soil/water) WATER Lab Prep Batch: V1011101

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0401002

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 01/11/00

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
107-12-0	Propionitrile	10.00	U
109-60-4	n-Propyl Acetate	1.00	U
103-65-1	n-Propylbenzene	1.00	U
100-42-5	Styrene	1.00	U
630-20-6	1,1,1,2-Tetrachloroethane	1.00	U
79-34-5	1,1,2,2-Tetrachloroethane	1.00	U
127-18-4	Tetrachloroethene	1.00	U
109-99-9	Tetrahydrofuran	20.00	U
108-88-3	Toluene	1.00	U
87-61-6	1,2,3-Trichlorobenzene	1.00	U
120-82-1	1,2,4-Trichlorobenzene	1.00	U
71-55-6	1,1,1-Trichloroethane	1.00	U
79-00-5	1,1,2-Trichloroethane	1.00	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	1.00	U
79-01-6	Trichloroethene	1.00	U
75-69-4	Trichlorofluoromethane	1.00	U
96-18-4	1,2,3-Trichloropropane	1.00	U
95-63-6	1,2,4-Trimethylbenzene	1.00	U
108-67-8	1,3,5-Trimethylbenzene	1.00	U
108-05-4	Vinyl Acetate	20.00	U
75-01-4	Vinyl Chloride	1.00	U
108-38-3	Xylene-mp	2.00	U
95-47-6	Xylene-o	1.00	U

775 284

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

V1011111LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0401002

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 01/11/00

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM 3
WATER VOA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: V1011101

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Matrix Spike - Sample No.: V1011111LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Acetone	100.0		93.62	94	59-151
Acetonitrile	1000		1153	115	57-143
Acrolein	100.0		117.1	117	59-134
Acrylonitrile	100.0		98.16	98	60-146
Allyl chloride	100.0		101.6	102	74-120
Benzene	100.0		104.6	105	72-124
Bromobenzene	100.0		101.1	101	77-120
Bromochloromethane	100.0		106.3	106	74-120
Bromodichloromethane	100.0		85.45	85	68-119
Bromoform	100.0		94.46	94	66-136
Bromomethane	100.0		140.8	141*	40-134
2-Butanone	100.0		120.4	120	55-151
n-Butylbenzene	100.0		96.45	96	69-129
sec-Butylbenzene	100.0		83.78	84	72-127
tert-Butylbenzene	100.0		90.19	90	73-126
Carbon Disulfide	100.0		112.8	113	60-133
Carbon Tetrachloride	100.0		88.98	89	64-123
Chlorobenzene	100.0		100.1	100	77-112
Chlorodibromomethane	100.0		96.85	97	72-118
Chloroethane	100.0		108.7	109	64-142
2-Chloroethyl vinyl Eth	100.0		100.6	101	22-165
Chloroform	100.0		98.18	98	70-115
Chloromethane	100.0		123.6	124	58-139
Chloroprene	100.0		98.29	98	73-118
2-Chlorotoluene	100.0		85.18	85	65-132
4-Chlorotoluene	100.0		86.08	86	67-127
1,2-Dibromo-3-chloropro	100.0		76.94	77	56-134
1,2-Dibromoethane	100.0		97.98	98	74-118

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: V1011101

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Matrix Spike - Sample No.: V1011111LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Dibromomethane	100.0		90.54	90	75-114
1,2-Dichlorobenzene	100.0		100.2	100	80-113
1,3-Dichlorobenzene	100.0		106.2	106	77-119
1,4-Dichlorobenzene	100.0		105.3	105	78-116
cis-1,4-Dichloro-2-bute	100.0		96.36	96	62-138
trans-1,4-Dichloro-2-bu	100.0		93.81	94	62-138
Dichlorodifluoromethane	100.0		78.94	79	48-145
1,1-Dichloroethane	100.0		94.05	94	76-118
1,2-Dichloroethane	100.0		91.14	91	62-124
1,1-Dichloroethene	100.0		92.22	92	69-121
cis-1,2-Dichloroethene	100.0		109.2	109	76-114
trans-1,2-Dichloroethen	100.0		102.4	102	72-121
1,2-Dichloropropane	100.0		100.6	101	64-133
1,3-Dichloropropane	100.0		98.87	99	68-128
2,2-Dichloropropane	100.0		91.55	92	67-132
1,1-Dichloropropene	100.0		105.7	106	76-117
cis-1,3-Dichloropropene	100.0		91.38	91	77-120
trans-1,3-Dichloroprope	100.0		96.88	97	73-124
Di isopropyl ether	100.0		110.4	110	62-160
1,4-Dioxane	2000		1879	94	56-131
Ethyl Acetate	100.0		109.6	110	52-151
Ethylbenzene	100.0		86.02	86	77-111
Ethyl methacrylate	200.0		180.9	90	57-140
Furan	100.0		100.7	101	52-124
Hexachlorobutadiene	100.0		99.50	100	69-137
Hexane	100.0		130.1	130	70-130
2-Hexanone	100.0		101.8	102	53-144
Iodomethane	100.0		154.8	155*	51-153

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - AQUEOUS

Client Name	Sverdrup Corporation
Project Name	DDMT- Dunn Field
ETC Order#	0002-422
Method (SW-846)	8270C/3510C

HOLDING TIMES

Sample Extraction	All aqueous samples extracted within 7 days.
Sample Analysis	All samples analyzed within 40 days of extraction.

QUALITY CONTROL

QC Batch	Form 4 Summary
P05295	P05295LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits, except as listed below.

Terphenyl-d14 exceeded control limits for samples 0002-422-01MS and MSD. There is minimal effect on the data.

Method Blank FORM 4
P05295LB

Target analytes were not detected in the Method Blanks, except as listed below.

The following analytes were detected in the Method Blank at the following concentrations. These analytes were not detected in the associated samples. There is no effect on the data.

Analyte	Concentration found in Blank
Benzo(ghi)perylene	4.68 ug/L
Dibenzo(ah)anthracene	4.40 ug/L
Indeno(1,2,3-cd)pyrene	4.38 ug/L

Laboratory Control Sample FORM 3
P05295LCS

All acceptance criteria met, except as listed below.

N-nitrosodi-n-propylamine was flagged for slightly low recovery in the LCS. This slightly low recovery does not affect the data. The laboratory spiked the LCS with all target compounds and all recoveries were within QC Limits except as previously noted. Due to the large number of spike compounds, it is likely that a few compounds may be out of control limits. It is ETC, Inc. QC policy that 90% of all spike compound recoveries are within control limits. The LCS complies with this requirement.

Matrix Spike / Matrix Spike Dup FORM 3
Batch P05295

0002-422-01	RPD	All analytes within QC limits.
ST-EFF-021	Spike Recovery	All analytes within QC limits, except as listed below.

4-Nitrophenol was flagged below control limits in the MS/MSD. Target analytes were not detected in the samples. There is no effect on the data.

Refer to Laboratory Control Sample(s) for system verification.

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - AQUEOUS

Client Name	Sverdrup Corporation
Project Name	DDMT- Dunn Field
ETC Order#	0002-422
Method (SW-846)	8270C/3510C

CALIBRATION

DFTPP Daily 12-Hour Tune	All criteria met. FORM 5
Initial Calibration	All criteria met. FORM 6
Calibration Verification	All criteria met. FORM 7, except as listed below.

Calibration Verification (CV): Date 02/17/00 Time: 1113

Analyte	%Diff(30% Max)	Response
Pyrene	-67.3	Low
Terphenyl-d14	+37.4	High (Surrogate)

Samples affected by this CV include 0002-422-01, 0002-422-02, P05295LB, and P05295LCS. High response indicates that reported levels for this surrogate may be biased high. Terphenyl-d14 was within control limits for all samples except as stated above. Low response indicates that reported levels for this analyte may be biased low. Pyrene was not identified in associated project samples.

Semi-Volatile Internal Standard Area and RT FORM 8
Daily Check Standard(s) Internal Standard Areas and Retention Times within QC limits.

SAMPLE ANALYSIS

Instrumentation	HP 5890 Series II GC, 5971MSD
Dilutions Required	No dilutions required.

CPS
Project Manager

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ANALYTICAL SUMMARY TABLE

Client Name Sverdrup Corporation
Site ID DDMT-Dunn Field

LTC Sample ID	Field ID	Matrix	Method	Method Description
00242201	ST-EFF-021	AQUEOUS	200.7	Silver
00242201	ST-EFF-021	AQUEOUS	200.7	Aluminum
00242201	ST-EFF-021	AQUEOUS	206.2	Arsenic
00242201	ST-EFF-021	AQUEOUS	8270C	GC/MS Base/Neutral & Acid
00242201	ST-EFF-021	AQUEOUS	200.7	Barium
00242201	ST-EFF-021	AQUEOUS	200.7	Beryllium
00242201	ST-EFF-021	AQUEOUS	200.7	Calcium
00242201	ST-EFF-021	AQUEOUS	200.7	Cadmium
00242201	ST-EFF-021	AQUEOUS	200.7	Cobalt
00242201	ST-EFF-021	AQUEOUS	200.7	Chromium
00242201	ST-EFF-021	AQUEOUS	200.7	Copper
00242201	ST-EFF-021	AQUEOUS	200.7	Iron
00242201	ST-EFF-021	AQUEOUS	245.1	Mercury
00242201	ST-EFF-021	AQUEOUS	200.7	Potassium
00242201	ST-EFF-021	AQUEOUS	200.7	Magnesium
00242201	ST-EFF-021	AQUEOUS	200.7	Manganese
00242201	ST-EFF-021	AQUEOUS	200.7	Sodium
00242201	ST-EFF-021	AQUEOUS	200.7	Nickel
00242201	ST-EFF-021	AQUEOUS	200.7	Lead
00242201	ST-EFF-021	AQUEOUS	150.1	pH
00242201	ST-EFF-021	AQUEOUS	200.7	Antimony
00242201	ST-EFF-021	AQUEOUS	200.7	Selenium
00242201	ST-EFF-021	AQUEOUS	200.7	Thallium
00242201	ST-EFF-021	AQUEOUS	8260B	GC/MS Volatile Organics
00242201	ST-EFF-021	AQUEOUS	200.7	Vanadium
00242201	ST-EFF-021	AQUEOUS	200.7	Zinc
00242202	ST-EFF-121	AQUEOUS	200.7	Silver
00242202	ST-EFF-121	AQUEOUS	200.7	Aluminum
00242202	ST-EFF-121	AQUEOUS	206.2	Arsenic
00242202	ST-EFF-121	AQUEOUS	8270C	GC/MS Base/Neutral & Acid
00242202	ST-EFF-121	AQUEOUS	200.7	Barium
00242202	ST-EFF-121	AQUEOUS	200.7	Beryllium
00242202	ST-EFF-121	AQUEOUS	200.7	Calcium
00242202	ST-EFF-121	AQUEOUS	200.7	Cadmium
00242202	ST-EFF-121	AQUEOUS	200.7	Cobalt
00242202	ST-EFF-121	AQUEOUS	200.7	Chromium
00242202	ST-EFF-121	AQUEOUS	200.7	Copper
00242202	ST-EFF-121	AQUEOUS	200.7	Iron
00242202	ST-EFF-121	AQUEOUS	245.1	Mercury
00242202	ST-EFF-121	AQUEOUS	200.7	Potassium
00242202	ST-EFF-121	AQUEOUS	200.7	Magnesium
00242202	ST-EFF-121	AQUEOUS	200.7	Manganese
00242202	ST-EFF-121	AQUEOUS	200.7	Sodium
00242202	ST-EFF-121	AQUEOUS	200.7	Nickel
00242202	ST-EFF-121	AQUEOUS	200.7	Lead
00242202	ST-EFF-121	AQUEOUS	150.1	pH
00242202	ST-EFF-121	AQUEOUS	200.7	Antimony
00242202	ST-EFF-121	AQUEOUS	200.7	Selenium
00242202	ST-EFF-121	AQUEOUS	200.7	Thallium
00242202	ST-EFF-121	AQUEOUS	8260B	GC/MS Volatile Organics
00242202	ST-EFF-121	AQUEOUS	200.7	Vanadium
00242202	ST-EFF-121	AQUEOUS	200.7	Zinc
00242203	Trip Blank	AQUEOUS	8260B	GC/MS Volatile Organics

Environmental Testing & Consulting, Inc.

Sample Reports

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

lient Name Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-10000003

Site ID DDMT-Dunn Field

Date Arrived 02/16/00
ETC Order Number 0002422

ETC Lab ID **0002422-01**
Sample ID: ST-EFF-021

Matrix :AQUEOUS
Sample Date :02/15/00

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED	BY	METHOD
pH	6.1	SU		0955	02/16/00	RB	150.1

ABORATORY MANAGER

775 292

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-10000003

Site ID: DDMT-Dunn Field

Date Arrived 02/16/00
ETC Order Number 0002422

ETC Lab ID **0002422-02**
Sample ID: ST-EFF-121

Matrix :AQUEOUS
Sample Date :02/15/00

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED	BY	METHOD
pH	5.4	SU		0955	02/16/00	RB	150.1

LABORATORY MANAGER

Environmental Testing & Consulting, Inc.

Login pH Logbook

Date: 2/16/00

North Seed: 7.5

South Seed: 7.3

pH Meter 1
4.00 - 7.00
159
116
7.00
3.98

pH Meter 2
7.00 - 10.00
185
10
6.99
10.06

Client	Sample Date	pH	Time
Cargill Steel	2/15-16	9.3	0815
Sverdup-021	2/15	6.1	0955
121		5.4	
Meeman		5.6	
CCL-North	2/16	8.9	1005
Cochran	2/15	6.4	1105
HW	2/16	9.7	
Metal Prep	2/15-16	7.7	
Cargill E	2/14	6.6	
W		7.1	
E	2/15	4.9	
W		6.7	
Fleisch	2/15	7.0	
	2/16	6.7	
Hogslat G	2/15	6.9	1210
C		7.0	1
Buckeye	2/15	9.2	1215
O.O.S.	2/15	8.0	
DC		7.8	
Bucklab	2/16	10.1	
Pond	2/14	7.9	
	2/15	7.8	
Collier-Carrier		7.1	
NorthMS-Happy		7.0	1310
TL #1		7.0	
TL #2		7.1	

pH Verified by: (RB)

slop/phlog1.doc

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-10000003

Site ID: DDMT-Dunn Field

Date Arrived 02/16/00
ETC Order Number 0002422

ETC Lab ID **0002422-01**
Sample ID: ST-EFF-021

Matrix :AQUEOUS
Sample Date :02/15/00

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED	BY	METHOD
Mercury Digestion Batch	V6-AQ-34					SH	245.1
Metals Digestion Batch	V19-AQ-03					NR	3030K
Silver	<0.009	mg/L	0.009	0937	02/21/00	SH	200.7
Aluminum	<0.060	mg/L	0.060	0937	02/21/00	SH	200.7
Arsenic	<0.003	mg/L	0.003	0545	02/18/00	JF	206.2
Barium	0.106	mg/L	0.003	0937	02/21/00	SH	200.7
Beryllium	<0.002	mg/L	0.002	0937	02/21/00	SH	200
Calcium	21.0	mg/L	0.015	0937	02/21/00	SH	200.
Cadmium	<0.005	mg/L	0.005	0937	02/21/00	SH	200.7
Cobalt	<0.009	mg/L	0.009	0937	02/21/00	SH	200.7
Chromium	<0.009	mg/L	0.009	0937	02/21/00	SH	200.7
Copper	<0.008	mg/L	0.008	0937	02/21/00	SH	200.7
Iron	0.114	mg/L	0.009	0937	02/21/00	SH	200.7
Mercury	<0.0002	mg/L	0.0002	1614	02/16/00	SH	245.1
Potassium	0.816	mg/L	0.250	0937	02/21/00	SH	200.7
Magnesium	10.8	mg/L	0.040	0937	02/21/00	SH	200.7
Manganese	0.025	mg/L	0.003	0937	02/21/00	SH	200.7
Sodium	22.7	mg/L	0.050	0937	02/21/00	SH	200.7
Nickel	<0.020	mg/L	0.020	0937	02/21/00	SH	200.7
Lead	<0.060	mg/L	0.060	0937	02/21/00	SH	200.7
Antimony	<0.040	mg/L	0.040	0937	02/21/00	SH	200.7
Selenium	<0.100	mg/L	0.100	0937	02/21/00	SH	200.7
Thallium	<0.065	mg/L	0.065	0937	02/21/00	SH	200.7
Vanadium	<0.010	mg/L	0.010	0937	02/21/00	SH	200.7
Zinc	0.305	mg/L	0.010	0937	02/21/00	SH	200.7

CBS
LABORATORY MANAGER

FORM 3
WATER VOA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: V1011101

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Matrix Spike - Sample No.: V1011111LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Isobutyl Alcohol	2000		1985	99	60-134
Isopropylbenzene	100.0		88.42	88	74-125
4-Isopropyltoluene	100.0		85.77	86	72-127
Methacrylonitrile	1000		1023	102	70-125
Methylene Chloride	100.0		104.8	105	76-115
Methyl methacrylate	200.0		189.1	94	57-147
4-Methyl-2-Pentanone	100.0		98.69	99	42-144
Methyl-tertbutyl-Ether	100.0		81.49	81	62-122
Naphthalene	100.0		103.3	103	53-124
Pentachloroethane	100.0		104.1	104	78-126
Propionitrile	1000		1067	107	58-139
n-Propyl Acetate	100.0		104.3	104	88-170
n-Propylbenzene	100.0		84.28	84	75-125
Styrene	100.0		96.02	96	77-117
1,1,1,2-Tetrachloroetha	100.0		87.99	88	79-113
1,1,2,2-Tetrachloroetha	100.0		99.69	100	67-126
Tetrachloroethene	100.0		100.1	100	77-115
Tetrahydrofuran	100.0		102.1	102	76-181
Toluene	100.0		96.56	96	77-115
1,2,3-Trichlorobenzene	100.0		109.4	109	62-132
1,2,4-Trichlorobenzene	100.0		107.5	108	68-132
1,1,1-Trichloroethane	100.0		88.79	89	63-122
1,1,2-Trichloroethane	100.0		95.93	96	69-117
1,1,2-trichloro-1,2,2-t	100.0		95.57	96	70-130
Trichloroethene	100.0		94.18	94	75-113
Trichlorofluoromethane	100.0		81.58	82	55-130
1,2,3-Trichloropropane	100.0		88.61	89	62-130
1,2,4-Trimethylbenzene	100.0		83.80	84	69-126

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC,INC. Lab Prep Batch: V1011101

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Matrix Spike - Sample No.: V1011111LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,3,5-Trimethylbenzene	100.0		85.67	86	69-128
Vinyl Acetate	100.0		74.15	74	28-146
Vinyl Chloride	100.0		105.2	105	65-134
Xylene-mp	200.0		191.6	96	77-115
Xylene-o	100.0		100.8	101	77-115

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 2 out of 89 outside limits

COMMENTS: _____

FORM 3
WATER VOA-GCMS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC,INC. Lab Prep Batch: V1011101

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Matrix Spike - Sample No.: 0001-169-1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Benzene	100.0	0.000	105.6	106	72-124
Chlorobenzene	100.0	0.000	96.33	96	77-112
1,1-Dichloroethene	100.0	14.68	108.2	94	69-121
Toluene	100.0	0.000	96.29	96	77-115
Trichloroethene	100.0	188.6	244.8	56*	75-113

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Benzene	100.0	104.2	104	2	20	72-124
Chlorobenzene	100.0	100.5	100	4	20	77-112
1,1-Dichloroethene	100.0	107.1	92	2	20	69-121
Toluene	100.0	99.40	99	3	20	77-115
Trichloroethene	100.0	247.4	59*	5	20	75-113

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 2 out of 10 outside limits

COMMENTS: _____

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Environmental Testing & Consulting, Inc.

Quality Control Reports
Level III
GC/MS Semi-Volatiles

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - AQUEOUS

Client Name	Sverdrup Corporation
Project Name	Memphis Depot Dunnfield
ETC Order#	0001-169
Method (SW-846)	8270C/3510C

HOLDING TIMES

Sample Extraction	All aqueous samples extracted within 7 days.
Sample Analysis	All samples analyzed within 40 days of extraction.

QUALITY CONTROL

QC Batch	Form 4 Summary
P05882	P05882LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.

Method Blank FORM 4
P05882LB

Target analytes were not detected in the Method Blanks, except as listed below.

Bis(2-ethylhexyl)phthalate detected at 6.94 ug/L. This analyte was not detected in the sample. There is no effect on the data.

Laboratory Control Sample FORM 3
P05882LCS

All acceptance criteria met, except as listed below.

Chrysene was flagged for slightly low recovery in the LCS. This analyte was not detected in the sample. There is no effect on the data.

Matrix Spike / Matrix Spike Dup FORM 3
Batch P05882

0001-169-01	RPD	All analytes within QC limits.
ST-EFF-020	Spike Recovery	All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

CALIBRATION

DFTPP Daily 12 Hour Tune	All criteria met. FORM 5
Initial Calibration	All criteria met. FORM 6
Calibration Verification	All criteria met. FORM 7, except as listed below.

Calibration Verification(CV) : Date 01/12/00 Time: 1117/1151

Analyte	%Diff(30% Max)	Response
Bis(2-chloroethyl)ether	+42.8	High
Nitrobenzene-d5(Surrogate)	+37.4	High

This CV affected all batch samples. High responses indicate that reported levels for these analytes may be bias high. These analytes were not identified in the sample. High response also did not affect LCS or MS/MSD recovery.

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ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - AQUEOUS

Client Name	Sverdrup Corporation
Project Name	Memphis Depot Dunnfield
ETC Order#	0001-169
Method (SW-846)	8270C/3510C

CALIBRATION

Semi-Volatile Internal Standard Area and RT FORM 8
Daily Check Standard(s) Internal Standard Areas and Retention Times within QC limits.

SAMPLE ANALYSIS

Instrumentation	HP 5890 Series II GC, 5971MSD
Dilutions Required	No dilutions required.

Project Manager

FORM 2
WATER BNA-GCMS SURROGATE RECOVERY

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

	CLIENT SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (TBP) #	S6 (2FP) #	S7 #	S8 #	TOT OUT
01	P05882LB	94	77	104	35	92	46			0
02	P05882LCS	94	81	97	32	98	47			0
03	0001-169-1	88	75	110	33	86	43			0
04	0001-169-1MS	92	82	107	34	91	46			0
05	0001-169-1MS	96	86	112	37	98	49			0
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		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(29-110)
S2 (FBP)	= 2-Fluorobiphenyl	(38-107)
S3 (TPH)	= Terphenyl-d14	(33-122)
S4 (PHL)	= Phenol-d6	(7- 58)
S5 (TBP)	= 2,4,6-Tribromophenol	(16-138)
S6 (2FP)	= 2-Fluorophenol	(8- 88)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 4
BNA-GCMS METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

P05882LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Lab File ID: 0401004 Lab Prep Batch: P05882

Instrument ID: BNA1 Date Extracted:

Matrix: (soil/water) WATER Date Analyzed: 01/12/00

Level: (low/med) LOW Time Analyzed: 1225

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	P05882LCS	P05882	0501005	01/12/00
02	0001-169-1	P05882	0601006	01/12/00
03	0001-169-1MS	P05882	1201012	01/12/00
04	0001-169-1MS	P05882	1301013	01/12/00
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COMMENTS:

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
P05882LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Matrix: (soil/water) WATER Lab Prep Batch: P05882

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 0401004

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 01/12/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
83-32-9	Acenaphthene	2.00	U
208-96-8	Acenaphthylene	2.00	U
98-86-2	Acetophenone	5.00	U
62-53-3	Aniline	5.00	U
120-12-7	Anthracene	2.00	U
92-87-5	Benzidine	20.00	U
56-55-3	Benz(a)Anthracene	2.00	U
205-99-2	Benzo(b)fluoranthene	2.00	U
207-08-9	Benzo(k)fluoranthene	2.00	U
191-24-2	Benzo(ghi)perylene	2.00	U
50-32-8	Benzo(a)pyrene	2.00	U
65-85-0	Benzoic acid	50.00	U
100-51-6	Benzyl alcohol	5.00	U
111-91-1	Bis(2-chloroethoxy)methane	5.00	U
111-44-4	Bis(2-chloroethyl)ether	5.00	U
108-60-1	Bis(2-chloroisopropyl)ether	5.00	U
117-81-7	Bis(2-ethylhexyl)phthalate	6.94	
101-55-3	4-Bromophenyl phenyl ether	5.00	U
85-68-7	Butyl benzyl phthalate	5.00	U
86-74-8	Carbazole	10.00	U
106-47-8	4-Chloroaniline	5.00	U
510-15-6	Chlorobenzilate	5.00	U
59-50-7	4-Chloro-3-methylphenol	5.00	U
91-58-7	2-Chloronaphthalene	5.00	U
95-57-8	2-Chlorophenol	5.00	U
7005-72-3	4-Chlorophenyl phenyl ether	5.00	U
218-01-9	Chrysene	2.00	U
53-70-3	Dibenz(a,h)anthracene	2.00	U
132-64-9	Dibenzofuran	5.00	U
84-74-2	Di-n-butyl phthalate	5.00	U
95-50-1	1,2-Dichlorobenzene	5.00	U
541-73-1	1,3-Dichlorobenzene	5.00	U
106-46-7	1,4-Dichlorobenzene	5.00	U

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FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
P05882LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Matrix: (soil/water) WATER Lab Prep Batch: P05882

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 0401004

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 01/12/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-94-1	3,3'-Dichlorobenzidine	10.00	U
120-83-2	2,4-Dichlorophenol	5.00	U
87-65-0	2,6-Dichlorophenol	5.00	U
84-66-2	Diethyl phthalate	5.00	U
119-93-7	3,3-Dimethylbenzidine	10.00	U
105-67-9	2,4-Dimethyphenol	5.00	U
131-11-3	Dimethyl phthalate	5.00	U
534-52-1	4,6-Dinitro-2-methylphenol	10.00	U
51-28-5	2,4-Dinitrophenol	20.00	U
121-14-2	2,4-Dinitrotoluene	5.00	U
606-20-2	2,6-Dinitrotoluene	5.00	U
122-39-4	N-Nitrsdiphylam/Diphenylamin	5.00	U
117-84-0	Di-n-octyl phthalate	5.00	U
62-50-0	Ethyl methanesulfonate	5.00	U
206-44-0	Fluoranthene	2.00	U
86-73-7	Fluorene	2.00	U
118-74-1	Hexachlorobenzene	5.00	U
87-68-3	Hexachlorobutadiene	5.00	U
77-47-4	Hexachlorocyclopentadiene	5.00	U
67-72-1	Hexachloroethane	5.00	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.00	U
78-59-1	Isophorone	5.00	U
66-27-3	Methyl methanesulfonate	5.00	U
91-57-6	2-Methylnaphthalene	5.00	U
95-48-7	2-Methylphenol	5.00	U
108-39-4	3&4-Methylphenol	5.00	U
91-20-3	Naphthalene	5.00	U
88-74-4	2-Nitroaniline	10.00	U
99-09-2	3-Nitroaniline	10.00	U
100-01-6	4-Nitroaniline	10.00	U
98-95-3	Nitrobenzene	5.00	U
88-75-5	2-Nitrophenol	10.00	U
100-02-7	4-Nitrophenol	5.00	U

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

P05882LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Matrix: (soil/water) WATER Lab Prep Batch: P05882

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 0401004

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 01/12/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
924-16-3	N-Nitrosodibutylamine	5.00	U
55-18-5	N-Nitrosodiethylamine	5.00	U
62-75-9	N-Nitrosodimethylamine	5.00	U
621-64-7	N-Nitrosodi-n-propylamine	5.00	U
82-68-8	Pentachloronitrobenzene	10.00	U
87-86-5	Pentachlorophenol	5.00	U
62-44-2	Phenacetin	5.00	U
85-01-8	Phenanthrene	2.00	U
108-95-2	Phenol	5.00	U
129-00-0	Pyrene	2.00	U
110-86-1	Pyridine	5.00	U
95-94-3	1,2,4,5-Tetrachlorobenzene	5.00	U
58-90-2	2,3,4,6-Tetrachlorophenol	5.00	U
120-82-1	1,2,4-Trichlorobenzene	5.00	U
95-95-4	2,4,5-Trichlorophenol	5.00	U
88-06-2	2,4,6-Trichlorophenol	5.00	U
103-33-3	1,2-Dphnylhydrzine/Azobenzen	5.00	U

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FORM 1

BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

P05882LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 0401004

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 01/12/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 6

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	928-96-1	3-HEXEN-1-OL, (Z)-	3.44	4.19	NJ
2.	627-97-4	2-METHYL-2-HEPTENE	4.06	5.83	NJ
3.	110-87-2	2H-PYRAN, 3,4-DIHYDRO-	4.30	13.79	NJ
4.	74630-08-3	1-OCTENE, 3-ETHYL-	4.39	5.80	NJ
5.	16747-31-2	HEXANE, 3,3,4-TRIMETHYL-	4.49	4.16	NJ
6.	590-66-9	CYCLOHEXANE, 1,1-DIMETHYL-	4.50	11.74	NJ
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FORM 3
WATER BNA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: P05882

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Matrix Spike - Sample No.: P05882LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Acenaphthene	50.00		45.26	90	37-123
Acenaphthylene	50.00		40.52	81	67-118
Acetophenone	50.00		41.63	83	60-120
Aniline	50.00		32.09	64	25-102
Anthracene	50.00		45.82	92	68-124
Benzidine	50.00		28.68	57	22-127
Benz(a)Anthracene	50.00		45.95	92	69-125
Benzo(b)fluoranthene	50.00		51.95	104	68-127
Benzo(k)fluoranthene	50.00		47.80	96	73-128
Benzo(ghi)perylene	50.00		40.11	80	53-138
Benzo(a)pyrene	50.00		48.56	97	73-125
Benzoic acid	50.00		21.64	43	20-150
Benzyl alcohol	50.00		34.14	68	23-142
Bis(2-chloroethoxy)meth	50.00		42.12	84	45-135
Bis(2-chloroethyl)ether	50.00		56.00	112	51-120
Bis(2-chloroisopropyl)e	50.00		45.88	92	34-137
Bis(2-ethylhexyl)phthal	50.00		47.56	95	61-151
4-Bromophenyl phenyl et	50.00		49.85	100	60-120
Butyl benzyl phthalate	50.00		42.32	85	60-120
Carbazole	50.00		41.72	83	37-156
4-Chloroaniline	50.00		38.48	77	45-135
Chlorobenzilate	50.00		44.50	89	20-150
4-Chloro-3-methylphenol	50.00		40.62	81	33-134
2-Chloronaphthalene	50.00		50.46	101	63-121
2-Chlorophenol	50.00		40.82	82	17-134
4-Chlorophenyl phenyl e	50.00		42.29	84	60-120
Chrysene	50.00		34.60	69*	70-124
Dibenz(a,h)anthracene	50.00		41.33	83	57-136

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER BNA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: P05882

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Matrix Spike - Sample No.: P05882LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Dibenzofuran	50.00		41.63	83	64-122
Di-n-butyl phthalate	50.00		43.90	88	60-120
1,2-Dichlorobenzene	50.00		35.74	71	39-101
1,3-Dichlorobenzene	50.00		39.64	79	38- 98
1,4-Dichlorobenzene	50.00		37.71	75	31- 97
3,3'-Dichlorobenzidine	50.00		22.43	45	35-165
2,4-Dichlorophenol	50.00		39.77	80	13-146
2,6-Dichlorophenol	50.00		38.96	78	20-150
Diethyl phthalate	50.00		43.04	86	60-120
3,3-Dimethylbenzidine	50.00		30.93	62	20-150
2,4-Dimethyphenol	50.00		40.59	81	51-118
Dimethyl phthalate	50.00		41.87	84	60-120
4,6-Dinitro-2-methylphe	50.00		42.99	86	15-150
2,4-Dinitrophenol	50.00		38.60	77	12-182
2,4-Dinitrotoluene	50.00		38.25	76	34-130
2,6-Dinitrotoluene	50.00		41.20	82	62-135
N-NitrsdiphylAm/Dipheny	50.00		40.94	82	45-135
Di-n-octyl phthalate	50.00		43.08	86	60-120
Ethyl methanesulfonate	50.00		40.56	81	45-135
Fluoranthene	50.00		43.43	87	55-135
Fluorene	50.00		43.43	87	66-121
Hexachlorobenzene	50.00		52.17	104	65-133
Hexachlorobutadiene	50.00		43.51	87	50-112
Hexachlorocyclopentadie	50.00		29.27	58	21-141
Hexachloroethane	50.00		43.75	88	37-100
Indeno(1,2,3-cd)pyrene	50.00		40.73	81	57-140
Isophorone	50.00		42.57	85	13-146
Methyl methanesulfonate	50.00		29.22	58	45-135

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER BNA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: P05882

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Matrix Spike - Sample No.: P05882LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
2-Methylnaphthalene	50.00		43.40	87	50-124
2-Methylphenol	50.00		38.27	76	48-117
3&4-Methylphenol	25.00		17.92	72	46- 99
Naphthalene	50.00		44.58	89	55-113
2-Nitroaniline	50.00		50.30	101	63-129
3-Nitroaniline	50.00		52.77	106	61-120
4-Nitroaniline	50.00		55.69	111	60-126
Nitrobenzene	50.00		40.22	80	57-120
2-Nitrophenol	50.00		43.94	88	27-137
4-Nitrophenol	50.00		19.42	39	20-150
N-Nitrosodibutylamine	50.00		47.25	94	60-120
N-Nitrosodiethylamine	50.00		41.93	84	60-120
N-Nitrosodimethylamine	50.00		31.86	64	30- 96
N-Nitrosodi-n-propylami	50.00		45.22	90	60-120
Pentachloronitrobenzene	50.00		50.96	102	20-150
Pentachlorophenol	50.00		54.82	110	22-171
Phenacetin	50.00		29.51	59	20-150
Phenanthrene	50.00		46.04	92	65-126
Phenol	50.00		20.32	41	12- 57
Pyrene	50.00		41.26	82	40-149
Pyridine	50.00		27.98	56	10- 82
1,2,4,5-Tetrachlorobenz	50.00		41.07	82	60-120
2,3,4,6-Tetrachlorophen	50.00		45.84	92	20-150
1,2,4-Trichlorobenzene	50.00		40.13	80	29-116
2,4,5-Trichlorophenol	50.00		45.34	91	31-147
2,4,6-Trichlorophenol	50.00		45.97	92	31-147
1,2-Dphnylhydrzine/Azob	50.00		55.14	110	45-135

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 1 out of 83 outside limits

COMMENTS: _____

FORM 3

WATER BNA-GCMS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC. Lab Prep Batch: P05882

Lab Code: Case No.: SAS No.: SDG No.: 0001-169

Matrix Spike - Sample No.: 0001-169-1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Acenaphthene	100.0	0.000	82.34	82	37-123
4-Chloro-3-methylphenol	160.0	0.000	102.3	64	33-134
2-Chlorophenol	160.0	0.000	98.19	61	17-134
1,4-Dichlorobenzene	100.0	0.243	65.22	65	31- 97
2,4-Dinitrotoluene	100.0	0.000	75.16	75	34-130
4-Nitrophenol	160.0	0.000	61.81	39	20-150
Pentachlorophenol	160.0	0.000	158.2	99	22-171
Phenol	160.0	0.000	54.21	34	12- 57
Pyrene	100.0	0.000	80.22	80	40-149
1,2,4-Trichlorobenzene	100.0	0.000	84.03	84	33-134

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Acenaphthene	100.0	86.86	87	6	20	37-123
4-Chloro-3-methylphenol	160.0	108.5	68	6	20	33-134
2-Chlorophenol	160.0	102.6	64	5	20	17-134
1,4-Dichlorobenzene	100.0	66.26	66	2	20	31- 97
2,4-Dinitrotoluene	100.0	79.22	79	5	20	34-130
4-Nitrophenol	160.0	67.17	42	7	20	20-150
Pentachlorophenol	160.0	169.5	106	7	20	22-171
Phenol	160.0	57.73	36	6	20	12- 57
Pyrene	100.0	82.71	83	4	20	40-149
1,2,4-Trichlorobenzene	100.0	84.28	84	0	20	33-134

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 10 outside limits
Spike Recovery: 0 out of 20 outside limits

COMMENTS: _____

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Chemical Analytical Data Review Checklist

Report Type: [ ] Preliminary [✓] Final Date Received: _____ Project Number: 801370

Project Name: DDMT Analysis/Method: VOA, SVOA, Metals

Laboratory: ETC Lab Project/Case: 12

Sample Number(s): ST-EFF-021, ST-EFF-12

Evaluated By: Betsy McDaniel Date Evaluated: 3/7/00

Data Package Deliverables Requirement: [✓] Mininum [ ] Standard [ ] Maximum

[ ] Other, please describe _____

Quality Control Deliverables	Required	Received	Passed	Failed
PQL, MDL, RL, etc meets DQOs				
Comment:				
Holding Times			✓	
Comment:				
Sample Condition (preservatives, containers, temperature, etc) / Case Narrative	X		✓	
Comment:				
Surrogate Recoveries	X		✓	
Comment: 1 high BN for MS/MSD				
Lab Control Sample Recoveries	X			✓
Comment: low 1,2-Dichlorobenzene, PCE, tetrahydrofuran high furan, pentachloroethane, low N-Nitrosodi-n-propylamine, ~~4-NP~~				
Lab Control Sample Duplicate or Other Spike Recoveries	X			
Comment: NA				
Lab Control Sample Duplicate or Other Laboratory Duplicate RPD	X			
Comment: NA				
Matrix Spike Recoveries	X		✓	
Comment: low Ag, pass on LCS and PDS low 4-NP, pass on LCS and RPD				
Matrix Spike Duplicate Recoveries	X		✓	
Comment: low Ag low 4-NP, pass on LCS and RPD				
Matrix Spike / Matrix Spike Duplicate RPD	X		✓	
Comment:				
Laboratory Blanks (daily, method, instrument)	X		✓	
Comment: several BNA hits, all BDL in samples				
Field Blanks (trip, equip, ambient, matrix)	X			
Comment: NA				
Field Duplicates RPD	X			
Comment: ~~N/A~~ (If 021 and 121 are duplicates, RPDs are good). see checked				

Data Validation Level III

FIELD DUPLICATES

$$RPD = \frac{[orig-dup] \times 100}{orig + dup/2}$$

Report No.: 801370

Analyte	Original Sample ID	Result	Duplicate Sample ID	Result	RPD	
pH	ST-EFF-021	6.1	ST-EFF-121	5.4	12	
Barium		0.106		0.108	-2	
Calcium		21		21.6	-3	
Iron		0.114		0.036	104	*
Potassium		0.816		0.874	-7	
Magnesium		10.8		11.3	-5	
Manganese		0.025		0.025	0	
Sodium		22.7		23.5	-3	
Zinc		0.305		0.053	141	*
Carbon tetrachloride		1.71		1.67	2	
Chloroform		6.51		6.58	-1	
1,1-Dichloroethane		<1		0.4	NC	
1,1-Dichloroethene		13.8		14.1	-2	
trans-1,2-Dichloroethene		12.3		12.3	0	
1,1,2,2-Tetrachloroethane		177		189	-7	
Tetrachloroethene		14.9		15.3	-3	
1,1,1-Trichloroethane		0.48		0.48	0	
1,1,2-Trichloroethane		0.8		0.75	NC	
Trichloroethene		177		179	-1	
cis-1,2-Dichloroethene		43.8		43.7	0	

ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road • Memphis, TN 38111 • (901) 327-2750 • FAX (901) 327-6334
Founded 1972

February 24, 2000

Mr. Virgil Jansen
Sverdrup Corporation
13723 Riverport Drive
Maryland Heights, MO 63043

Ref: Analytical Testing
ETC Order # 0002422
Project Description DDMT-Dunn Field

Project # 801370- Memphis Defense Depot

The above referenced project has been analyzed per your instructions. The analyses were performed in our laboratory in accordance with Standard Methods 17th/18th Edition; The Solid Waste Manual SW-846; EPA Methods for the Analysis of Water and Wastes and/or 40 CFR part 136.

The results are shown on the attached analysis sheet(s).

Please do not hesitate to contact our office if you have any questions.

Sincerely,

C D Scheibel

Chester D. Scheibel
Project Manager

rt
Attachment

SVE_MHDDMT

775 314

Environmental Testing & Consulting, Inc.

Data Qualifiers for Organic Reporting

Within the attached report, some analytical data may be reported as "Qualified Data" as indicated by a "Data Qualifier" next to the result. This table summarizes the possible "Data Qualifiers" that may be associated with this report.

Q	Surrogate Recovery Outside QC Limits
J	Estimated Value. Presence of the compound was confirmed but less than the
	reported detection limit.
E	Concentration exceeds the established method calibration range but is within
	the working range of the instrument.
B	Analyte detected in the associated Method Blank.
U	Reported result was unconfirmed. Refer to Case Narrative.
N	Non-Compliance Report associated with this sample or project.
C	Result reported from GC/MS confirmation analysis.
M	Result reported represents a minimum value. Refer to Case Narrative.
NC	Result reported from Primary Column. Result did not confirm.
*	QC Data (percent recovery/RPD for a particular analyte was outside QC Limits)

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
METALS - AQUEOUS

Client Name Sverdrup Corporation
Project Name DDMT- Dunn Field

ETC Order# 0002-422

HOLDING TIMES

QC Batch(s) for this order	ICP/GFAA	V19-AQ-03
	Mercury	V6-AQ-34
Sample Analysis	All samples digested and analyzed within 180 days of collection.	
Mercury Analysis	All samples analyzed within 28 days of collection.	

CALIBRATION

Initial Calibration	All criteria met.
Continuing Calibration	All criteria met.

SAMPLE ANALYSIS

Instrumentation: Thermo Jarrell Ash Enviro-I ICP
Varian 640Z Zeeman Graphite Furnace
Perkin Elmer 5100ZL Graphite Furnace
Perkin Elmer 6000 Graphite Furnace
Thermo Jarrell Ash AA-Scan 4 Graphite Furnace
CETAC M-6000A Mercury Analyzer

Dilutions Required No dilutions required.

QUALITY CONTROL

0002-422.MQCBLANK
Method Blank

V19-AQ-03BLK	ICP/GFAA Metals
V6-AQ-34BLK	Mercury

No analytes detected in the Method Blank

0002-422.MQCLCS
Laboratory Control Sample(s)

V19-AQ-03LCS	ICP/GFAA Metals
V6-AQ-34LCS	Mercury

All criteria met.

0002-422.MQCMSMSD
Matrix Spike / Matrix Spike Dup - ICP Metals

0002-422-01	RPD	All analytes within QC limits.
ST-EFF-021	Spike Recovery	All analytes within QC limits, except as listed below.

Silver was flagged for low recoveries in the Matrix Spike and Matrix Spike Duplicate. A Post Digestion Spike was performed for verification:

Analyte	mg/L Expected	mg/L Found	% Recovery	QA Evaluation
Silver	0.250	0.242	97	Pass

Refer to Laboratory Control Sample(s) for system verification.

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
METALS - AQUEOUS

Client Name Sverdrup Corporation
Project Name DDMT- Dunn Field

ETC Order# 0002-422

QUALITY CONTROL

Matrix Spike / Matrix Spike Dup - Graphite Metals

0002-422-01	RPD	All analytes within QC limits.
ST-EFF-021	Spike Recovery	All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Matrix Spike / Matrix Spike Dup - Hg

0002-422-01	RPD	All analytes within QC limits.
ST-EFF-021	Spike Recovery	All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Dilution Test Dilution result must agree within 10% of original result when sample is diluted by a factor of 5.

Post Digestion Spike Recovery must be +/-15% of expected value.

Project Manager

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
GC/MS VOLATILE COMPOUNDS - AQUEOUS

Client Name	Sverdrup Corporation
Project Name	DDMT- Dunn Field
ETC Order#	0002-422
Method (SW-846)	8260B/5030B

SAMPLE PRESERVATION (Verified at time of analysis)

All aqueous samples preserved to pH < 2.

HOLDING TIMES

Sample Analysis — All samples analyzed within 14 days of collection.

QUALITY CONTROL

QC Batch	Form 4 Summary
V2021701	V2021711LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.

Method Blank FORM 4
V2021711LB

Target Analytes were not detected in the Method Blanks.

Laboratory Control Sample FORM 3
V2021711LCS

All acceptance criteria met, except as listed below.

1,2-Dichlorobenzene, Tetrachloroethene and Tetrahydrofuran (non-target analyte) were flagged for slightly low recovery in the LCS. Furan and Pentachloroethane, which were non-target analytes, were flagged for high recovery in the LCS. The slightly low recovery for Tetrachloroethene does not significantly affect the sample results. The laboratory spiked the LCS with all target compounds and all recoveries were within QC Limits except as previously noted. Due to the large number of spike compounds, it is likely that a few compounds may be out of control limits. It is ETC, Inc. QC policy that 90% of all spike compound recoveries are within control limits. The LCS complies with this requirement. The LCS recovery is considered as acceptable.

Matrix Spike / Matrix Spike Dup. FORM 3
Batch V2021701

0002-423-06	RPD	All analytes within QC limits.
	Spike Recovery	All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

CALIBRATION

BFB Daily 12-Hour Tune	All criteria met. FORM 5
Initial Calibration	All criteria met. FORM 6
Calibration Verification	All criteria met. FORM 7

Volatile Internal Standard Area and RT FORM 8
Daily Check Standard(s) Internal Standard Areas and Retention Times within QC limits.

ENVIRONMENTAL TESTING AND CONSULTING, INC.
CASE NARRATIVE
GC/MS VOLATILE COMPOUNDS - AQUEOUS

Client Name	Sverdrup Corporation
Project Name	DDMT- Dunn Field
ETC Order#	0002-422
Method (SW-846)	8260B/5030B

SAMPLE ANALYSIS

Instrumentation	HP 5890 Series II GC, 5971MSD
Dilutions Required	No dilutions required.

Project Manager

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FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

P05295LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Matrix: (soil/water) WATER Lab Prep Batch: P05295

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 0301003

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 02/17/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-94-1	3,3'-Dichlorobenzidine	10.00	U
120-83-2	2,4-Dichlorophenol	5.00	U
87-65-0	2,6-Dichlorophenol	5.00	U
84-66-2	Diethyl phthalate	5.00	U
119-93-7	3,3-Dimethylbenzidine	10.00	U
105-67-9	2,4-Dimethyphenol	5.00	U
131-11-3	Dimethyl phthalate	5.00	U
534-52-1	4,6-Dinitro-2-methylphenol	10.00	U
51-28-5	2,4-Dinitrophenol	20.00	U
121-14-2	2,4-Dinitrotoluene	5.00	U
606-20-2	2,6-Dinitrotoluene	5.00	U
122-39-4	N-Nitrsdiphylam/Diphenylamin	5.00	U
117-84-0	Di-n-octyl phthalate	5.00	U
62-50-0	Ethyl methanesulfonate	5.00	U
206-44-0	Fluoranthene	2.00	U
86-73-7	Fluorene	2.00	U
118-74-1	Hexachlorobenzene	5.00	U
87-68-3	Hexachlorobutadiene	5.00	U
77-47-4	Hexachlorocyclopentadiene	5.00	U
67-72-1	Hexachloroethane	5.00	U
193-39-5	Indeno(1,2,3-cd)pyrene	4.38	
78-59-1	Isophorone	5.00	U
66-27-3	Methyl methanesulfonate	5.00	U
91-57-6	2-Methylnaphthalene	2.00	U
95-48-7	2-Methylphenol	5.00	U
108-39-4	3&4-Methylphenol	5.00	U
91-20-3	Naphthalene	2.00	U
88-74-4	2-Nitroaniline	10.00	U
99-09-2	3-Nitroaniline	10.00	U
100-01-6	4-Nitroaniline	10.00	U
98-95-3	Nitrobenzene	5.00	U
88-75-5	2-Nitrophenol	10.00	U
100-02-7	4-Nitrophenol	5.00	U

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
P05295LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Matrix: (soil/water) WATER Lab Prep Batch: P05295

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 0301003

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 02/17/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
924-16-3	N-Nitrosodibutylamine	5.00	U
55-18-5	N-Nitrosodiethylamine	5.00	U
129-00-0	N-Nitrosodimethylamine	5.00	U
621-64-7	N-Nitrosodi-n-propylamine	5.00	U
82-68-8	Pentachloronitrobenzene	10.00	U
87-86-5	Pentachlorophenol	5.00	U
62-44-2	Phenacetin	5.00	U
85-01-8	Phenanthrene	2.00	U
108-95-2	Phenol	5.00	U
129-00-0	Pyrene	2.00	U
110-86-1	Pyridine	5.00	U
95-94-3	1,2,4,5-Tetrachlorobenzene	5.00	U
58-90-2	2,3,4,6-Tetrachlorophenol	5.00	U
120-82-1	1,2,4-Trichlorobenzene	5.00	U
95-95-4	2,4,5-Trichlorophenol	5.00	U
88-06-2	2,4,6-Trichlorophenol	5.00	U
103-33-3	1,2-Dphnylhydrzine/Azobenzen	5.00	U

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FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

P05295LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 0301003

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 02/17/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	107-86-8	2-BUTENAL, 3-METHYL-	4.45	7.06	NJ
2.	4291-79-6	CYCLOHEXANE, 1-METHYL-2-PROP	4.66	8.65	NJ
3.					
4.					
5.					
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28.					
29.					
30.					

FORM 3
WATER BNA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: P05295

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Matrix Spike - Sample No.: P05295LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.	
Acenaphthene	50.00		37.30	75	37-123	
Acenaphthylene	50.00		34.16	68	67-118	
Acetophenone	50.00		29.59	59*	60-120	NA
Aniline	50.00		25.61	51	25-102	
Anthracene	50.00		44.79	90	68-124	
Benzidine	50.00		89.25	178*	22-127	NA
Benz(a)Anthracene	50.00		45.08	90	69-125	
Benzo(b)fluoranthene	50.00		39.05	78	68-127	
Benzo(k)fluoranthene	50.00		37.92	76	73-128	
Benzo(ghi)perylene	50.00		32.16	64	53-138	
Benzo(a)pyrene	50.00		38.35	77	73-125	
Benzoic acid	50.00		25.00	50	20-150	
Benzyl alcohol	50.00		27.15	54	23-142	
Bis(2-chloroethoxy)meth	50.00		31.29	62	45-135	
Bis(2-chloroethyl)ether	50.00		27.14	54	51-120	
Bis(2-chloroisopropyl)e	50.00		28.30	57	34-137	
Bis(2-ethylhexyl)phthal	50.00		40.96	82	61-151	
4-Bromophenyl phenyl et	50.00		45.94	92	60-120	
Butyl benzyl phthalate	50.00		47.02	94	60-120	
Carbazole	50.00		37.30	75	37-156	
4-Chloroaniline	50.00		33.59	67	45-135	
Chlorobenzilate	50.00		54.96	110	20-150	
4-Chloro-3-methylphenol	50.00		36.25	72	33-134	
2-Chloronaphthalene	50.00		42.55	85	63-121	
2-Chlorophenol	50.00		27.24	54	17-134	
4-Chlorophenyl phenyl e	50.00		38.20	76	60-120	
Chrysene	50.00		35.26	70	70-124	
Dibenz(a,h)anthracene	50.00		33.72	67	57-136	

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER BNA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: P05295

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Matrix Spike - Sample No.: P05295LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Dibenzofuran	50.00		36.48	73	64-122
Di-n-butyl phthalate	50.00		44.14	88	60-120
1,2-Dichlorobenzene	50.00		27.59	55	39-101
1,3-Dichlorobenzene	50.00		26.11	52	38- 98
1,4-Dichlorobenzene	50.00		26.72	53	31- 97
3,3'-Dichlorobenzidine	50.00		44.01	88	35-165
2,4-Dichlorophenol	50.00		33.37	67	13-146
2,6-Dichlorophenol	50.00		34.20	68	20-150
Diethyl phthalate	50.00		39.32	79	60-120
3,3-Dimethylbenzidine	50.00		63.22	126	20-150
2,4-Dimethyphenol	50.00		33.00	66	51-118
Dimethyl phthalate	50.00		38.41	77	60-120
4,6-Dinitro-2-methylphe	50.00		39.24	78	15-150
2,4-Dinitrophenol	50.00		32.17	64	12-182
2,4-Dinitrotoluene	50.00		45.50	91	34-130
2,6-Dinitrotoluene	50.00		42.55	85	62-135
N-NitrsdiphylAm/Dipheny	100.0		84.17	84	45-135
Di-n-octyl phthalate	50.00		33.53	67	60-120
Ethyl methanesulfonate	50.00		27.30	55	45-135
Fluoranthene	50.00		47.08	94	55-135
Fluorene	50.00		38.59	77	66-121
Hexachlorobenzene	50.00		45.79	92	65-133
Hexachlorobutadiene	50.00		32.00	64	50-112
Hexachlorocyclopentadie	50.00		29.66	59	21-141
Hexachloroethane	50.00		23.85	48	37-100
Indeno(1,2,3-cd)pyrene	50.00		33.46	67	57-140
Isophorone	50.00		30.74	61	13-146
Methyl methanesulfonate	50.00		18.06	36*	45-135 NA

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER BNA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: P05295

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Matrix Spike - Sample No.: P05295LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.	
2-Methylnaphthalene	50.00		31.54	63	50-124	
2-Methylphenol	50.00		27.64	55	48-117	
3&4-Methylphenol	50.00		26.14	52	46- 99	
Naphthalene	50.00		29.29	58	55-113	
2-Nitroaniline	50.00		37.61	75	63-129	
3-Nitroaniline	50.00		38.19	76	61-120	
4-Nitroaniline	50.00		39.46	79	60-126	
Nitrobenzene	50.00		29.74	59	57-120	
2-Nitrophenol	50.00		31.39	63	27-137	
4-Nitrophenol	50.00		14.99	30	20-150	
N-Nitrosodibutylamine	50.00		35.33	71	60-120	
N-Nitrosodiethylamine	50.00		28.54	57*	60-120	NA
N-Nitrosodimethylamine	50.00		18.37	37	30- 96	
N-Nitrosodi-n-propylami	50.00		29.71	59*	60-120	
Pentachloronitrobenzene	50.00		47.87	96	20-150	
Pentachlorophenol	50.00		45.33	91	22-171	
Phenacetin	50.00		42.68	85	20-150	
Phenanthrene	50.00		44.97	90	65-126	
Phenol	50.00		12.35	25	12- 57	
Pyrene	50.00		56.64	113	40-149	
Pyridine	50.00		15.31	31	10- 82	
1,2,4,5-Tetrachlorobenz	50.00		32.43	65	60-120	
2,3,4,6-Tetrachlorophen	50.00		39.76	80	20-150	
1,2,4-Trichlorobenzene	50.00		29.19	58	29-116	
2,4,5-Trichlorophenol	50.00		39.50	79	31-147	
2,4,6-Trichlorophenol	50.00		37.31	75	31-147	
1,2-Dphnylhydrzine/Azob	50.00		37.90	76	45-135	

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 5 out of 83 outside limits

COMMENTS: _____

FORM 3
WATER BNA-GCMS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC. Lab Prep Batch: P05295

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Matrix Spike - Sample No.: 0002-422-1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Acenaphthene	100.0		80.58	80	37-123
4-Chloro-3-methylphenol	160.0		121.8	76	33-134
2-Chlorophenol	160.0		108.2	68	17-134
1,4-Dichlorobenzene	100.0		64.05	64	31- 97
2,4-Dinitrotoluene	100.0		103.1	103	34-130
4-Nitrophenol	160.0		22.09	14*	20- 75
Pentachlorophenol	160.0		68.05	42	22-171
Phenol	160.0		54.69	34	12- 57
Pyrene	100.0		132.0	132	40-149
1,2,4-Trichlorobenzene	100.0		69.15	69	29-116

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Acenaphthene	100.0	79.79	80	0	20	37-123
4-Chloro-3-methylphenol	160.0	115.0	72	5	20	33-134
2-Chlorophenol	160.0	106.7	67	1	20	17-134
1,4-Dichlorobenzene	100.0	67.26	67	4	20	31- 97
2,4-Dinitrotoluene	100.0	103.3	103	0	20	34-130
4-Nitrophenol	160.0	22.38	14*	0	20	20- 75
Pentachlorophenol	160.0	66.63	42	0	20	22-171
Phenol	160.0	56.91	36	6	20	12- 57
Pyrene	100.0	126.4	126	5	20	40-149
1,2,4-Trichlorobenzene	100.0	71.24	71	3	20	29-116

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 10 outside limits
Spike Recovery: 2 out of 20 outside limits

COMMENTS: _____

Environmental Testing & Consulting, Inc.

Login
Chain-of-Custody

CHAIN OF CUSTODY RECORD

Environmental Testing & Consulting, Inc.
2924 Walnut Grove Rd.
Memphis, TN 38111
(901)327-2750 FAX (901)327-6334

ETC Work Order : 0002422

Company Name: Syerdrup
Phone #: 314.770.4025
Fax #: 314.770.5108
Fax Results:
RUSH:
Ice:
Project/Site: ODMT - Dunn Field
FID #:
PO #:
Project #: 801370-10000003
Project Manager/Contact: Virgil Janson

Matrix
(1) Wastewater 4 Sludge
2 Aqueous 5 Oil/Solvent
3 Soil/Sediment 6 Other

Analysis Requested
(Note special detection limits or methods)

# of cont.	Sample ID/ Number	Depth	Sample Date	Sample Time	Matrix	Type Grab/Comp	VOCs 8260B	SVOCs 8270	Metals 200.8	AS-206-2	Hg-245-1	OH					Comments
10	ST-EFF-021		2/15/00	18:00	W	G	X	X	X	X	X	X					MS & MSD
	~~ST-EFF-11 SAB~~		~~2/15 SAB~~	~~18:00 SAB~~		~~G SAB~~											~~from ST-EFF-021~~
6	ST-EFF-121		2/15/00	18:00	W	G	X	X	X	X	X	X					Containers
3	Trip Blank		2/15/00														

Please Run
Temp. 17.9°C
pH 5.90
Cond: 309

Sampled By: SAB
Method of Shipment: Hand Delivery
Blank/Cooler Temp: 4°C
Remarks: 734 GPM / 976866 Gal

	DATE	TIME		DATE	TIME	
RELINQUISHED BY (sign): Susan Baska	2/15/00	18:30	RECEIVED BY (sign): Virgil Janson	2/15/00	18:30	Sample Delivery Group ID
RELINQUISHED BY (sign): Virgil Janson	2/15/00	0830	RECEIVED BY (sign):	DATE	TIME	
RELINQUISHED BY (sign):	DATE	TIME	RECEIVED BY LAB (print/sign): RBaldwin	2/16/00	0830	

775 327

Distribution : Original and Yellow accompany samples to the laboratory. Pink copy for Field Crew.
Original copy returned with results. Yellow copy for ETC, Inc. files.

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775.328

Environmental Testing & Consulting, Inc.
Cooler Receipt Form

Date Received 2/16/00
Date/Time Checked In 2/16/00-0830 *
Carrier/Bill# Hand-Delivered

LIMS# 0002-422
Project DDMT
Dunn Field
By RBaugh

1.	Custody Seals?/Location	No
2.	Samples are non-radioactive?	Yes
3.	Chain of Custody in plastic?	Yes
4.	Temperature at receipt (ok = 4 ± 2 °C)<4oC	OK
5.	Ice & Packing-Bagged Ice, Bubble Wrap	Yes
6.	Chain of Custody filled out properly?	Yes
7.	All containers in separate bags?	Yes
8.	Sample containers intact?	Yes
9.	Label(s) complete and in good condition?	Yes
10.	Label(s) agree with Chain of Custody?	Yes
11.	Correct containers used?	Yes
12.	Sufficient sample?	Yes
13.	VOA vials bubble-free (H_2O) or no head space (soil)?	Yes
14.	Preservation OK? TM pH____; TRPH pH____; TOC pH____; TOX pH____; CN pH____; N/P pH____; Other pH____	Yes

Comments _____

*Validated Date and Time of Sample Receipt (VDTSR)

CHAIN OF CUSTODY RECORD

Environmental Testing & Consulting, Inc.
2924 Walnut Grove Rd.
Memphis, TN 38111
(901)327-2750 FAX (901)327-6334

ETC Work Order : _____ 775 329

Company Name	Phone # :	Fax Results	
	Fax # :	RUSH	
Project/Site	FID # :	Ice	
	PO # :		
Project #	Matrix: 1 Wastewater, 2 Aqueous, 3 Soil/Sediment, 4 Sludge, 5 Oil/Solvent, 6 Other		
Project Manager/Contact			

# of cont.	Sample ID/ Number	Depth	Sample Date	Sample Time	Matrix	Type Grab/Comp	Analysis Requested (Note special detection limits or methods)										Comments

Sampled By	Method of Shipment	Blank/Cooler Temp	Remarks

RELINQUISHED BY (sign)	DATE	TIME	RECEIVED BY (sign)	DATE	TIME	Sample Delivery Group ID
RELINQUISHED BY (sign)	DATE	TIME	RECEIVED BY (sign)	DATE	TIME	
RELINQUISHED BY (sign)	DATE	TIME	RECEIVED BY LAB (print/sign)	DATE	TIME	

Distribution : Original and Yellow accompany samples to the laboratory. Pink copy for Field Crew.
Original copy returned with results. Yellow copy for ETC, Inc. files.

F:\QAQC\SLOP\COC0995.XLS

FORM 3
WATER VOA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: V2021701

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Matrix Spike - Sample No.: V2021711LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,3,5-Trimethylbenzene	100.0		97.22	97	69-128
Vinyl Acetate	100.0		93.80	94	28-146
Vinyl Chloride	100.0		85.06	85	65-134
Xylene-mp	200.0		188.8	94	77-115
Xylene-o	100.0		92.41	92	77-115

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 5 out of 89 outside limits

COMMENTS: _____

FORM 3
WATER VOA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC.

Lab Code: Case No.: Lab Prep Batch: V2021701

Matrix Spike - Sample No.: V2021712LCS SAS No.: SDG No.: 0002-422

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,2-Dichlorobenzene	100.0		114.8	115*	80-113
Tetrachloroethene	100.0		99.56	100	77-115
Tetrahydrofuran	100.0		95.71	96	76-181

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 1 out of 3 outside limits

COMMENTS:

FORM 3
WATER VOA-GCMS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC,INC. Lab Prep Batch: V2021701

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Matrix Spike - Sample No.: 0002-423-6

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Benzene	100.0	0.000	97.59	98	72-124
Chlorobenzene	100.0	0.000	103.6	104	77-112
1,1-Dichloroethene	100.0	0.000	99.61	100	69-121
Toluene	100.0	0.000	101.7	102	77-115
Trichloroethene	100.0	0.000	99.51	100	75-113

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Benzene	100.0	94.17	94	4	20	72-124
Chlorobenzene	100.0	97.84	98	6	20	77-112
1,1-Dichloroethene	100.0	94.59	94	6	20	69-121
Toluene	100.0	97.30	97	5	20	77-115
Trichloroethene	100.0	96.41	96	4	20	75-113

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

775 333

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-i0000003
FID #

Site ID: DDMT-Dunn Field

Date Arrived 02/16/00
ETC Order Number 0002422

ETC Lab ID **0002422-01**
Sample ID: ST-EFF-021

Matrix :AQUEOUS
Sample Date :02/15/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Base/Neutral & Acid							
QC Batch	P05295			02/16/00	02/17/00	PF	8270C
Acenaphthene	ND	ug/L	2.00				
Acenaphthylene	ND	ug/L	2.00				
Anthracene	ND	ug/L	2.00				
Benzo(a)anthracene	ND	ug/L	2.00				
Benzo(b)fluoranthene	ND	ug/L	2.00				
Benzo(k)fluoranthene	ND	ug/L	2.00				
Benzo(g,h,i)perylene	ND	ug/L	2.00				
Benzo(a)pyrene	ND	ug/L	2.00				
Benzoic Acid	ND	ug/L	50.0				
Benzyl Alcohol	ND	ug/L	10.0				
Bis(2-chloroethoxy)methane	ND	ug/L	5.00				
Bis(2-chloroethyl)ether	ND	ug/L	5.00				
Bis(2-chloroisopropyl)ether	ND	ug/L	5.00				
Bis(2-ethylhexyl)phthalate	ND	ug/L	10.0				
4-Bromophenyl phenyl ether	ND	ug/L	5.00				
Butyl benzyl phthalate	ND	ug/L	5.00				
4-Chloroaniline	ND	ug/L	5.00				
2-Chloronaphthalene	ND	ug/L	5.00				
4-Chloro-3-methylphenol	ND	ug/L	5.00				
2-Chlorophenol	ND	ug/L	5.00				
4-Chlorophenyl phenyl ether	ND	ug/L	5.00				
Chrysene	ND	ug/L	2.00				
Dibenzo(a,h)anthracene	ND	ug/L	2.00				
Dibenzofuran	ND	ug/L	5.00				
Di-n-butyl phthalate	ND	ug/L	5.00				
1,2-Dichlorobenzene	ND	ug/L	5.00				
1,3-Dichlorobenzene	ND	ug/L	5.00				
1,4-Dichlorobenzene	ND	ug/L	5.00				
3,3'-Dichlorobenzidine	ND	ug/L	10.0				
2,4-Dichlorophenol	ND	ug/L	5.00				
2,6-Dichlorophenol	ND	ug/L	5.00				
Diethyl phthalate	ND	ug/L	5.00				
2,4-Dimethylphenol	ND	ug/L	5.00				
Dimethyl phthalate	ND	ug/L	5.00				
4,6-Dinitro-2-methylphenol	ND	ug/L	10.0				
2,4-Dinitrophenol	ND	ug/L	50.0				
2,4-Dinitrotoluene	ND	ug/L	5.00				
2,6-Dinitrotoluene	ND	ug/L	5.00				
Di-n-octyl phthalate	ND	ug/L	5.00				
Fluoranthene	ND	ug/L	2.00				
Fluorene	ND	ug/L	2.00				
Hexachlorobenzene	ND	ug/L	5.00				

LABORATORY MANAGER

ND - Not Detected

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

ent Name Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-10000003
FID #

Site ID DDMT-Dunn Field

Date Arrived 02/16/00
ETC Order Number 0002422

ETC Lab ID **0002422-01**
Sample ID: ST-EFF-021

Matrix :AQUEOUS
Sample Date :02/15/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Base/Neutral & Acid				02/16/00	02/17/00	PF	8270C
Hexachlorobutadiene	ND	ug/L	5.00				
Hexachlorocyclopentadiene	ND	ug/L	5.00				
Hexachloroethane	ND	ug/L	5.00				
Indeno(1,2,3-cd)pyrene	ND	ug/L	2.00				
Isophorone	ND	ug/L	5.00				
2-Methylnaphthalene	ND	ug/L	2.00				
2-Methylphenol (o-cresol)	ND	ug/L	5.00				
Methylphenol (m-cresol)	ND	ug/L	5.00				
Methylphenol (p-cresol)	ND	ug/L	5.00				
Naphthalene	ND	ug/L	2.00				
Nitrobenzene	ND	ug/L	5.00				
2-Nitroaniline	ND	ug/L	5.00				
3-Nitroaniline	ND	ug/L	10.0				
4-Nitroaniline	ND	ug/L	5.00				
2-Nitrophenol	ND	ug/L	5.00				
4-Nitrophenol	ND	ug/L	5.00				
N-Nitrosodiphenylamine	ND	ug/L	5.00				
N-Nitrosodipropylamine	ND	ug/L	5.00				
Pentachlorophenol	ND	ug/L	10.0				
Phenanthrene	ND	ug/L	2.00				
Phenol	ND	ug/L	5.00				
Pyrene	ND	ug/L	2.00				
1,2,4-Trichlorobenzene	ND	ug/L	5.00				
2,4,5-Trichlorphenol	ND	ug/L	5.00				
2,4,6-Trichlorophenol	ND	ug/L	5.00				

Surrogate Standard	% Recovery	QC Limits	
S1 - Nitrobenzene-d5	77	29	110
S2 - 2-Fluorobiphenyl	77	38	107
S3 - 4-Terphenyl-d14	115	33	122
S4 - Phenol-d6	33	7	58
S5 - 2,4,6-Tribromophenol	82	16	138
S6 - 2-Fluorophenol	43	8	88

RPS
LABORATORY MANAGER

ND - Not Detected

775.335

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
0002-422-1

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 0901009

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 02/17/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 15 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	79-01-6	TRICHLOROETHYLENE	2.64	12.87	NJ
2.	127-18-4	TETRACHLOROETHYLENE	3.60	5.15	NJ
3.	79-34-5	ETHANE, 1,1,2,2-TETRACHLORO-	4.48	78.01	NJ
4.	53941-19-8	2-HEXENE, 3,4,4-TRIMETHYL-	4.66	6.90	NJ
5.	2155-30-8	PROPANOIC ACID, 2-HYDROXY-,	15.60	18.14	NJ
6.		UNKNOWN	16.12	38.38	J
7.	33100-27-5	15-CROWN-5	17.45	30.35	NJ
8.		UNKNOWN	18.43	27.74	J
9.	62338-56-1	CYCLOUNDECANE, (1-METHYLETHY	18.54	13.80	NJ
10.	22522-34-5	9-HEXADECENOIC ACID, EICOSYL	18.77	58.24	NJ
11.		UNKNOWN	18.90	14.95	J
12.	33100-27-5	15-CROWN-5	19.13	50.56	NJ
13.		UNKNOWN	19.72	19.23	J
14.	56009-20-2	CYCLOHEXANE, 1-(1,5-DIMETHYL	20.29	14.59	NJ
15.	1892-12-2	CYCLODODECANEMETHANOL	22.53	45.41	NJ
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
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FORM I BNA-GCMS-TIC

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

..nt Name Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-10000003
FID #

Site ID DDMT-Dunn Field

Date Arrived 02/16/00
ETC Order Number 0002422

ETC Lab ID 0002422-02
Sample ID: ST-EFF-121

Matrix :AQUEOUS
Sample Date :02/15/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Base/Neutral & Acid							8270C
				02/16/00	02/17/00	PF	
QC Batch	P05295	ug/L					
Acenaphthene	ND	ug/L	2.00				
Acenaphthylene	ND	ug/L	2.00				
Anthracene	ND	ug/L	2.00				
Benzo(a)anthracene	ND	ug/L	2.00				
Benzo(b)fluoranthene	ND	ug/L	2.00				
Benzo(k)fluoranthene	ND	ug/L	2.00				
..nzo(g,h,i)perylene	ND	ug/L	2.00				
..zo(a)pyrene	ND	ug/L	2.00				
Benzoic Acid	ND	ug/L	50.0				
Benzyl Alcohol	ND	ug/L	10.0				
Bis(2-chloroethoxy)methane	ND	ug/L	5.00				
Bis(2-chloroethyl)ether	ND	ug/L	5.00				
Bis(2-chloroisopropyl)ether	ND	ug/L	5.00				
Bis(2-ethylhexyl)phthalate	ND	ug/L	10.0				
4-Bromophenyl phenyl ether	ND	ug/L	5.00				
Butyl benzyl phthalate	ND	ug/L	5.00				
4-Chloroaniline	ND	ug/L	5.00				
2-Chloronaphthalene	ND	ug/L	5.00				
4-Chloro-3-methylphenol	ND	ug/L	5.00				
2-Chlorophenol	ND	ug/L	5.00				
4-Chlorophenyl phenyl ether	ND	ug/L	5.00				
Chrysene	ND	ug/L	2.00				
Dibenzo(a,h)anthracene	ND	ug/L	2.00				
Dibenzofuran	ND	ug/L	5.00				
Di-n-butyl phthalate	ND	ug/L	5.00				
1,2-Dichlorobenzene	ND	ug/L	5.00				
1,3-Dichlorobenzene	ND	ug/L	5.00				
1,4-Dichlorobenzene	ND	ug/L	5.00				
3,3'-Dichlorobenzidine	ND	ug/L	10.0				
',4-Dichlorophenol	ND	ug/L	5.00				
2,6-Dichlorophenol	ND	ug/L	5.00				
Diethyl phthalate	ND	ug/L	5.00				
2,4-Dimethylphenol	ND	ug/L	5.00				
Dimethyl phthalate	ND	ug/L	5.00				
4,6-Dinitro-2-methylphenol	ND	ug/L	10.0				
',4-Dinitrophenol	ND	ug/L	50.0				
2,4-Dinitrotoluene	ND	ug/L	5.00				
..-Dinitrotoluene	ND	ug/L	5.00				
n-octyl phthalate	ND	ug/L	5.00				
Fluoranthene	ND	ug/L	2.00				
Fluorene	ND	ug/L	2.00				
exachlorobenzene	ND	ug/L	5.00				

PPS

..ORATORY MANAGER

ND - Not Detected

775 337

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-10000003
FID #

Site ID: DDMT-Dunn Field

Date Arrived 02/16/00
ETC Order Number 0002422

ETC Lab ID 0002422-02
Sample ID: ST-EFF-121

Matrix :AQUEOUS
Sample Date :02/15/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Base/Neutral & Acid							8270C
Hexachlorobutadiene	ND	ug/L	5.00	02/16/00	02/17/00	PF	
Hexachlorocyclopentadiene	ND	ug/L	5.00				
Hexachloroethane	ND	ug/L	5.00				
Indeno(1,2,3-cd)pyrene	ND	ug/L	2.00				
Isophorone	ND	ug/L	5.00				
2-Methylnaphthalene	ND	ug/L	2.00				
2-Methylphenol (o-cresol)	ND	ug/L	5.00				
3-Methylphenol (m-cresol)	ND	ug/L	5.00				
4-Methylphenol (p-cresol)	ND	ug/L	5.00				
Naphthalene	ND	ug/L	2.00				
Nitrobenzene	ND	ug/L	5.00				
2-Nitroaniline	ND	ug/L	5.00				
3-Nitroaniline	ND	ug/L	10.0				
4-Nitroaniline	ND	ug/L	5.00				
2-Nitrophenol	ND	ug/L	5.00				
4-Nitrophenol	ND	ug/L	5.00				
N-Nitrosodiphenylamine	ND	ug/L	5.00				
N-Nitrosodipropylamine	ND	ug/L	5.00				
Pentachlorophenol	ND	ug/L	10.0				
Phenanthrene	ND	ug/L	2.00				
Phenol	ND	ug/L	5.00				
Pyrene	ND	ug/L	2.00				
1,2,4-Trichlorobenzene	ND	ug/L	5.00				
2,4,5-Trichlorphenol	ND	ug/L	5.00				
2,4,6-Trichlorophenol	ND	ug/L	5.00				

Surrogate Standard	% Recovery	QC Limits	
S1 - Nitrobenzene-d5	70	29	110
S2 - 2-Fluorobiphenyl	70	38	107
S3 - 4-Terphenyl-d14	107	33	122
S4 - Phenol-d6	30	7	58
S5 - 2,4,6-Tribromophenol	69	16	138
S6 - 2-Fluorophenol	38	8	88

CJS

LABORATORY MANAGER

ND - Not Detected

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
0002-422-2

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 1001010

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 02/17/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 11

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	79-01-6	TRICHLOROETHYLENE	2.64	9.85	NJ
2.	127-18-4	TETRACHLOROETHYLENE	3.60	4.48	NJ
3.	79-34-5	ETHANE, 1,1,2,2-TETRACHLORO-	4.48	71.78	NJ
4.	53941-19-8	2-HEXENE, 3,4,4-TRIMETHYL-	4.66	7.02	NJ
5.		UNKNOWN	13.94	8.17	J
6.	17455-13-9	1,4,7,10,13,16-HEXAOXACYCLOO	15.61	8.54	NJ
7.	33100-27-5	15-CROWN-5	17.45	8.42	NJ
8.	1786-94-3	3,6,9,12,15-PENTAOXANONADECA	19.12	11.16	NJ
9.		UNKNOWN	20.94	9.58	J
10.	582-33-2	BENZOIC ACID, 3-AMINO-, ETHY	21.30	8.91	NJ
11.	70286-10-1	PROPANEDINITRILE, (5,6-DIPHE	22.14	29.95	NJ
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FORM 2
WATER BNA-GCMS SURROGATE RECOVERY

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

	CLIENT SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (TBP) #	S6 (2FP) #	S7 #	S8 #	TOT OUT
01	P05295LB	75	76	90	32	96	44			0
02	P05295LCS	65	69	121	28	111	38			0
03	0002-422-1	77	77	115	33	82	43			0
04	0002-422-2	70	70	107	30	69	38			0
05	0002-422-1MS	79	77	132*	35	93	44			1
06	0002-422-1MS	76	78	125*	36	89	43			1
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		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(29-110)
S2 (FBP)	= 2-Fluorobiphenyl	(38-107)
S3 (TPH)	= Terphenyl-d14	(33-122)
S4 (PHL)	= Phenol-d6	(7- 58)
S5 (TBP)	= 2,4,6-Tribromophenol	(16-138)
S6 (2FP)	= 2-Fluorophenol	(8- 88)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM II BNA-GCMS

FORM 4
BNA-GCMS METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

P05295LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Lab File ID: 0301003 Lab Prep Batch: P05295

Instrument ID: BNA2 Date Extracted:

Matrix: (soil/water) WATER Date Analyzed: 02/17/00

Level: (low/med) LOW Time Analyzed: 1143

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	P05295LCS	P05295	0401004	02/17/00
02	0002-422-1	P05295	0901009	02/17/00
03	0002-422-2	P05295	1001010	02/17/00
04	0002-422-1MS	P05295	1101011	02/17/00
05	0002-422-1MS	P05295	1201012	02/17/00
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COMMENTS:

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
P05295LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Matrix: (soil/water) WATER Lab Prep Batch: P05295

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 0301003

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:

Concentrated Extract Volume: 1(mL) Date Analyzed: 02/17/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
83-32-9	Acenaphthene	2.00	U
208-96-8	Acenaphthylene	2.00	U
98-86-2	Acetophenone	0.595	J
62-53-3	Aniline	5.00	U
120-12-7	Anthracene	2.00	U
92-87-5	Benzidine	20.00	U
56-55-3	Benz(a)Anthracene	0.323	J
205-99-2	Benzo(b)fluoranthene	1.12	J
207-08-9	Benzo(k)fluoranthene	1.09	J
191-24-2	Benzo(ghi)perylene	4.68	
50-32-8	Benzo(a)pyrene	2.00	U
65-85-0	Benzoic acid	50.00	U
100-51-6	Benzyl alcohol	5.00	U
111-91-1	Bis(2-chloroethoxy)methane	5.00	U
111-44-4	Bis(2-chloroethyl)ether	5.00	U
108-60-1	Bis(2-chloroisopropyl)ether	5.00	U
117-81-7	Bis(2-ethylhexyl)phthalate	3.97	J
101-55-3	4-Bromophenyl phenyl ether	5.00	U
85-68-7	Butyl benzyl phthalate	5.00	U
86-74-8	Carbazole	2.00	U
106-47-8	4-Chloroaniline	5.00	U
510-15-6	Chlorobenzilate	5.00	U
59-50-7	4-Chloro-3-methylphenol	5.00	U
91-58-7	2-Chloronaphthalene	2.00	U
95-57-8	2-Chlorophenol	5.00	U
7005-72-3	4-Chlorophenyl phenyl ether	5.00	U
218-01-9	Chrysene	2.00	U
53-70-3	Dibenz(a,h)anthracene	4.40	
132-64-9	Dibenzofuran	5.00	U
84-74-2	Di-n-butyl phthalate	5.00	U
95-50-1	1,2-Dichlorobenzene	5.00	U
541-73-1	1,3-Dichlorobenzene	5.00	U
106-46-7	1,4-Dichlorobenzene	5.00	U

FORM 4
VOA-GCMS METHOD BLANK SUMMARY

775 342 CLIENT SAMPLE NO.

V2021711LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Lab File ID: 0302004 Lab Prep Batch: V2021701

Date Analyzed: 02/17/00 Time Analyzed: 1243

GC Column: ID: 2 (mm) Heated Purge: (Y/N) Y

Instrument ID: VOC2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	V2021711LCS	V2021701	0201002LCS	1110
02	0002-422-3	V2021701	0501006	1413
03	0002-422-1	V2021701	0601007	1459
04	0002-422-2	V2021701	0701008	1542
05	0002-423-6	V2021701	1301014	2019
06	V2021712LCS	V2021701	1401015	2105
07	0002-423-6MS	V2021701	1501016	2151
08	0002-423-6MS	V2021701	1601017	2237
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COMMENTS:

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
V2021711LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Matrix: (soil/water) WATER Lab Prep Batch: V2021701

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0302004

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 02/17/00

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	20.00	U
75-05-8	Acetonitrile	25.00	U
107-02-8	Acrolein	20.00	U
107-13-1	Acrylonitrile	20.00	U
107-05-1	Allyl chloride	1.00	U
71-43-2	Benzene	1.00	U
108-86-1	Bromobenzene	1.00	U
74-97-5	Bromochloromethane	1.00	U
75-27-4	Bromodichloromethane	1.00	U
75-25-2	Bromoform	1.00	U
74-83-9	Bromomethane	1.00	U
104-51-8	n-Butylbenzene	1.00	U
135-98-8	sec-Butylbenzene	1.00	U
98-06-6	tert-Butylbenzene	1.00	U
75-15-0	Carbon Disulfide	1.00	U
78-93-3	2-Butanone	100.0	U
56-23-5	Carbon Tetrachloride	1.00	U
108-90-7	Chlorobenzene	1.00	U
124-48-1	Chlorodibromomethane	1.00	U
75-00-3	Chloroethane	1.00	U
110-75-0	2-Chloroethyl vinyl Ether	5.00	U
67-66-3	Chloroform	1.00	U
74-87-3	Chloromethane	1.00	U
126-99-8	Chloroprene	1.00	U
95-49-8	2-Chlorotoluene	1.00	U
106-43-4	4-Chlorotoluene	1.00	U
96-12-8	1,2-Dibromo-3-chloropropane	1.00	U
106-93-4	1,2-Dibromoethane	1.00	U
74-95-3	Dibromomethane	1.00	U
95-50-1	1,2-Dichlorobenzene	1.00	U
541-73-1	1,3-Dichlorobenzene	1.00	U
106-46-7	1,4-Dichlorobenzene	1.00	U
1476-11-5	cis-1,4-Dichloro-2-butene	1.00	U

FORM 1 775 344 CLIENT SAMPLE NO.
VOA-GCMS ORGANICS ANALYSIS DATA SHEET

V2021711LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Matrix: (soil/water) WATER Lab Prep Batch: V2021701

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0302004

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 02/17/00

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.00	U
67-64-1	Dichlorodifluoromethane	1.00	U
75-34-3	1,1-Dichloroethane	1.00	U
107-06-2	1,2-Dichloroethane	1.00	U
75-35-4	1,1-Dichloroethene	1.00	U
156-59-4	cis-1,2-Dichloroethene	1.00	U
156-60-5	trans-1,2-Dichloroethene	1.00	U
78-87-5	1,2-Dichloropropane	1.00	U
142-28-9	1,3-Dichloropropane	1.00	U
590-20-7	2,2-Dichloropropane	1.00	U
563-58-6	1,1-Dichloropropene	1.00	U
10061-01-5	cis-1,3-Dichloropropene	1.00	U
10061-02-6	trans-1,3-Dichloropropene	1.00	U
108-20-3	Di isopropyl ether	1.00	U
123-91-1	1,4-Dioxane	100.0	U
141-78-6	Ethyl Acetate	5.00	U
100-41-4	Ethylbenzene	1.00	U
97-63-2	Ethyl methacrylate	1.00	U
110-00-9	Furan	1.00	U
87-63-3	Hexachlorobutadiene	1.00	U
110-54-3	Hexane	5.00	U
591-78-6	2-Hexanone	5.00	U
74-88-4	Iodomethane	1.00	U
78-83-1	Isobutyl Alcohol	100.0	U
98-82-8	Isopropylbenzene	1.00	U
99-87-6	4-Isopropyltoluene	1.00	U
126-98-7	Methacrylonitrile	10.00	U
75-09-2	Methylene Chloride	1.00	U
80-62-6	Methyl methacrylate	1.00	U
108-10-1	4-Methyl-2-Pentanone	5.00	U
1634-04-4	Methyl-tertbutyl-Ether	1.00	U
91-20-3	Naphthalene	1.00	U
76-01-7	Pentachloroethane	1.00	U

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
V2021711LB

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Matrix: (soil/water) WATER Lab Prep Batch: V2021701

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0302004

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 02/17/00

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
107-12-0	Propionitrile	10.00	U
109-60-4	n-Propyl Acetate	1.00	U
103-65-1	n-Propylbenzene	1.00	U
100-42-5	Styrene	1.00	U
630-20-6	1,1,1,2-Tetrachloroethane	1.00	U
79-34-5	1,1,2,2-Tetrachloroethane	1.00	U
127-18-4	Tetrachloroethene	1.00	U
109-99-9	Tetrahydrofuran	1.00	U
108-88-3	Toluene	1.00	U
87-61-6	1,2,3-Trichlorobenzene	1.00	U
120-82-1	1,2,4-Trichlorobenzene	1.00	U
71-55-6	1,1,1-Trichloroethane	1.00	U
79-00-5	1,1,2-Trichloroethane	1.00	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	1.00	U
79-01-6	Trichloroethene	1.00	U
75-69-4	Trichlorofluoromethane	1.00	U
96-18-4	1,2,3-Trichloropropane	1.00	U
95-63-6	1,2,4-Trimethylbenzene	1.00	U
108-67-8	1,3,5-Trimethylbenzene	1.00	U
108-05-4	Vinyl Acetate	5.00	U
75-01-4	Vinyl Chloride	1.00	U
1330-20-7	Xylene-mp	2.00	U
95-47-6	Xylene-o	1.00	U

FORM 1 775.346 CLIENT SAMPLE NO.

VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

V2021711LB

Lab Name: ETC,INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0302004

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 02/17/00

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM 3
WATER VOA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: V2021701

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Matrix Spike - Sample No.: V2021711LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Acetone	100.0		75.15	75	59-151
Acetonitrile	1000		734.4	73	57-143
Acrolein	100.0		97.05	97	59-134
Acrylonitrile	100.0		73.21	73	60-146
Allyl chloride	100.0		77.80	78	74-120
Benzene	100.0		84.30	84	72-124
Bromobenzene	100.0		91.70	92	77-120
Bromochloromethane	100.0		89.89	90	74-120
Bromodichloromethane	100.0		91.36	91	68-119
Bromoform	100.0		78.00	78	66-136
Bromomethane	100.0		81.84	82	40-134
n-Butylbenzene	100.0		91.43	91	69-129
sec-Butylbenzene	100.0		96.14	96	72-127
tert-Butylbenzene	100.0		94.80	95	73-126
Carbon Disulfide	100.0		72.75	73	60-133
2-Butanone	100.0		79.60	80	55-151
Carbon Tetrachloride	100.0		94.93	95	64-123
Chlorobenzene	100.0		89.54	90	77-112
Chlorodibromomethane	100.0		94.04	94	72-118
Chloroethane	100.0		86.50	86	64-142
2-Chloroethyl vinyl Eth	100.0		64.31	64	22-165
Chloroform	100.0		82.12	82	70-115
Chloromethane	100.0		86.63	87	58-139
Chloroprene	100.0		88.47	88	73-118
2-Chlorotoluene	100.0		91.30	91	65-132
4-Chlorotoluene	100.0		93.09	93	67-127
1,2-Dibromo-3-chloropro	100.0		72.03	72	56-134
1,2-Dibromoethane	100.0		83.95	84	74-118

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: V2021701

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Matrix Spike - Sample No.: V2021711LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Dibromomethane	100.0		84.68	85	75-114
1,2-Dichlorobenzene	100.0		78.44	78*	80-113
1,3-Dichlorobenzene	100.0		82.65	83	77-119
1,4-Dichlorobenzene	100.0		81.62	82	78-116
cis-1,4-Dichloro-2-bute	100.0		90.43	90	62-138
trans-1,4-Dichloro-2-bu	100.0		88.62	89	62-138
Dichlorodifluoromethane	100.0		78.36	78	48-145
1,1-Dichloroethane	100.0		86.73	87	76-118
1,2-Dichloroethane	100.0		83.77	84	62-124
1,1-Dichloroethene	100.0		86.96	87	69-121
cis-1,2-Dichloroethene	100.0		87.80	88	76-114
trans-1,2-Dichloroethen	100.0		89.66	90	72-121
1,2-Dichloropropane	100.0		88.96	89	64-133
1,3-Dichloropropane	100.0		82.59	82	68-128
2,2-Dichloropropane	100.0		107.8	108	67-132
1,1-Dichloropropene	100.0		88.79	89	76-117
cis-1,3-Dichloropropene	100.0		95.52	96	77-120
trans-1,3-Dichloroprope	100.0		95.37	95	73-124
Di isopropyl ether	100.0		85.87	86	62-160
1,4-Dioxane	2000		1620	81	56-131
Ethyl Acetate	100.0		73.80	74	52-151
Ethylbenzene	100.0		91.32	91	77-111
Ethyl methacrylate	200.0		164.8	82	57-140
Furan	100.0		130.1	130*	52-124
Hexachlorobutadiene	100.0		90.64	91	69-137
Hexane	100.0		98.52	98	70-130
2-Hexanone	100.0		76.71	77	53-144
Iodomethane	100.0		83.66	84	51-153

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOA-GCMS LAB CONTROL SAMPLE

Lab Name: ETC, INC. Lab Prep Batch: V2021701

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Matrix Spike - Sample No.: V2021711LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Isobutyl Alcohol	2000		1488	74	60-134
Isopropylbenzene	100.0		93.84	94	74-125
4-Isopropyltoluene	100.0		100.8	101	72-127
Methacrylonitrile	1000		722.9	72	70-125
Methylene Chloride	100.0		83.14	83	76-115
Methyl methacrylate	200.0		159.3	80	57-147
4-Methyl-2-Pentanone	100.0		76.10	76	42-144
Methyl-tertbutyl-Ether	100.0		84.43	84	62-122
Naphthalene	100.0		72.38	72	53-124
Pentachloroethane	100.0		161.6	162*	78-126
Propionitrile	1000		727.7	73	58-139
n-Propyl Acetate	100.0		114.8	115	88-170
n-Propylbenzene	100.0		96.32	96	75-125
Styrene	100.0		92.44	92	77-117
1,1,1,2-Tetrachloroetha	100.0		97.09	97	79-113
1,1,2,2-Tetrachloroetha	100.0		72.29	72	67-126
Tetrachloroethene	100.0		71.50	72*	77-115
Tetrahydrofuran	100.0		68.87	69*	76-181
Toluene	100.0		88.75	89	77-115
1,2,3-Trichlorobenzene	100.0		83.86	84	62-132
1,2,4-Trichlorobenzene	100.0		89.99	90	68-132
1,1,1-Trichloroethane	100.0		90.08	90	63-122
1,1,2-Trichloroethane	100.0		84.18	84	69-117
1,1,2-trichloro-1,2,2-t	100.0		80.04	80	70-130
Trichloroethene	100.0		87.18	87	75-113
Trichlorofluoromethane	100.0		86.62	87	55-130
1,2,3-Trichloropropane	100.0		79.38	79	62-130
1,2,4-Trimethylbenzene	100.0		96.47	96	69-126

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM III VOA-GCMS

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-10000003

Site ID DDMT-Dunn Field

Date Arrived 02/16/00
ETC Order Number 0002422

ETC Lab ID **0002422-02**
Sample ID: ST-EFF-121

Matrix :AQUEOUS
Sample Date :02/15/00

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED	BY	METHOD
Mercury Digestion Batch	V6-AQ-34					SH	245.1
Metals Digestion Batch	V19-AQ-03					NR	3030K
Silver	<0.009	mg/L	0.009	0937	02/21/00	SH	200.7
Aluminum	<0.060	mg/L	0.060	0937	02/21/00	SH	200.7
Arsenic	<0.003	mg/L	0.003	0545	02/18/00	JF	206.2
Barium	0.108	mg/L	0.003	0937	02/21/00	SH	200.7
B llium	<0.002	mg/L	0.002	0937	02/21/00	SH	200.7
C. ium	21.6	mg/L	0.015	0937	02/21/00	SH	200.7
Cadmium	<0.005	mg/L	0.005	0937	02/21/00	SH	200.7
Cobalt	<0.009	mg/L	0.009	0937	02/21/00	SH	200.7
Chromium	<0.009	mg/L	0.009	0937	02/21/00	SH	200.7
Copper	<0.008	mg/L	0.008	0937	02/21/00	SH	200.7
Iron	0.036	mg/L	0.009	0937	02/21/00	SH	200.7
Mercury	<0.0002	mg/L	0.0002	1614	02/16/00	SH	245.1
Potassium	0.874	mg/L	0.250	0937	02/21/00	SH	200.7
Magnesium	11.3	mg/L	0.040	0937	02/21/00	SH	200.7
Manganese	0.025	mg/L	0.003	0937	02/21/00	SH	200.7
Sodium	23.5	mg/L	0.050	0937	02/21/00	SH	200.7
Nickel	<0.020	mg/L	0.020	0937	02/21/00	SH	200.7
Lead	<0.060	mg/L	0.060	0937	02/21/00	SH	200.7
Antimony	<0.040	mg/L	0.040	0937	02/21/00	SH	200.7
Selenium	<0.100	mg/L	0.100	0937	02/21/00	SH	200.7
Thallium	<0.065	mg/L	0.065	0937	02/21/00	SH	200.7
Vanadium	<0.010	mg/L	0.010	0937	02/21/00	SH	200.7
Zinc	0.053	mg/L	0.010	0937	02/21/00	SH	200.7

CDS
BORATORY MANAGER

WATER METHOD BLANK
METALS

Lab Name	Environmental Testing and Consulting, Inc		
Laboratory ID ICP/GFAA Metals	V19-AQ-03 BLK	QC Batch	V19-AQ-03
Laboratory ID Mercury	V6-AQ-34 BLK		V6-AQ-34
Date Sample Prepared	02/16/00		ICP/GFAA Metals
	02/16/00		Mercury

Metals	Concentration mg/L	Detection Limit mg/L	Date Analyzed	Method
Silver	ND	0.009	02/21/00	200.7
Aluminum	ND	0.060	02/21/00	200.7
Arsenic	ND	0.003	02/18/00	206.2
Barium	ND	0.003	02/21/00	200.7
Beryllium	ND	0.002	02/21/00	200.7
Calcium	ND	0.015	02/21/00	200.7
Cadmium	ND	0.005	02/21/00	200.7
Cobalt	ND	0.009	02/21/00	200.7
Chromium	ND	0.009	02/21/00	200.7
Copper	ND	0.008	02/21/00	200.7
Iron	ND	0.009	02/21/00	200.7
Potassium	ND	0.250	02/21/00	200.7
Magnesium	ND	0.040	02/21/00	200.7
Manganese	ND	0.003	02/21/00	200.7
Sodium	ND	0.050	02/21/00	200.7
Nickel	ND	0.020	02/21/00	200.7
Lead	ND	0.060	02/21/00	200.7
Antimony	ND	0.040	02/21/00	200.7
Selenium	ND	0.100	02/21/00	200.7
Thallium	ND	0.065	02/21/00	200.7
Vanadium	ND	0.010	02/21/00	200.7
Zinc	ND	0.010	02/21/00	200.7
Mercury	ND	0.0002	02/16/00	245.1

QC REVIEWED ✓

WATER LABORATORY CONTROL SAMPLE
METALS

Lab Name: Environmental Testing and Consulting, Inc

			QC Batch
Laboratory Control ID	ICP/GFAA Metals	V19-AQ-03 LCS	V19-AQ-03
	Mercury	V6-AQ-34 LCS	V6-AQ-34
Date Prepared	ICP/GFAA Metals	02/16/00	
	Mercury	02/16/00	

Metals	Spike Added mg/L	Found mg/L	% R	#	QC Limits	
Silver	0.250	0.260	104		80	120
Aluminum	2.50	2.61	104		80	120
Arsenic	0.063	0.066	105		85	115
Barium	2.50	2.63	105		80	120
Beryllium	0.250	0.264	106		80	120
Calcium	5.00	5.16	103		80	120
Cadmium	0.250	0.254	102		80	120
Cobalt	1.25	1.30	104		80	120
Chromium	0.500	0.523	105		80	120
Copper	0.500	0.542	108		80	120
Iron	2.50	2.75	110		80	120
Potassium	5.00	5.12	102		80	120
Magnesium	5.00	5.24	105		80	120
Manganese	0.250	0.254	102		80	120
Sodium	5.00	5.16	103		80	120
Nickel	1.25	1.28	102		80	120
Lead	1.25	1.26	101		80	120
Antimony	2.50	2.67	107		80	120
Selenium	1.25	1.34	107		80	120
Thallium	1.25	1.19	95		80	120
Vanadium	1.25	1.35	108		80	120
Zinc	0.250	0.268	107		80	120
Mercury	0.0050	0.0045	90		80	120

\# Column to be used to flag recovery values with an asterisk
* Values outside of QC limits

QC REVIEWED _____

775 353

WATER MATRIX SPIKE
METALS

Lab Name Environmental Testing and Consulting, Inc

		QC Batch
Laboratory ID MS ICP/GFAA Metals	0002-422-01	V19-AQ-03
Laboratory ID MS Mercury	0002-422-01	V6-AQ-34

Date Sample Prepared	02/16/00	ICP/GFAA Metals
	02/16/00	Mercury

Metals	SPIKE Added mg/L	SAMPLE Conc mg/L	MS Conc mg/L	RPD <20% #	MS % Rec #	QC Limits	
Silver	0.250	ND	0.171	15	68 *	75	125
Aluminum	2.50	ND	2.60	3	104	75	125
Arsenic	0.063	ND	0.064	2	102	85	115
Barium	2.50	0.106	2.73	2	105	75	125
Beryllium	0.250	ND	0.275	2	110	75	125
Calcium	5.00	21.0	26.2	2	104	75	125
Cadmium	0.250	ND	0.265	2	106	75	125
Cobalt	1.25	ND	1.30	2	104	75	125
Chromium	0.500	ND	0.533	2	107	75	125
Copper	0.500	ND	0.551	3	110	75	125
Iron	2.50	0.114	2.88	2	111	75	125
Potassium	5.00	0.816	5.74	5	98	75	125
Magnesium	5.00	10.8	16.1	1	106	75	125
Manganese	0.250	0.025	0.279	2	102	75	125
Sodium	5.00	22.7	27.1	4	88	75	125
Nickel	1.25	ND	1.30	1	104	75	125
Lead	1.250	ND	1.31	1	105	75	125
Antimony	2.50	ND	2.72	1	109	75	125
Selenium	1.25	ND	1.35	1	108	75	125
Thallium	1.25	ND	1.22	2	98	75	125
Vanadium	1.25	ND	1.36	2	109	75	125
Zinc	0.250	0.305	0.573	1	107	75	125
Mercury	0.0050	ND	0.0047	2	94	75	125

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits
ND - Not Detected

QC REVIEWED _____

WATER MATRIX SPIKE DUPLICATE
METALS

Lab Name Environmental Testing and Consulting, Inc

		QC Batch
Laboratory ID MS ICP/GFAA Metals	0002-422-01	V19-AQ-03
Laboratory ID MS Mercury	0002-422-01	V6-AQ-34

Date Sample Prepared	02/16/00	ICP/GFAA Metals
	02/16/00	Mercury

Metals	SPIKE Added mg/L	SAMPLE Conc mg/L	MSD Conc mg/L		MSD % Rec #	QC Limits	
Silver	0.250	ND	0.147		59 *	75	125
Aluminum	2.50	ND	2.68		107	75	125
Arsenic	0.063	ND	0.065		103	85	115
Barium	2.50	0.106	2.79		107	75	125
Beryllium	0.250	ND	0.281		112	75	125
Calcium	5.00	21.0	26.6		112	75	125
Cadmium	0.250	ND	0.270		108	75	125
Cobalt	1.25	ND	1.32		106	75	125
Chromium	0.500	ND	0.546		109	75	125
Copper	0.500	ND	0.568		114	75	125
Iron	2.50	0.114	2.95		113	75	125
Potassium	5.00	0.816	6.01		104	75	125
Magnesium	5.00	10.8	16.3		110	75	125
Manganese	0.250	0.025	0.285		104	75	125
Sodium	5.00	22.7	28.3		112	75	125
Nickel	1.25	ND	1.31		105	75	125
Lead	1.25	ND	1.32		106	75	125
Antimony	2.50	ND	2.76		110	75	125
Selenium	1.25	ND	1.34		107	75	125
Thallium	1.25	ND	1.24		99	75	125
Vanadium	1.25	ND	1.39		111	75	125
Zinc	0.250	0.305	0.580		110	75	125
Mercury	0.0050	ND	0.0048		96	75	125

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits
ND - Not Detected

QC REVIEWED _____

775 355

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-10000003
FID #

Site ID: DDMT-Dunn Field

Date Arrived 02/16/00
ETC Order Number 0002422

ETC Lab ID **0002422-01**
Sample ID: ST-EFF-021

Matrix :AQUEOUS
Sample Date :02/15/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							8260B
QC Batch	V2021701	ug/L			02/17/00	LS	
Acetone	ND	ug/L	20.0				
Benzene	ND	ug/L	1.00				
Bromodichloromethane	ND	ug/L	1.00				
Bromoform	ND	ug/L	1.00				
Bromomethane	ND	ug/L	1.00				
Carbon Disulfide	ND	ug/L	1.00				
Carbon Tetrachloride	1.71	ug/L	1.00				
Chlorobenzene	ND	ug/L	1.00				
Chlorodibromomethane	ND	ug/L	1.00				
Chloroethane	ND	ug/L	1.00				
Chloroform	6.51	ug/L	1.00				
Chloromethane	ND	ug/L	1.00				
1,1-Dichloroethane	ND	ug/L	1.00				
1,2-Dichloroethane	ND	ug/L	1.00				
1,1-Dichloroethene	13.8	ug/L	1.00				
trans-1,2-Dichloroethene	12.3	ug/L	1.00				
1,2-Dichloropropane	ND	ug/L	1.00				
cis-1,3-Dichloropropene	ND	ug/L	1.00				
trans-1,3-Dichloropropene	ND	ug/L	1.00				
Ethylbenzene	ND	ug/L	1.00				
2-Hexanone (MBK)	ND	ug/L	5.00				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00				
2-Butanone (MEK)	ND	ug/L	20.0				
Methylene Chloride	ND	ug/L	5.00				
Styrene	ND	ug/L	1.00				
1,1,2,2-Tetrachloroethane	177	ug/L	1.00				
Tetrachloroethene	14.9	ug/L	1.00				
Toluene	ND	ug/L	1.00				
1,1,1-Trichloroethane	0.48J	ug/L	1.00				
1,1,2-Trichloroethane	0.80J	ug/L	1.00				
Trichloroethene	177	ug/L	1.00				
Vinyl Acetate	ND	ug/L	20.0				
Vinyl Chloride	ND	ug/L	1.00				
o-Xylenes	ND	ug/L	1.00				
m-Xylenes	ND	ug/L	1.00				
p-Xylenes	ND	ug/L	1.00				
cis-1,2-Dichloroethene	43.8	ug/L	1.00				

Surrogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	97	74	123
S2 - Toluene-d8	97	86	112
S3 - 4-Bromofluorobenzene	99	81	115

CPS
LABORATORY MANAGER

ND - Not Detected

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

0002-422-1

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0601007

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 02/17/00

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

775 357

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-10000003
FID #

Site ID: DDMT-Dunn Field

Date Arrived 02/16/00
ETC Order Number 0002422

ETC Lab ID **0002422-02**
Sample ID: ST-EFF-121

Matrix :AQUEOUS
Sample Date :02/15/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							8260B
QC Batch	V2021701				02/17/00	LS	
Acetone	ND	ug/L	20.0				
Benzene	ND	ug/L	1.00				
Bromodichloromethane	ND	ug/L	1.00				
Bromoform	ND	ug/L	1.00				
Bromomethane	ND	ug/L	1.00				
Carbon Disulfide	ND	ug/L	1.00				
Carbon Tetrachloride	1.67	ug/L	1.00				
Chlorobenzene	ND	ug/L	1.00				
Chlorodibromomethane	ND	ug/L	1.00				
Chloroethane	ND	ug/L	1.00				
Chloroform	6.58	ug/L	1.00				
Chloromethane	ND	ug/L	1.00				
1,1-Dichloroethane	0.40J	ug/L	1.00				
1,2-Dichloroethane	ND	ug/L	1.00				
1,1-Dichloroethene	14.1	ug/L	1.00				
trans-1,2-Dichloroethene	12.3	ug/L	1.00				
1,2-Dichloropropane	ND	ug/L	1.00				
cis-1,3-Dichloropropene	ND	ug/L	1.00				
trans-1,3-Dichloropropene	ND	ug/L	1.00				
Ethylbenzene	ND	ug/L	1.00				
2-Hexanone (MBK)	ND	ug/L	5.00				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00				
2-Butanone (MEK)	ND	ug/L	20.0				
Methylene Chloride	ND	ug/L	5.00				
Styrene	ND	ug/L	1.00				
1,1,2,2-Tetrachloroethane	189	ug/L	1.00				
Tetrachloroethene	15.3	ug/L	1.00				
Toluene	ND	ug/L	1.00				
1,1,1-Trichloroethane	0.48J	ug/L	1.00				
1,1,2-Trichloroethane	0.75J	ug/L	1.00				
Trichloroethene	179	ug/L	1.00				
Vinyl Acetate	ND	ug/L	20.0				
Vinyl Chloride	ND	ug/L	1.00				
o-Xylenes	ND	ug/L	1.00				
m-Xylenes	ND	ug/L	1.00				
p-Xylenes	ND	ug/L	1.00				
cis-1,2-Dichloroethene	43.7	ug/L	1.00				

Surrogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	97	74	123
S2 - Toluene-d8	96	86	112
S3 - 4-Bromofluorobenzene	98	81	115

ABORATORY MANAGER

ND - Not Detected

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

0002-422-2

Lab Name: ETC,INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0701008

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 02/17/00

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
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775 359

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name: Sverdrup Corporation
Memphis Defense Depot
13723 Riverport Drive
Maryland Heights, MO 63043

Project # 801370-10000003
FID #

Site ID: DDMT-Dunn Field

Date Arrived 02/16/00
ETC Order Number 0002422

ETC Lab ID **0002422-03**
Sample ID: Trip Blank

Matrix :AQUEOUS
Sample Date :02/15/00

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics							8260B
QC Batch	V2021701	ug/L			02/17/00	LS	
Acetone	ND	ug/L	20.0				
Benzene	ND	ug/L	1.00				
Bromodichloromethane	ND	ug/L	1.00				
Bromoform	ND	ug/L	1.00				
Bromomethane	ND	ug/L	1.00				
Carbon Disulfide	ND	ug/L	1.00				
Carbon Tetrachloride	ND	ug/L	1.00				
Chlorobenzene	ND	ug/L	1.00				
Chlorodibromomethane	ND	ug/L	1.00				
Chloroethane	ND	ug/L	1.00				
Chloroform	ND	ug/L	1.00				
Chloromethane	ND	ug/L	1.00				
1,1-Dichloroethane	ND	ug/L	1.00				
1,2-Dichloroethane	ND	ug/L	1.00				
1,1-Dichloroethene	ND	ug/L	1.00				
trans-1,2-Dichloroethene	ND	ug/L	1.00				
1,2-Dichloropropane	ND	ug/L	1.00				
cis-1,3-Dichloropropene	ND	ug/L	1.00				
trans-1,3-Dichloropropene	ND	ug/L	1.00				
Ethylbenzene	ND	ug/L	1.00				
2-Hexanone (MBK)	ND	ug/L	5.00				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00				
2-Butanone (MEK)	ND	ug/L	20.0				
Methylene Chloride	ND	ug/L	5.00				
Styrene	ND	ug/L	1.00				
1,1,2,2-Tetrachloroethane	ND	ug/L	1.00				
Tetrachloroethene	ND	ug/L	1.00				
Toluene	ND	ug/L	1.00				
1,1,1-Trichloroethane	ND	ug/L	1.00				
1,1,2-Trichloroethane	ND	ug/L	1.00				
Trichloroethene	ND	ug/L	1.00				
Vinyl Acetate	ND	ug/L	20.0				
Vinyl Chloride	ND	ug/L	1.00				
o-Xylenes	ND	ug/L	1.00				
m-Xylenes	ND	ug/L	1.00				
p-Xylenes	ND	ug/L	1.00				
cis-1,2-Dichloroethene	ND	ug/L	1.00				

Surrogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	96	74	123
S2 - Toluene-d8	96	86	112
S3 - 4-Bromofluorobenzene	98	81	115

LABORATORY MANAGER

ND - Not Detected

775 360

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

0002-422-3

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 10.00 (g/mL) ML Lab File ID: 0501006

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 02/17/00

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
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FORM 2
WATER VOA-GCMS SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ETC, INC. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 0002-422

	CLIENT SAMPLE NO.	SMC1 #	SMC2 (TOL) #	SMC3 (BFB) #	OTHER	TOT OUT
01	V2021711LCS	92	93	106		0
02	V2021711LB	93	95	96		0
03	0002-422-3	96	96	98		0
04	0002-422-1	97	97	99		0
05	0002-422-2	97	96	98		0
06	V2021712LCS	98	97	100		0
07						
08						
09						
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30						

		QC LIMITS
SMC1	= Dibromofluoromethane	(74-123)
SMC2 (TOL)	= Toluene-d8	(86-112)
SMC3 (BFB)	= Bromofluorobenzene	(81-115)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

APPENDIX D

Data Evaluation of Quarterly Groundwater and Monthly Effluent Samples

Data Evaluation

Field Quality Control

During the field sampling events at the Defense Depot in Memphis, Tennessee, a total of four effluent samples were collected from November 16, 1999 through February 15, 2000. The required analyses included volatiles (EPA 8260B), semi-volatiles (EPA 8270C) and metals (EPA 200 series). Submitted with the samples were four trip blanks, and three duplicate samples.

Trip blanks were submitted with all effluent samples and analyzed for volatiles (EPA 8260B). All trip blanks gave non-detect results for all compounds.

The three samples taken in duplicate were ST-EFF-018, ST-EFF-019 and ST-EFF-021. The duplicates were analyzed for the same tests as the original samples. The following table lists the duplicate relative percent difference (RPD) calculations. A blank space indicates that compound was not found in the sample or its duplicate. "NC" indicates the RPD could not be calculated due to a positive result in a sample but not its duplicate.

Analyte	018 RPD	019 RPD	021 RPD
Volatile Organics			
Carbon tetrachloride	5	**37**	2
Chloroform	1	**32**	1
1,1-Dichloroethane		NC	NC
1,1-Dichloroethene	1	**42**	2
Trans-1,2-Dichloroethene	2	**40**	0
1,1,2,2-Tetrachloroethane	2	5	7
Tetrachloroethene	1	**29**	3
1,1,1-Trichloroethane		**35**	0
1,1,2-Trichloroethane		NC	NC
Trichloroethene	2	**25**	1
Cis-1,2-Dichloroethene	1	**36**	0
Wet-Chemistry			
pH		3	12
Metals			
Barium	1	2	2
Calcium	1	2	3
Copper	NC		
Iron	**31**	24	**104**
Potassium	**34**	9	7
Magnesium	1	1	5
Manganese	0	0	0
Sodium	2	6	3
Nickel	NC		
Zinc	24	4	**141**

Data Evaluation

The acceptance criteria used for field duplicates was <20% for organic compounds and <30% for metals analytes (reference SW-846 Test Methods for Evaluating Solid Waste and 600R94111 Methods for the Determination of Metals in Environmental Samples). There were no detectable concentrations of semi-volatile compounds in any effluent samples. There were significant differences in the volatile results for sample ST-EFF-019 and its duplicate. The other two duplicate samples yielded good RPDs for all volatile compounds. Two duplicate samples yielded high RPDs for two metals analytes each. As the unacceptable RPD values were not consistent for all compounds or analytical methods, the varying sample results were probably due to lack of homogeneity in the samples. The sample results for iron and potassium in ST-EFF-018 and ST-EFF-116 should be flagged. The sample results for carbon tetrachloride, chloroform, 1,1-dichloroethene, trans-1,2-dichloroethane, 1,1,1-trichloroethane and cis-1,2-dichloroethane in ST-EFF-019 and ST-EFF-117 should be flagged. The sample results for iron and zinc in ST-EFF-021 and ST-EFF-121 should be flagged.

Laboratory Quality Control

A method blank and a laboratory control sample were analyzed in each batch containing a sample from this project. Surrogates were used by the laboratory to show control of organic analyses. Matrix spike and matrix spike duplicate samples were analyzed on project samples as sufficient amounts of sample were available. For batches that did not include matrix spike and matrix spike duplicates, a laboratory control duplicate sample was analyzed.

The method blanks associated with all four effluent samples yielded positive recoveries for methylene chloride. There were no detectable concentrations of methylene chloride in the samples. The method blank associated with ST-EFF-018 yielded a positive recovery for sodium. The method blank associated with ST-EFF-019 gave detectable concentrations of aluminum and calcium. The sodium result for ST-EFF-018 and the aluminum and calcium results for ST-EFF-019 were greater than twenty times the blank hits, so no actions were taken. There were positive semi-volatile recoveries in all four method blanks, but all sample results were below the reporting limits, so no actions were taken.

The LCS/LCSD samples associated with ST-EFF-018 yielded a few recoveries outside acceptance limits for volatiles and semi-volatiles; however the only target compounds out of control were below the reporting limit in the sample. For ST-EFF-019 the trichloroethene result should be flagged as biased low due to a low LCS recovery. For ST-EFF-020 the chrysene result should be flagged as biased low due to a low LCS recovery. For ST-EFF-021 the tetrachloroethene result should be flagged as biased low due to a low LCS recovery.

The only qualification due to unacceptable MS/MSD recoveries was for sodium in ST-EFF-019. For this sample the MS and MSD recoveries were low, and sodium was detected in the sample. The detectable concentration of sodium in ST-EFF-019 may be biased low.

Data Evaluation

One high surrogate recovery each for ST-EFF-018 and ST-EFF-021 was reported for the semi-volatiles. As all semi-volatile results were below the reporting limit, a high surrogate recovery would not affect the samples. One low volatiles surrogate was reported for the dilution rerun of ST-EFF-20, but the original results were reported. No flags were assigned for surrogate failures as batch control was expressed by passing surrogates for each sample.

The project completeness criteria of 95% were met, as the combined completeness for all samples and all analyses was 97.6%.

Data Evaluation

Field Quality Control

The second year first quarter sampling event for the Defense Depot in Memphis, Tennessee took place in February 2000. The required analysis was volatiles (EPA 8260B). Two trip blanks, three equipment blanks and one field blank were submitted with the samples. All trip blanks, equipment blanks and field blanks yielded non-detect results for all compounds.

Laboratory Quality Control

A method blank and a laboratory control sample were analyzed in each batch containing a sample from this project. Surrogates were used by the laboratory to show control of organic analyses. Matrix spike and matrix spike duplicate samples were analyzed in each batch.

All method blanks gave only non-detect results. There were three LCS samples as three batches of volatiles results were provided. The first batch LCS gave only non-target recoveries outside acceptance limits. The second and third batch LCS samples yielded some high recoveries, but only for target compounds whose sample results were below the reporting limits. No qualifications were applied for LCS exceedances.

All surrogate recoveries were within acceptance criteria. Where MS/MSD recoveries were high, the compounds yielded sample results below the reporting limits. No qualifications were applied for MS exceedances.

The project completeness criteria were met at 97.7%, where the project requirements were 95%.

FINAL PAGE

ADMINISTRATIVE RECORD

FINAL PAGE