GW - 16

REPORTS

YEAR(S):

1989 - 1988

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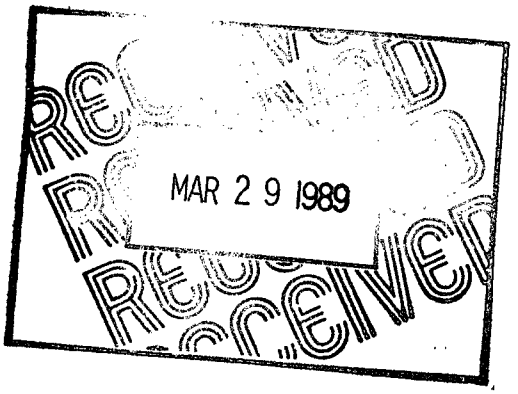

AT KEARNEY

March 28, 1989

Mr. Thomas D. Clark
Regional Project Officer
U. S. Environmental Protection Agency
1445 Ross Avenue
Dallas, TX 75202-2733

Reference: EPA Contract No. 68-01-7374; Work Assignment No. R26-06-03; Phillips Petroleum-Eunice Natural Gas Plant; Eunice, New Mexico; EPA I.D. No. NMD000709675; Comprehensive Ground-Water Monitoring Evaluation Report

Dear Mr. Clark:

As you requested, we have enclosed one copy of the deliverable and one copy of the cover letter for the above-referenced project. We are sending the original report and two copies of the report to Julie Wanslow at the New Mexico Environmental Improvement Division. Due to the unusual length of time required to obtain the analytical data from the New Mexico State laboratory and the fact that the current contract terminates on March 31, 1989, we will be unable to respond to any comments you may have concerning this report. However, we would like to offer you a copy of the report (excluding Appendices C, D and E) on a disk in "Word Perfect 5.0" format. This would allow you to make revisions to the report as you require.

As a result of this evaluation, we found several technical deficiencies which may constitute violation of 40 CFR Parts 265 and 270. Detailed lists of deficiencies and potential regulatory violations are provided in our report.

There are several issues we identified during this evaluation that we feel should be brought to your attention:

- In the 1988 geological investigation report, the owner/ operator stated that well development was difficult and probably incomplete due to the relatively low well yield experienced during pumping. Based on results from the turbidity analyses, we agree that the wells were indeed not properly designed or developed.

- The upgradient well may be affected by facility processes and wastewater treatment tanks which are located upgradient from this well.

- Based on water level data, it appears that the owner/operator should add an additional downgradient well north of MW-2 to detect any contamination emanating from the north side of the surface impoundment.

Please contact me or Steve Muse, the Work Assignment Manager, at (703) 548-4700, if you have any questions.

Sincerely,

Arthur Glazer
Technical Director

Enclosure

cc: J. Wanslow, EID (original and two copies)
J. Levin
D. Bean
S. Muse
A. Schaffer (w/o enclosure)
B. Stewart, SAIC

COMPREHENSIVE GROUND-WATER MONITORING EVALUATION

REPORT

Phillips Petroleum-Eunice Natural Gas Plant
Eunice, New Mexico
EPA I.D. Number NMD000709675

Prepared for:

U.S. Environmental Protection Agency
Region VI
1445 Ross Avenue
Dallas, Texas 75202-2733

Prepared by:

Kearney/Centaur
A Division of A. T. Kearney, Inc.
225 Reinekers Lane
Alexandria, VA 22313

Contract No. 68-01-7374
Work Assignment No. R26-06-03

March 1989

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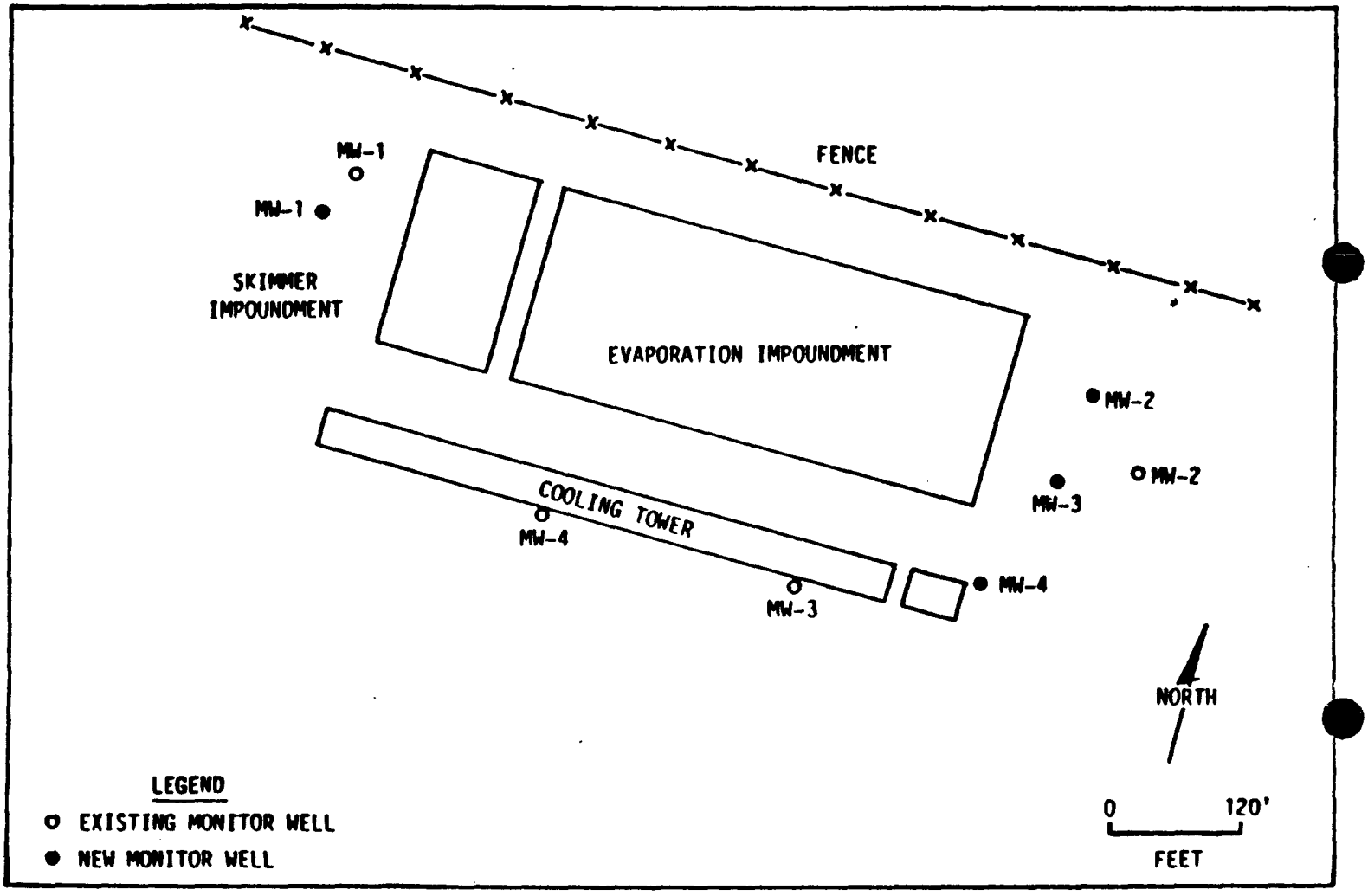


Exhibit 1-1

Eunice Site Map Showing Former and New Ground-Water Monitoring Wells

(Source: Reference 20)

EPA issued a Compliance Order to Phillips on September 29, 1983 for operating without interim status and failing to determine if the cooling tower blowdown water was a hazardous waste. The Order also required Phillips to submit closure and post closure plans for the surface impoundment[7].

1.5.2 Ground-Water Monitoring Status of the Phillips-Eunice Facility

Phillips operated a surface impoundment for chromium based cooling tower blowdown disposal and treatment from 1963 until 1983[14, 21].
According to the facility's closure plan, the estimated mass of elemental chromium in the cooling tower water discharged to the surface impoundment was 479 kilograms/year[11]. In 1984, the facility installed four interim status monitoring wells (MW-1 through MW-4) to monitor the uppermost aquifer beneath the surface impoundment. These wells were determined, by EID and EPA Region VI to be inadequately designed. EID directed the facility to plug and abandon these wells and install four new monitoring wells (MW-1 through MW-4)[20]. The new monitoring wells were installed and sampled on May 10, 1988 under first year interim status detection monitoring requirements. The facility will continue to monitor under interim status, pending approval or rejection of the surface impoundment closure certification by EID.

2.0 KEY FINDINGS

This section presents the findings of the CME in terms of the elements of the ground-water performance standards which have not been met by the Eunice facility, the technical deficiencies which were discovered during the office and field evaluations, and the regulations under 40 CFR Parts 265 and 270 which may have been violated. Table 2-1 summarizes the findings. Subsequent sections provide the basis for these findings and present further details about the facility and its operations.

Table 2-1

Elements of Ground-Water Performance Standard Requirements Which Were Not Met	Technical Deficiencies Which May Constitute Violations Under 40 CFR Parts 265 and 270	Regulatory Citations
Uppermost aquifer must be correctly identified; ground-water flow directions and rates must be properly defined; and geologic and hydrogeologic formations underlying the site must be fully characterized	o Failure to clearly define the extent of the uppermost aquifer in the area of the facility	§265.90(a) §265.91(a)(1) (a)(2) *§270.14(c)(2)
	o Failure to adequately consider aquifers which may be hydraulically interconnected to the uppermost aquifer	§265.90(a) §265.91(a)(1) (a)(2) *§270.14(c)(2)
	o Failure to assess significance of vertical gradients when evaluating flow rates and directions	§265.90(a) §265.91(a)(1) (a)(2) §270.14(c)(2)
	o Failure to prepare flow nets	§270.14(c)(2)
	o Failure to document the procedure for establishing the potentiometric surface	§265.90(a) §265.91(a)(1) (a)(2) §270.14(c)(2)
	o Failure to document the method(s) of obtaining samples during the 1984 boring program	§265.90(a) §265.91(a)(1) §270.14(c)(2)
	o Failure to consider temporal and seasonal variations in water levels when establishing flow directions	§265.90(a) §265.91(a)(1) (a)(2) §270.14(c)(2)

* Indicates potential Class I regulatory violation.

Table 2-1 (Cont.)

Elements of Ground-Water Performance Standard Requirements Which Were Not Met	Technical Deficiencies Which May Constitute Violations Under 40 CFR Parts 265 and 270	Regulatory Citations
Uppermost aquifer must be correctly identified; ground-water flow directions and rates must be properly defined; and geologic and hydrogeologic formations underlying the site must be fully characterized (cont.)	o Failure to perform pump tests to determine hydraulic conductivity of uppermost aquifer	§270.14(c)(2)
	o Failure to collect sufficient hydrogeologic data to support selection of the geometric dimensions of the uppermost aquifer	§265.90(a) §265.91(a)(1) (a)(2) §270.14(c)(2)
	o Failure to document presence or absence of confining layer	*§270.14(c)(2)
	o Failure to perform pump tests to prove a lack of interconnection between aquifers	*§270.14(c)(2)
	o Failure to drill sufficient borings in the site investigative program to establish subsurface conditions	§270.14(c)(2)
	o Failure to provide geologic and hydrogeologic cross-sections concerning subsurface conditions	§270.14(c)(2)
	o Failure to prepare boring logs and field notes during 1984 boring program	§270.24(c)(2)
	o Failure to prepare geologic or soil maps	§270.14(c)(2)
	o Failure to perform material tests and geochemical analyses on boring samples	§270.14(c)(2)
	o Failure to prepare structure maps of the water-bearing formations and confining layer	§270.14(c)(2)
	o Failure to adequately characterize site hydrogeology	*§270.14(c)(2)

Table 2-1 (Cont.)

Elements of Ground-Water Performance Standard Requirements Which Were Not Met	Technical Deficiencies Which May Constitute Violations Under 40 CFR Parts 265 and 270	Regulatory Citations
Uppermost aquifer must be correctly identified; ground-water flow directions and rates must be properly defined; and geologic and hydrogeologic formations underlying the site must be fully characterized (cont.)	o Failure to document qualifications of personnel supervising boring program in 1984	§270.14(c)(2)
	o Overreliance on regional geologic and hydrogeologic data in site investigation	§270.14(c)(2)
	o Failure to provide a topographic map prepared by a licensed surveyor	§270.14(c)(2)
	o Failure to document methods or criteria used to correlate and analyze subsurface data	§270.14(c)(2)
	o Failure to provide documentation of criteria used to select boring locations	§270.14(c)(2)
	o Failure to have 1984 boring logs prepared by a qualified geologist	§270.14(c)(2)
Background monitoring wells must be constructed so as to yield samples that are representative of site ground-water quality and located so as to yield samples unaffected by the facility	o Failure to install a background well which is unaffected by the facility	*§265.90(a) *§265.91(a)(1)
Downgradient monitoring wells must be located so as to immediately detect any contamination migrating from the facility and constructed so as to yield samples representative of on-site ground-water quality	o Failure to implement a ground water monitoring program capable of determining the facility's impact on the quality of ground water in the uppermost aquifer underlying the facility	*§265.90(a)
	o Failure to properly develop monitoring wells after construction or failure to properly design a GWMS	*§265.91(a)

* Indicates potential Class I regulatory violation.

Table 2-1 (Cont.)

Elements of Ground-Water Performance Standard Requirements Which Were Not Met	Technical Deficiencies Which May Constitute Violations Under 40 CFR Parts 265 and 270	Regulatory Citations
Samples from background and down-gradient wells must be properly collected and analyzed	o Failure to prepare and submit an adequate sampling and analysis plan	*§265.92(a)
	o Failure to transfer samples directly to containers from bailer	§265.90(a) §265.92(a) §265.93(d)(4) §270.14(c)(4)
	o Failure to use trip blanks for each type of sample container	§265.90(a) §265.92(a) §265.93(d)(4) §270.14(c)(4)
	o Failure to document type of sample containers for inorganics in the sampling and analysis plan	§265.90(a) §265.92(a) §265.93(d)(4) §270.14(c)(4)
	o Failure to use sampling methods which can detect immiscible layers	§265.90(a) §265.92(a) §265.93(d)(4) §270.14(c)(4)
	o Failure to obtain equipment blanks	§265.90(a) §265.92(a) §265.93(d)(4) §270.14(c)(4)
	o Improper handling of samples for volatiles analysis; samples agitated as placed in containers	§265.90(a) §265.92(a) §265.93(d)(4) §270.14(c)(4)
	o Chain-of-custody form does not request time or date of collection	§265.90(a) §265.92(a) §265.93(d)(4) §270.14(c)(4)

* Indicates potential Class I regulatory violation.

3.0 DISCUSSION OF THE OFFICE EVALUATION AND FIELD EVALUATION FOR THE PHILLIPS EUNICE FACILITY

The office evaluation and field evaluation phases of a CME involve review of available file information concerning the facility's ground-water monitoring program and ground-water monitoring system (GWMS) design, and a site visit for the purpose of evaluating the operation of the GWMS. Checklists for both the office and field evaluation have been developed to aid the technical reviewer in the evaluation. These checklists have been completed for this CME and are attached as Appendices A and B. Findings and conclusions of the office and field evaluation are presented in Section 5.1 and 5.2, respectively.

EPA Region VI and the Mexico Environmental Improvement Division (EID) requested the Kearney Team to conduct the field evaluation at the Eunice facility and to obtain ground-water sample splits. The Kearney Team was composed of Phebe Davol and Marianne Smith, and Phillips was represented by Mr. Mike Ford. The field evaluation of the Eunice facility was conducted on November 2 and 3, 1988.

The Kearney Team arrived at the Eunice facility at 10:00 a.m. Mountain Standard Time (MST), as previously arranged with the facility representative. As this was the fourth Phillips facility at which a CME had been conducted in two weeks, a formal briefing meeting was not necessary to discuss the purpose of the CME. The field team accompanied Mr. Ford directly to MW-1 to begin the field evaluation.

The ambient air temperature was about 65°F and winds were gusting from the southwest at 15 to 20 knots. Heavy equipment traffic enroute to and from the surface impoundment created an almost continuous dust storm during the purging and sampling of the wells.

The Kearney Team observed as Mr. Ford conducted the facility's routine sampling procedures. Field notes were compiled and photographs were taken to document the facility's sample collection procedures and techniques. The

Field Log is attached as Appendix C to this report, and the Photograph Log is attached as Appendix D.

The Kearney Team had been instructed to obtain samples from all four monitoring wells and to submit samples for inorganic analyses to the New Mexico Department of Health and Environment Scientific Laboratory Division in Albuquerque. Samples for organic analyses were submitted to C-E Environmental in Camarillo, California. The Kearney Team provided all sample containers and preservatives necessary for obtaining the required samples.

The Kearney Team obtained sample splits for analysis of volatile organics, semi-volatile organics, total metals, and turbidity. In addition to the samples collected from each well, the Kearney Team also prepared and submitted an equipment blank prior to the start of sampling, a trip blank prepared using distilled water, and a duplicate sample collected from MW-4. All QC samples were analyzed for the same parameters as the samples from the four monitoring wells. All samples were shipped on the day of collection via overnight air service to the designated laboratories. The appropriate laboratory forms and chain-of-custody documentation was completed and enclosed with each shipment. Custody seals were placed on each shipping container prior to shipment.

Phillip's personnel collected samples for analysis of water quality and indicator parameters and parameters listed in Appendix III to 40 CFR Part 265.

4.0 ANALYTICAL RESULTS

The samples for analysis of inorganics were shipped via overnight air service on November 3, 1988, to the New Mexico Department of Health and Environment Scientific Laboratory Division (SLD) in Albuquerque for analysis. The chain-of-custody and analytical request forms were completed and included with each shipment. A custody seal was affixed to each cooler prior to shipment. These samples were analyzed for total metals and turbidity. A summary of the inorganic analytical results provided by SLD are presented in Table 4-1. The complete data package from SLD is included as Appendix E to this report.

The samples collected for analysis of organic parameters were shipped to the C-E Environmental, Inc., lab in Camarillo, CA on November 3, 1988. C-E Environmental analyzed for all CLP target compounds (Hazardous Substance List) (volatiles and semivolatiles) and turbidity. In addition to the CLP target list, the samples were analyzed for 2-butanone, 1-methyl-naphthalene, (o,m,p-) cresol, and 7,12-dimethylanthracene. The lab provided the standard CLP data package summarizing the results of the analyses and related QC data. Concentrations of the organic constituents detected are presented in Table 4-1.

TABLE 4-1

ANALYTICAL RESULTS SUMMARY

WELL NUMBER/SAMPLE NUMBER

CONSTITUENT	MW-1 11/88	MW-2 11/88	MW-3 11/88	MW-4 11/88	MW-5 11/88	MW-6 11/88
Turbidity	15.0[1]	66.0	105.0	40.0	0.950[3]	0.026[3]
Benzene[4]	ND[2]	210	ND	ND	ND	ND
Total Xylenes	ND	120	ND	ND	ND	ND
2,4,-Dimethylphenol	ND	24	ND	ND	ND	ND
Di-n-Octyl Phthalate	ND	ND	ND	ND	22	ND
Aluminum[5]	0.2	0.4	2.9	1.4	ND	ND
Arsenic	0.06	0.148	0.10	0.062	ND	ND
Barium	0.3	1.2	0.3	0.1	ND	ND
Boron	0.8	0.5	0.7	0.9	ND	ND
Calcium	290	170	210	360	0.9	ND
Chromium	0.006	0.013	0.008	0.026	ND	ND
Nickel	ND	ND	0.16	ND	ND	ND
Iron	3.4	13	25	17	ND	ND
Magnesium	110.0	41	80	110	ND	ND
Manganese	2.3	0.17	0.29	0.42	ND	ND
Silicon	36	30	34	26	ND	ND
Strontium	4.0	2.4	2.0	3.7	ND	ND
Tin	0.2	0.1	0.2	0.3	ND	ND
Vanadium	ND	ND	ND	ND	ND	ND
Zinc	ND	ND	ND	ND	ND	ND

(1) Expressed as Nephelometric Turbidity Units (NTU)

(2) ND = Not Detected

(3) MW-5 was an Equipment Blank and MW-6 was a Field Blank

(4) Organic results expressed in parts per billion

(5) Metals results expressed in parts per million

5.0 SUMMARY AND CONCLUSIONS

5.1 Office Evaluation

The following sections are conclusions drawn from the CME office evaluation of the Phillips Petroleum Eunice facility: Section 5.1.1 addresses the facility's evaluation of site subsurface geology; Section 5.1.2 addresses the facility's site hydrogeologic assessment; Section 5.1.3 addresses the adequacy of the design and construction of the facility's GWMS; and Section 5.1.4 addresses the adequacy of the detection monitoring program being implemented.

5.1.1 Adequacy of the Characterization of Subsurface Geology and Related Data Gaps

Data from two subsurface investigations performed at the Eunice facility were reviewed. The first investigation was completed in 1984 and the second in 1988. Both studies were conducted in order to determine appropriate locations for monitoring wells associated with the facility's former surface impoundment. While data collected during the investigations is useful and necessary, the depth of termination of the borings completed during the studies is not sufficient to adequately characterize site subsurface geology.

Several deficiencies and data gaps, which the facility should address, were noted during review of the facility's geologic information. The following is a description of these deficiencies:

- Criteria used to select spacing or depth of termination of borings was not provided;
- Methods of drilling and sample collection used during the 1984 study were not provided;
- Boring samples from the 1984 study were not logged by a qualified geological professional;

- o Lithologic descriptions of the different strata encountered during the 1984 study were not complete or detailed enough;

- o Lithologic logs from both studies (especially the 1984 work) were incomplete, lacking information such as sampling intervals and depth and vertical extent of water-bearing units;

- o No geochemical or petrographic analyses were performed on samples from either study;

- o No geologic cross-sections were prepared; and

- o A site topographic map with contours intervals of two feet was not prepared.

5.1.2 Adequacy of the Characterization of the Uppermost Aquifer and Related Data Gaps

The hydrogeologic assessment conducted at the Eunice facility is incomplete and adequate characterization of the uppermost aquifer and confining layer has not been accomplished. The following deficiencies and data gaps identified during the office evaluation should be addressed by the facility:

- o No materials tests (e.g., sieve analysis) were performed on borings samples;

- o No piezometers were installed for use in determining the hydraulic gradient;

- o No pump tests or slug tests were performed;

- o Values for hydraulic conductivity were obtained from a text on hydrogeology;

- The potentiometric surface map submitted by Phillips does not include flow lines;

- No hydrogeologic cross-sections were prepared;

- Presence or absence of the first confining layer beneath the uppermost aquifer has not been documented and lack of hydraulic communication between the uppermost aquifer and underlying aquifer has not been established;

- Lateral continuity of the confining unit has not been demonstrated because all borings were completed in one small area around the surface impoundment. Several more borings should be completed both downgradient and upgradient of the surface impoundment and should be drilled deep enough to determine the thickness of the confining unit.

- Narrative description and calculation of ground-water flow rate was not provided;

- A vertical component of flow through unsaturated and saturated zones was not considered; and

- Flow nets have not been prepared.

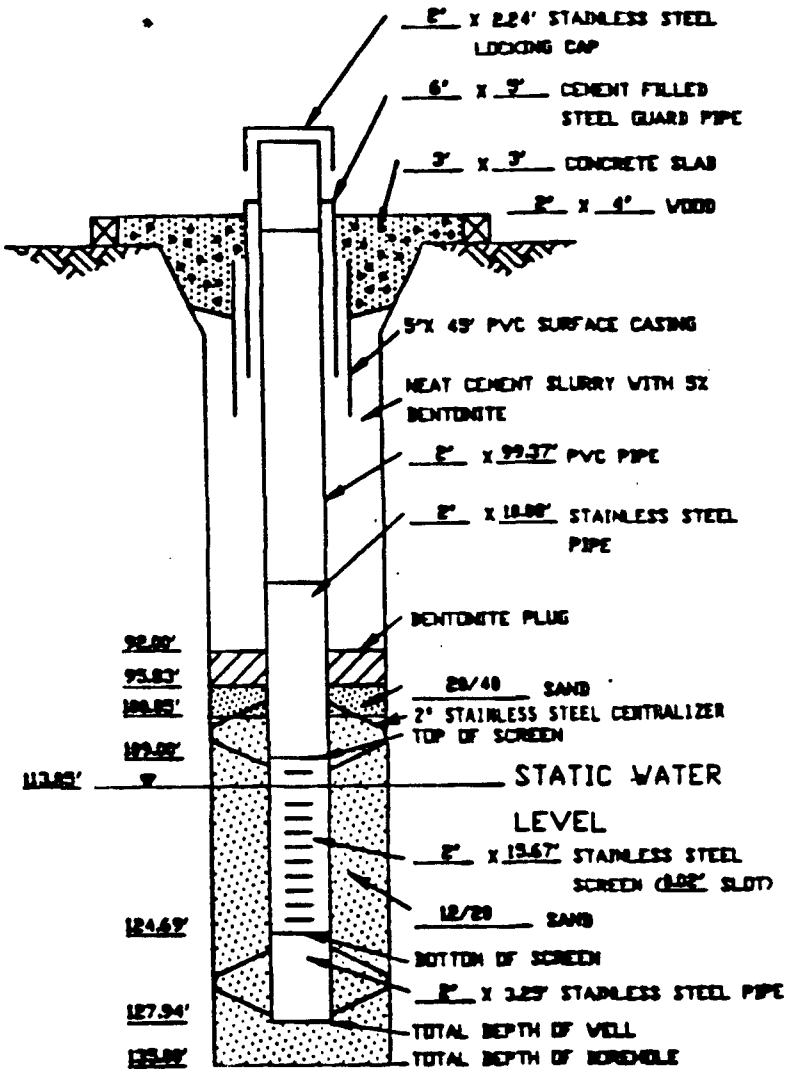
5.1.3 Adequacy of the Design and Construction of the Ground Water Monitoring Wells and Related Data Gaps

The design and construction of the monitoring wells at the Eunice facility is inadequate. (Exhibit 5-1 is an as-built drawing of the typical monitoring well at Eunice). The following deficiencies were noted and should be corrected by the owner/operator:

Exhibit 5-1

Typical Monitoring Well Design

(Source: Reference 20)



TYPICAL MONITOR WELL DESIGN

PHILLIPS EUNICE PLANT

- The owner/operator states in the 1988 investigation report[20] that well development "was difficult and probably incomplete" due to the relatively low well yields experienced during pumping. While the aquifer may exhibit a low hydraulic conductivity (this has not been established with existing data), the low well yields experienced by Phillips during development is more likely due to an inadequate well intake design. The owner/operator did not perform a grain size analysis on borings samples collected and, therefore, has no real basis for selecting screen slot size or filter pack materials. Both the screen slot size as well as the grain size of the filter pack, may be too small;

- The Technical Enforcement Guidance Document (TEGD) recommends that the top of the filter pack in a monitoring well be no more than two feet above the top of the screen and that the bottom of the filter pack extend no deeper than the bottom of the screen. According to as-built drawings of the wells (see Exhibit 5-1), the filter pack in all four wells exceeds the recommended dimensions by as much as 9 feet on top and as much as 8 feet on bottom. The excessive filter pack lengths may contribute to sample dilution by unnecessarily increasing the size of the well intake; and

- The owner/operator states in the 1988 investigation report[20] that during well development, the wells "never produced completely non-turbid water". If this was the case, the facility should have followed the procedure recommended in the TEGD for determining if the quality of the samples produced by the wells is acceptable.

5.1.4 Adequacy of the Ground-Water Detection Monitoring Program and Related Data Gaps

The detection monitoring program at the Eunice facility is not adequate for the reasons noted in Chapter 5.0 of this report. Phillips must address all deficiencies noted immediately in order to comply with applicable regulations concerning interim status ground-water monitoring.

5.2 Field Evaluation

The field evaluation at the Eunice facility was conducted November 2 and 3, 1988 to verify the findings of the office evaluation and to collect ground-water samples. This section summarizes the findings of the field evaluation as follows: Section 5.2.1, ground-water monitoring system design and construction; Section 5.2.2, sample preservation and handling procedures; Section 5.2.4, chain-of-custody procedures; Section 5.2.5, implementation of quality assurance/quality control program; and Section 5.2.6, surficial well inspection. Table 5-2 is a summary of water level data obtained at Eunice during this CME.

5.2.1 Adequacy of the Design and Construction of the Ground-Water Monitoring System

Inadequacies concerning the design and construction of the monitoring wells at the Eunice facility were noted in Section 5.1.3. As a result of the field evaluation, several additional deficiencies concerning the GWMS design or construction were discussed. These deficiencies, which Phillips must address immediately, are as follows:

- Turbidity results for samples from all four wells exceed the recommended 5 N.T.U. (See Table 4-1). This confirms visual observations of turbid samples made in the field and indicated that the wells were either designed or developed inadequately;

- The upgradient well (MW-1) at Eunice appears to be upgradient from the surface impoundment based on water level data. However, it is downgradient from the processing area of the plant. While water level data collected from this well are apparently valid, the validity of the background data being collected from it may be affected by the plant operations. Phillips should consider adding to the GWMS a background well which is upgradient from the surface impoundment, as well as the processing area; and

- Based on the ground water flow direction indicated by the facility's potentiometric surface map (See Exhibit 5-2), the owner/operator should add an additional downgradient well north of MW-2 to detect contamination emanating from the north side of the surface impoundment.

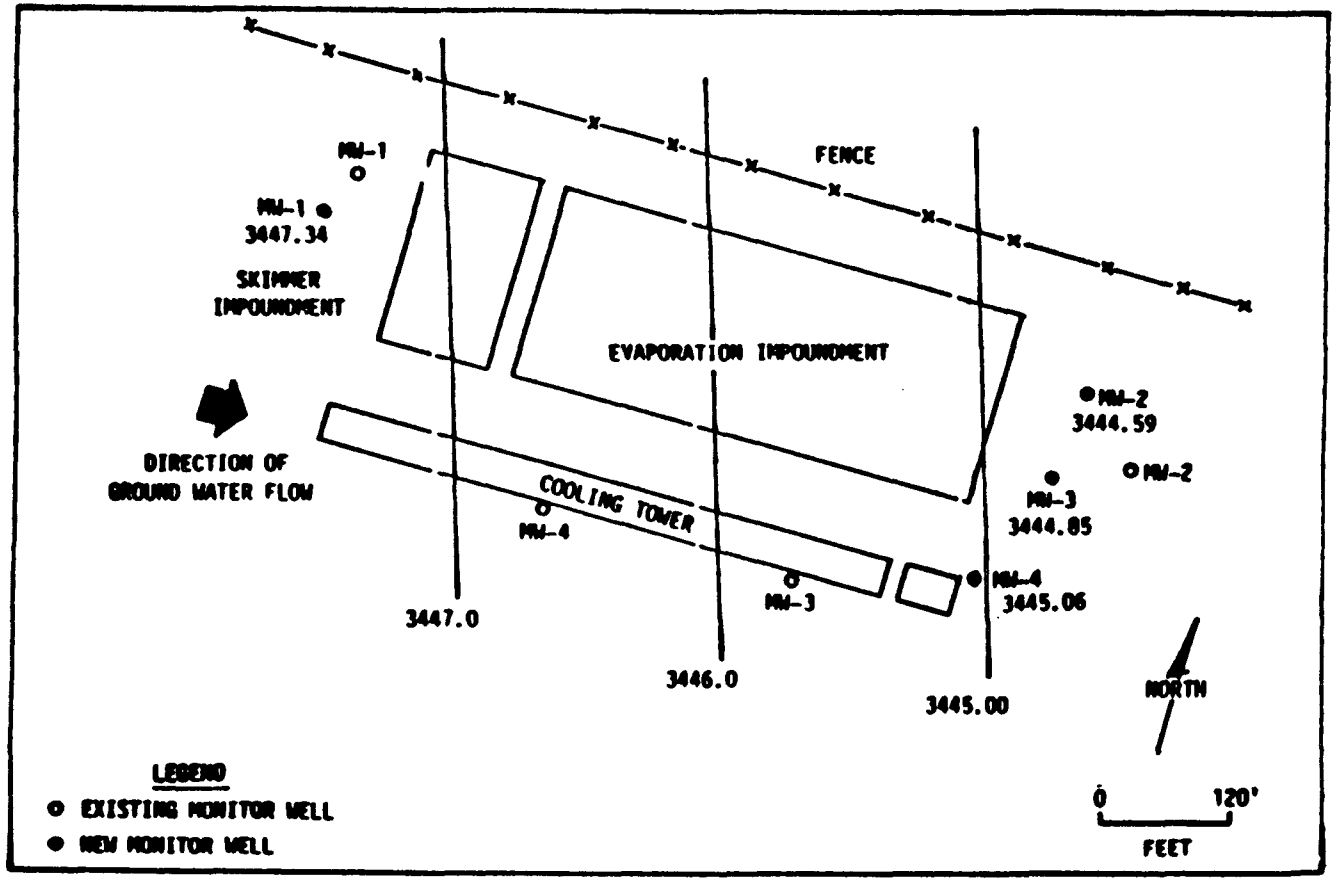


Exhibit 5-2

Potentiometric Surface Map Based on May 27, 1988 data

(Source: Reference 20)

TABLE 5-2

SUMMARY OF WATER LEVEL DATA

	MW-1	MW-2	MW-3	MW-4
Elevation of Reference Point	3562.63[1]	3561.74	3561.64	3561.87
Depth of Static Water Level	115.18[2]	118.07	117.80	117.77
Elevation of Static Water Level	3447.45[3]	3443.67	3443.84	3444.10

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1 Feet above mean sea level; data provided by facility.

2 Feet below top of steel outer casing; measured on 11/2/88.

3 Elevation of static water level on 11/2/88.

5.2.2 Adequacy of Sample Collection Procedures

The following deficiencies in sample collection procedures were identified during the field evaluation:

- o No consideration is given to the possibility that volatile organic constituents could be present in the ground-water at the facility. The owner/operator should monitor the head space in the wells for the presence of organic vapors prior to purging and sampling and should also implement a procedure which allows for the detection of an immiscible layer(s) of organic constituents in the well;

- o With the exception of the sample for volatiles, samples are not transferred directly from the bailer to the appropriate sample container. The samples are first placed in polyethylene beakers and then transferred to sample containers. This practice agitates and aerates the samples and also increases the possibility of contaminating the sample;

- o The owner/operator is careless in handling the sampling bailer, sometimes allowing it to come in contact with the ground or other points which have not been decontaminated;

- o It should be noted that the Sampling and Analysis Plan states that the total depth of well should be measured after sampling. The owner/operator only measured the total depth before sampling;

- o No equipment blanks are collected at the time of equipment decontamination; and

- The owner/operator uses propylene rope instead of fluorocarbon resin or single-strand stainless steel wire to lower and retrieve bailers.

5.2.3 Adequacy of Sample Preservation and Handling Procedures

The owner/operator's sampling and analysis plan was reviewed prior to the field evaluation. During the field evaluation, the owner/operator was observed while collecting, handling and preserving samples to ascertain if the procedures documented in the plan were followed. The following deficiencies in the plan or in the owner/operator's implementation of the plan were identified:

- The owner/operator's sampling and analysis plan states that equipment blanks will be collected only when equipment is decontaminated by steam cleaning. Equipment blanks should be collected whenever sampling equipment is decontaminated;

- The owner's/operator's sampling and analysis plan does not adequately address decontamination procedures for equipment, simply stating the equipment will be steam cleaned and rinsed with distilled water.

- The owner/operator's sampling and analysis plan states that equipment blanks will be analyzed for benzene, toluene, ethyl benzene and xylene (BTEX). Equipment blanks are used to ensure that cross contamination has not occurred and, therefore, should be analyzed in the laboratory for the same parameters as the environmental samples;

- The owner/operator's sampling and analysis plan states that trip blanks will be provided and analyzed only for BTEX. Trip blanks are used to verify the effectiveness of the laboratory's sample container decontamination and, therefore, should be analyzed for the same parameters as the environmental samples; and

- The owner/operator's sampling and analysis plan includes procedures to be used by the analytical laboratory for cleansing sample containers for organics but not for inorganics.

5.2.4 Adequacy of Chain-of-Custody Procedures

Chain-of-custody procedures documented in the owner/operator's sampling and analysis plan are adequate and are implemented in the field. Only two comments are offered relative to this subject. The field logbook maintained by the owner/operator is a loose-leaf notebook. This may seem to be an innocuous item. However, some of the information entered in the logbook is required under 40 CFR 265.92 and 265.94 and, as such, should be recorded in a bound notebook with pre-numbered pages. This type of notebook is a better means for recording and documenting field data. Secondly, the chain-of-custody form does not provide a space for date and time of sample collection. This information is essential to ensure samples are analyzed within the specified holding time for the particular analyte.

5.2.5 Adequacy of Field Implementation of the Quality Assurance/Quality Control Program

Most of the data generated through sampling and analysis of ground-water samples at the Eunice facility should be considered valid and reliable. However, the deficiencies noted in Section 5.2.2, 5.2.3 and 5.2.4 of this report should be addressed by the facility immediately to ensure that all data can be relied upon to determine what impact the facility's operation may have had on the quality of the ground-water there.

5.2.3 Surficial Well Inspection and Field Observations

During the field evaluation the following information presented in the facility's hydrogeologic assessment was verified:

- Numbers and locations of monitoring wells;
- A concrete pad measuring 3 feet by 3 feet and six inches thick was installed at the surface around the casing stick-up for all wells;
- Two-inch diameter steel casing inside a six-inch protective casing was visible at the surface for all wells;
- All wells were structurally stable at the surface; and
- All wells were fitted with locking caps.

5.3 Conclusions Concerning the Adequacy of the Ground-Water Monitoring Program

The Eunice facility is in the detection phase of monitoring under 40 CFR Part 265 Sub-part F. The program is not adequate due to deficiencies noted in this report.

The owner/operator should address these deficiencies, after consultation with EPA and EID, using the TEGD as a guide. Significant technical deficiencies and potential regulatory violations were noted in the following major areas:

- The owner/operator's geologic and hydrogeologic investigations are inadequate;
- The owner/operator has not adequately defined the uppermost aquifer and first confining layer;

- The background well may be affected by the plant operations;

- The monitoring wells produce highly turbid samples and may require redevelopment or replacement; and

- The owner/operator does not collect adequate field blanks for quality control purposes.

6.0 REFERENCES

Note: The following references were reviewed for background information and support documentation during the office and field evaluations.

1. Geology and Ground Water Conditions in Southern Lea County, New Mexico, by Alexander Nicholson, Jr. and Alfred Clebsch, Jr., Published by the New Mexico Bureau of Mines, 1961.

2. Part A Permit Application for Phillips Petroleum submitted to U.S. EPA by Eunice Natural Gasoline Plant, dated November 19, 1980.

3. Letter to U.S. EPA Region VI, from B.F. Ballard, Phillips Petroleum, re: request that facility be removed from active status on the register of hazardous waste facilities, dated June 16, 1982.

4. Letter to B.F. Ballard, Phillips Petroleum Eunice Natural Gas Plant, from Allyn Davis, U.S. EPA, re: Part A Hazardous Waste Permit, dated August 9, 1982.

5. Hazardous Waste Part A Permit Application for Phillips Petroleum Eunice Plant, dated March 30, 1983.

6. Letter to Allyn Davis, U.S. EPA, from B.F. Ballard, Phillips Petroleum re: Closure of surface impoundment, dated June 17, 1983.

7. Letter to B.F. Ballard, Phillips Petroleum Company, from Allyn Davis, U.S. EPA, re: Compliance Order and Notice of Opportunity for Hearing, dated September 29, 1983.

8. Letter to E.E. Clark, Phillips Petroleum, from Joe Ramey, Energy and Minerals Department, re: Discharge Plan, dated April 25, 1984.

9. Driller's Logs for the Phillips Petroleum Eunice Gasoline Plant, dated May 30, 1984.

10. Closure and Post Closure Plan for Hazardous Waste Facility, Phillips Petroleum Company, Eunice Natural Gasoline Plant, dated June 14, 1984.

11. Summary Report, Closure and Post-Closure Plan, Phillips Petroleum Company Eunice Natural Gas Plant, dated June 1984.

12. Post Closure Plan for Surface Impoundment, Phillips Petroleum Company Eunice Natural Gas Plant, dated July 27, 1984.

13. Letter to Reese Copeland, Phillips Petroleum Company, from James Turner, U.S. EPA re: Consent Agreements and Final Orders for the Phillips Petroleum's Natural Gas Plants, dated August 27, 1984.

14. CEI Report for Phillips Petroleum Company's Eunice, Lee, Lusk, and Artesia Plants, prepared by NMEID, dated September 15, 1987.

15. Upgraded Monitoring Well Network Locations and Construction Details for the Phillips Petroleum Natural Gas Plants, dated 1987.

16. Letter to Jack Ellvinger, New Mexico Health and Environment Department, from B.F. Ballard, Phillips, re: Notice of Violations at Lee, Eunice, Artesia, and Lusk Facilities, dated August 24, 1987.

17. Letter to Christopher Nelson, A.T. Kearney, from Michael Ford, Phillips Petroleum Natural Gas Company, re: Chromium analysis for wood sample from cooling tower at the Eunice Plant, dated May 6, 1988.

18. Radian Corporation RAS Perimeter Report on Samples Collected from Eunice Natural Gasoline Plant, dated May 28, 1988.

19. Letter to Boyd Hamilton, NMEID, Hazardous Waste Bureau, from Bruce Stearns, Phillips Petroleum Company, re: Compliance Schedule, dated June 6, 1988.

20. Report on the Installation of a Groundwater Monitoring System at Phillips 66 Natural Gas Plant, Eunice Plant, dated June 6, 1988.

21. PR/VSI Report prepared by A.T. Kearney, Inc., to Tom Clark, U.S. EPA Region VI, dated June 27, 1988.

22. Sampling and Analysis Plan for Phillips 66 Natural Gas Company, Artesia, Eunice, Lee, and Lusk Gasoline Plants, prepared for Phillips 66 Natural Gas Company by Geoscience Consultants, LTD., dated June 3, 1988.

Facility Name: Phillips-Eunice
EPA I.D. Number: NMD00709675

Revision 1
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APPENDIX A

Office Evaluation Checklist: Technical Evaluation of the Design of the Ground-Water Monitoring System

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Notes:

1. This checklist is adapted from OSWER Directive Number 9950.2, "Final RCRA Comprehensive Ground-Water Monitoring Evaluation (CME) Guidance Document."

2. One of these checklists must be completed for each CME office evaluation that is conducted; the completed checklist then must be included in the CME office evaluation report as well as the final CME report.

3. This checklist is a tool to be used by the technical reviewer to assure that all elements of a CME office evaluation are covered and to identify data gaps. Each line in the right-hand column should be filled out using a "Y" (YES) or "N" (NO) for each corresponding question in the left-hand column. Where the file information is incomplete, use the designation "I" (Incomplete).

	Information Provided (Y/N/I)
A. Review of relevant documents:	
1. What documents were obtained for use in the Office Evaluation:	
a. RCRA Part A permit application?	Y
b. RCRA Part B permit application?	N
c. Correspondence between the owner/operator and appropriate agencies or citizens' groups?	Y
d. Previously conducted facility inspection reports?	Y
e. Facility's contractor reports?	Y
f. Regional hydrogeologic, geologic, or soil reports?	Y
g. The facility's Sampling and Analysis Plan?	Y
h. Ground-Water Quality Assessment Program Outline (or Plan, if the facility is in assessment monitoring)?	Y
i. Other (specify) as follows:	
(1) PR/VSI Report	
(2) First quarter analytical results	
B. Evaluation of the Owner/Operator's Hydrogeologic Assessment:	
1. Did the owner/operator use the following direct techniques in the hydrogeologic assessment:	
a. Logs of the soil borings/rock corings (documented by a professional geologist, soil scientist, or geotechnical engineer)?	Y*

* Only logs from wells constructed in 1988, not for logs from wells constructed in 1984.

		Information Provided (Y/N/I)
b.	Materials tests (e.g., grain size analyses, standard penetration tests)?	N
c.	Piezometer installation for water level measurements at different depths?	N
d.	Slug tests?	N
e.	Pump tests?	N
f.	Geochemical analyses of soil samples?	N
g.	Other (specify) (e.g., hydrochemical diagrams and wash analysis) None	N

2. Did the owner/operator use the following indirect techniques to supplement direct techniques data:

a.	Geophysical well logs?	N
b.	Tracer studies?	N
c.	Resistivity and/or electromagnetic conductance?	N
d.	Seismic survey?	N
e.	Hydraulic conductivity measurements of cores?	N
f.	Aerial photography?	N
g.	Ground penetrating radar?	N
h.	Other (specify) None	

3. Did the owner/operator document and present the raw data from the site hydrogeologic assessment? N

4. Did the owner/operator document methods (criteria) used to correlate and analyze the information? N

		Information Provided (Y/N/I)
5.	Did the owner/operator prepare the following:	
	a. Narrative description of geology?	Y
	b. Geologic cross-sections?	N
	c. Geologic and soil maps?	N*
	d. Boring/coring logs?	Y**
	e. Structure contour maps of the differing water-bearing zones and confining layer?	N***
	f. Narrative description and calculation of ground-water flows?	N
	g. Water table/potentiometric map?	Y****
	h. Hydrologic cross sections?	N
6.	Did the owner/operator obtain a regional map of the area and delineate the facility?	Y
	If yes, does this map illustrate:	
	a. Surficial geology features?	Y
	b. Streams, rivers, lakes, or wetlands near the facility?	Y
	c. Discharging or recharging wells near the facility?	N

---

* One surficial geological map was provided.

** Only logs from 1988 investigation.

*** Owner/operator has not fully characterized uppermost aquifer and has not identified a confining layer.

**** Potentiometric surface map is inadequate. See Section 5.1.2 of report text.

		Information Provided (Y/N/I)
7.	Did the owner/operator obtain a regional hydrogeologic map?	N
	If yes, does this hydrogeologic map indicate:	
	a. Major areas of recharge/discharge?	N/A
	b. Regional ground-water flow direction?	N/A
	c. Potentiometric contours which are consistent with observed water level elevations?	N/A
8.	Did the owner/operator prepare a facility site map?	Y
	If yes, does the site map show:	
	a. Regulated units of the facility (e.g., landfill areas, impoundments)?	Y
	b. Any seeps, springs, streams, ponds, or wetlands?	N
	c. Location of monitoring wells, soil borings, or test pits?	Y
	d. How many regulated land-based units does the facility have (specify)?	One*
	If more than one regulated unit then,	N/A
	o Does the waste management area encompass all regulated units?	N/A
	OR	
	o Is a waste management area delineated for each regulated unit?	N/A

* Surface impoundment undergoing RCRA closure.

	Information Provided (Y/N/I)

C. Characterization of Subsurface Geology of Site

1. Soil boring/test pit program:

a. Were the soil borings/test pits performed under the supervision of a qualified professional?	Y*
b. Did the owner/operator provide documentation for selecting the spacing for borings?	N
c. Were the borings drilled to the depth of the first confining unit below the uppermost zone of saturation or ten feet into bedrock?	I**
d. Were the following method(s) of drilling used:	
o Auger (hollow or solid stem)?	N
o Mud rotary? see below	Y
o Reverse rotary?	N
o Cable tool?	N
o Jetting?	N
o Other (specify) MW-1 drilled with air rotary and air foam rotary. MW-2, MW-3 and MW-4 wells were drilled with water/ mud rotary using the drill cuttings as the mud.	

* Only borings completed during 1988 investigation.

** Owner/operator has not adequately characterized the confining unit.

		Information Provided (Y/N/I)
e.	Were continuous sample corings taken?	N*
f.	If samples were obtained, what method was used?	
	o Split spoon?	N
	o Shelby tube, or similar?	N
	o Rock coring?	N
	o Ditch sampling?	N
	o Other (specify) Samples were collected from the drill cuttings.	
g.	Were the sample corings logged by a qualified professional in geology?	Y**
h.	Does the field boring log include the following information:	
	o Hole name/number?	Y**
	o Date started and finished?	Y**
	o Driller's name?	Y
	o Hole location (i.e., map and elevation)?	Y**
	o Drill rig type and bit/auger size?	Y**
	o Gross petrography (e.g., rock type) of each geologic unit?	Y
	o Gross mineralogy of each geologic unit?	Y**

---

* Samples of the drill cuttings for borings completed in 1988 were collected at 5-foot intervals and the lithology was logged by GCL's on-site geologist. This information for 1984 borings was not provided.

** Only the borings completed in 1988; not the borings completed in 1984.

	Information Provided (Y/N/I)
o Gross structural interpretation of each geologic unit and structural features (e.g., fractures, gouge material, solution channels, buried streams or valleys, identification of depositional material)?	N
o Development of soil zones and vertical extent and description of soil type?	N
o Depth of water-bearing unit(s) and vertical extent of each?	N
o Depth and reason for termination of borehole?	Y*
o Depth and location of any contaminant encountered in borehole?	Y
o Sample location/number?	N
o Percent sample recovery?	N
o Narrative descriptions of:	
-- Geologic observations?	Y**
-- Drilling observations?	N
i. Were the following analytical tests performed on the core samples:	
o Mineralogy (e.g., microscopic tests and x-ray diffraction)?	N

* Reason for termination not provided.

** Only the borings completed in 1988, not the borings completed in 1984.

	Information Provided (Y/N/I)
o Petrographic analysis:	
- degree of crystallinity and cementation of matrix?	N
- degree of sorting, size fraction (i.e., sieving), textural variations?	N
- rock type(s)?	N
- soil type?	N
- approximate bulk geochemistry?	N
- existence of microstructures that affect or indicate fluid flow?	N
o Falling head tests?	N
o Static head tests?	N
o Settling measurements?	N
o Centrifuge tests?	N
o Column drawings?	N

D. Verification of subsurface geological data:

1. Has the owner/operator used indirect geophysical methods to supplement knowledge of geological conditions between borehole locations? N

2. Do the number of borings and analytical data indicate that the confining layer displays a low enough permeability to impede the migration of contaminants to any stratigraphically lower water-bearing units? N*

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* Confining layer not adequately characterized.

		Information Provided (Y/N/I)
3.	Is the confining layer laterally continuous across the entire site?	I*
4.	Did the owner/operator consider the chemical compatibility of the site-specific waste types and the geologic materials of the confining layer?	N
5.	Did the geologic assessment address or provide means for resolution of any information gaps of geologic data?	N
6.	Do the laboratory data corroborate the field data for petrography?	N**
7.	Do the laboratory data corroborate the field data for mineralogy and subsurface geochemistry?	N**

E. Presentation of geologic data:

1.	Did the owner/operator present geologic cross-sections of the site?	N

---

* Information provided is not adequate to determine the extent of the confining layer.

** No laboratory data were presented.

		Information Provided (Y/N/I)
2.	Do cross-sections:	
	a. identify the types and characteristics of the geologic materials present?	N/A
	b. define the contact zones between different geologic materials?	N/A
	c. note the zones of high permeability or fracture?	N/A
	d. give detailed borehole information including:	
	o location of borehole?	N/A
	o depth of termination?	N/A
	o location of screen (if applicable)?	N/A
	o depth of zone(s) of saturation?	N/A
	o backfill procedure?	N/A
3.	Did the owner/operator provide a topographic map which was constructed by a licensed surveyor?	N
4.	Does the topographic map provide:	
	a. contours at a maximum interval of two feet?	N/A
	b. locations and illustrations of man-made features (e.g., parking lots, factory buildings, drainage ditches, storm drains, pipelines)?	N/A
	c. descriptions of nearby water bodies?	N/A
	d. descriptions of off-site wells?	N/A
	e. site boundaries?	N/A
	f. individual RCRA units?	N/A
	g. delineation of the waste management area(s)?	N/A

		Information Provided (Y/N/I)
	h. well and boring locations?	N/A
5.	Did the owner/operator provide an aerial photograph depicting the site and adjacent off-site features?	Y
6.	Does the photograph clearly show surface water bodies, adjacent municipalities, and residences and are these clearly labelled?	Y

	Information Provided (Y/N/I)

F. Identification of the Uppermost Aquifer:

1. Ground-water flow direction:

a. Was the well casing height measured by a licensed surveyor to the nearest 0.01 feet?	Y
b. Were the well water level measurements taken within a 24-hour period?	Y
c. Were the well water level measurements taken to the nearest 0.01 feet?	Y
d. Were the well water levels allowed to stabilize after construction and development for a minimum of 24 hours prior to measurements?	Y
e. Was the water level information obtained from (check appropriate one):	
o multiple piezometers placed in single borehole?	N
o vertically nested piezometers in closely spaced separate boreholes?	N
o monitoring wells?	Y
f. Did the owner/operator provide construction details for the piezometers or wells?	Y
g. How were the static water levels measured:	
o Electric water sounder?	Y
o Wetted tape?	Y
o Air line?	N

		Information Provided (Y/N/I)
o	Other (specify) No	
h.	Was the well water level measured in wells with equivalent screened intervals at an equivalent depth below the saturated zone?	Y
i.	Has the owner/operator provided a site water table (potentiometric) contour map? If yes:	Y*
	o Do the potentiometric contours appear logical and accurate based on topography and presented data? (Consult water level data.)	Y
	o Are ground-water flow-lines indicated?	N**
	o Are static water levels shown?	Y
	o Can hydraulic gradients be estimated?	Y
j.	Did the owner/operator develop hydrologic cross-sections of the vertical flow component across the site using measurements from all wells?	N
k.	Did the owner construct flow nets?	N
l.	Do the owner/operator's flow nets include:	
	o piezometer locations?	N/A
	o depth of screening?	N/A

* The map provided is based on May 27, 1988 measurements only.

** See Section 5.1.2 of report text.

	Information Provided (Y/N/I)
o width of screening?	N/A
o measurements of water levels from all wells and piezometers?	N/A
2. Seasonal and temporal fluctuations in ground-water level	
a. Do fluctuations in static water levels occur?	Y*
o If yes, are the fluctuations caused by any of the following:	
-- Off-site well pumping?	N
-- Tidal processes or other intermittent natural variations (e.g., river stage)?	N
-- On-site well pumping?	N
-- Off-site, on-site construction or changing land use patterns?	N
-- Deep well injection?	I
-- Seasonal variations?	I*
-- Other (specify) _____	
b. Has the owner/operator documented sources and patterns that contribute to or affect the groundwater patterns below the waste management units?	N

* Based on two quarterly measurements.

	Information Provided (Y/N/I)
c. Do water level fluctuations alter the general ground-water gradients and flow directions?	I*
d. Based on water level data, do any head differentials occur that may indicate a vertical flow component in the saturated zone?	N
e. Did the owner/operator implement means for gauging long-term effects on water movement that may result from on-site or off-site construction or changes in land-use patterns?	N

3. Hydraulic conductivity

   a. How were hydraulic conductivities of the subsurface materials determined?

o Single-well tests (slug tests)?	N**
o Multiple-well tests (pump tests)?	N**
o Other (specify) _____	

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* Only two measurements have been made in existing system.

** Owner/operator estimated the hydraulic conductivity from ranges of values found in a text on hydrogeology.

		Information Provided (Y/N/I)
b.	If single-well tests were conducted, was it done by:	
	o Adding or removing a known volume of water?	N/A
	o Pressurizing the well casing?	N/A
c.	If single well tests were conducted in a highly permeable formation, were pressure transducers and high-speed recording equipment used to record the rapidly changing water levels?	N/A
d.	Since single well tests only measure hydraulic conductivity in a limited area, were enough tests run to ensure a representative measure of conductivity in each hydrogeologic unit?	N/A
e.	Is the owner/operator's slug test data (if applicable) consistent with existing geologic information (e.g., boring logs)?	N/A
f.	Were other hydraulic conductivity properties determined?	N
g.	If yes, provide any of the following data, if available:	
	o Transmissivity	N/A
	o Storage coefficient	N/A
	o Leakage	N/A
	o Permeability	N/A
	o Porosity	N/A
	o Specific capacity	N/A
	o Other (specify) N/A	

		Information Provided (Y/N/I)
4.	Identification of the uppermost aquifer	
	a. Has the extent of the uppermost saturated zone (aquifer) in the facility area been defined?	
	If yes,	N
	o Are soil boring/test pit logs included?	N
	o Are geologic cross-sections included?	N
	b. Is there evidence of confining (unfractured, continuous, and low permeability) layers beneath the site?	I*
	o _____	
	c. What is the hydraulic conductivity of the confining unit (if present)? Not determined. How was it determined? Not determined.	
	d. Does potential for other hydraulic communication exist (e.g., lateral incontinuity between geologic units, facies changes, fracture zones, cross-cutting structures, or chemical corrosion/alteration of geologic units by leachate)?	I**

* Confining layer not adequately characterized.

** Owner/operator has not provided data indicating whether hydraulic interconnection exists between the uppermost aquifer and the strata below.

	Information Provided (Y/N/I)
If yes or no, what is the rationale?	

G. Evaluation of the Facility's Ground-Water Monitoring Wells' Design and Construction:

Note: These questions should be answered for each different well design present at the facility.

Note: All four wells evaluated have same design.

1. Drilling methods

a. What drilling method was used for the well:

o Hollow-stem auger?	N
o Solid-stem auger?	N
o Mud rotary?	Y
o Air rotary?	Y
o Reverse rotary?	N
o Cable tool?	N
o Jetting?	N
o Air drill with casing hammer?	N
o Other (specify) Air foam rotary	

b. Were any cutting fluids (including water) or additives used during drilling? Y

If yes, specify:

Type of drilling fluid Foam.

Source of water used _____ I

		Information Provided (Y/N/I)
	Foam Air/foam was used on MW-1 (type/brand not indicated)	
	Polymers No	
	Other (specify) Natural mud composed of drill cuttings	
c.	Was the cutting fluid, or additive, identified?	N
d.	Was the drilling equipment steam-cleaned prior to drilling the well?	Y
	Other methods	
e.	Was compressed air used during drilling?	Y
	o If yes, was the air filtered to remove oil?	Y
f.	Did the owner/operator document procedure for establishing the potentiometric surface?	N
	o If yes, explain how the location was established?	
g.	Formation samples	
	o Were formation samples collected initially during drilling?	Y
	o Were any continuous cores taken?	N
	o If not, at what interval were samples taken?	5 feet

	Information Provided (Y/N/I)
o How were the samples obtained:	
- Split spoon?	N
- Shelby tube?	N
- Core drill?	N
- Other (specify) Drill Cuttings	Y
o Identify any physical and/or chemical tests performed on the formation samples: None	

2. Monitoring well construction materials*

a. Identify construction materials (by number) and diameters (ID/OD).

	Material	Diameter (ID/OD)
o Primary casing	Type 1, grade 1 1120 PVC, Sched. 40	2.067"/2.375"
	Type 304, stainless, steel, Sched. 40	2.067"/2.375"
o Secondary or outside casing (double construction)	Steel to five feet	6 in. OD
o Screen	Schedule 304 Stainless Steel	1.9"/2.375"
	Slot size 0.02 in.	

b. How are the sections of casing and screen connected:

o Pipe sections threaded?	Y
o Couplings (friction) with adhesive or solvent?	N

* See Exhibit 5-1 in report text.

	Information Provided (Y/N/I)
o Couplings (friction) with retainer screws?	N
o Other (specify) _____	
c. Were the materials steam-cleaned prior to installation?	Y
If no, how were the materials cleaned? _____	
3. Well intake design and well development	
a. Was a well intake screen installed?	Y
o What is the length of the screen for the well? MW-1 = 15.69'; MW-2 = 15.62'; MW-3 = 15.67'; MW-4 = 15.67'	
o Is the screen manufactured?	Y
b. Was a filter pack installed?	Y
o What kind of filter pack was employed? (specify) 12/20 grade packaged silica sand	
o Is the filter pack compatible with formation materials?	Y
o How was the filter pack installed? tremie pipe	
o What are the dimensions of the filter pack?* MW-1 = 6.5" x 39'; MW-2 = 6.5" x 28'; MW-3 =6.5" x 28'; MW-4 = 6.5 x 26'	
o Has a turbidity measurement of the well water ever been made?	Y**
o Have the filter pack and screen been designed for the in-situ materials?	I*

* See Section 5.1.3 of report text.

** See Section 5.2.1 of report text.

Information Provided (Y/N/I)

c. Was the well developed? Y

o What technique was used for well development:

- Surge block? N
- Bailer? N
- Air surging? N
- Water pumping? Y
- Other (specify) Surging with distilled water and formation water.

4. Annular space seals

a. What is the annular space in the saturated zone directly above the filter pack filled with:

- Sodium bentonite? (specify type and grit) Volcay tablets
- Cement? (specify neat or concrete) No
- Other (specify) _____

o Was the seal installed by:

- Dropping material down the hole and tamping? N
- Dropping material down the inside of a hollow-stem auger? N
- Tremie pipe method? Y
- Other (specify) No

b. Was a different seal used in the unsaturated zone? N

If yes,

o Was this seal made with:

- Sodium bentonite? (specify type and grit) N/A
- Cement? (specify neat or concrete)
- Other (specify) N/A

	Information Provided (Y/N/I)
o Was this seal installed by:	
- Dropping material down the hole and tamping?	N/A
- Dropping material down the inside of hollow stem auger?	N/A
- Other (specify) _____	N/A
c. Is the upper portion of the borehole sealed with a concrete cap to prevent infiltration from the surface?	Y
d. Is the well fitted with an above-ground protective device and bumper guards?	Y*
e. Has the protective cover been installed with locks to prevent tampering?	Y

H. Evaluation of the Facility's Detection Monitoring Program:

1. Placement of downgradient detection monitoring wells

a. Are the ground-water monitoring wells or clusters located immediately adjacent to the waste management area? Y**

b. How far apart are the detection monitoring wells?

The distance between MW-1 and MW-2 is approximately 650 feet. The distance between MW-2 and MW-3 is approximately 96 feet. The distance between MW-3 and MW-4 is approximately 101 feet.

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* No bumper guards.

** See Section 5.1.4 of report text.

		Information Provided (Y/N/I)
c.	Does the owner/operator provide a rationale for the location of each monitoring well or cluster?	N*
d.	Has the owner/operator identified the well screen lengths of each monitoring well or clusters?	Y
e.	Does the owner/operator provide an explanation for the well screen lengths of each monitoring well or cluster?	N
f.	Do the actual locations of monitoring wells or clusters correspond to those identified by the owner/operator?	Y
2.	Placement of upgradient monitoring wells	
a.	Has the owner/operator documented the location of each upgradient or background monitoring well or cluster?	Y
b.	Does the owner/operator provide an explanation for the location(s) of the upgradient or background monitoring wells?	Y*
c.	What length screen has the owner/operator employed in the background monitoring well(s)? MW-1 screen length is 15.69 feet	Y
d.	Does the owner/operator provide an explanation for the screen length(s) chosen?	N

* Locations were determined following a review of exisitng data and discussions with NMEID.

	Information Provided (Y/N/I)
e. Does the actual location of each background monitoring well or cluster correspond to that identified by the owner/operator?	Y

I. Evaluation of the Facility's Assessment Monitoring Program:

1.	If the facility is in detection monitoring, has the owner/operator prepared a ground-water quality assessment program outline	Y
2.	Does the owner/operator maintain a copy of the outline at the facility? (If so, try to obtain a copy of the outline during the field evaluation)	N
3.	Does the outline meet the requirements of 40 CFR Part 265.93(a)?	Y
4.	If the facility is in assessment monitoring, does the owner/operator have a ground-water quality assessment program plan which has been approved by EPA or the appropriate state agency?	N/A
5.	Does the owner/operator maintain a copy of the plan at the facility? (If so, try to obtain a copy of the plan during the field evaluation.)	N/A

		Information Provided (Y/N/I)
6.	Does the assessment plan specify:	
	a. The number, location, and depth of wells?	N/A
	b. The rationale for their placement and identify the basis that will be used to select subsequent sampling locations and depths in later assessment phases?	N/A
7.	Does the list of monitoring parameters include all hazardous waste constituents from the facility?	N/A
	a. Does the water quality parameter list include other important indicators not classified as hazardous waste constituents?	N/A
	b. Does the owner/operator provide documentation for the listed wastes which are not included?	N/A
8.	Does the owner/operator's assessment plan specify the procedures to be used to determine the rate of constituent migration in the ground water?	N/A
9.	Has the owner/operator specified a schedule of implementation in the assessment plan?	N/A
10.	Have the assessment monitoring objectives been clearly defined in the assessment plan?	N/A
	a. Does the plan include analyses and/or re-evaluation to determine if significant contamination has occurred in any of the detection monitoring wells?	N/A

		Information Provided (Y/N/I)
b.	Does the plan provide for a comprehensive program of investigation to fully characterize the rate and extent of contaminant migration from the facility?	N/A
c.	Does the plan call for determining the concentrations of hazardous wastes and hazardous waste constituents in the ground water?	N/A
11.	Does the assessment plan identify the investigatory methods that will be used in the assessment phase?	N/A
a.	Is the role of each method in the evaluation fully described?	N/A
b.	Does the plan provide sufficient descriptions of the direct methods to be used?	N/A
c.	Does the plan provide sufficient descriptions of the indirect methods to be used?	N/A
d.	Will the method contribute to the further characterization of the contaminant movement?	N/A
12.	Are the investigatory techniques utilized in the assessment program based on direct methods?	N/A
a.	Does the assessment approach incorporate indirect methods to further support direct methods?	N/A
b.	Will the planned methods called for in the assessment approach ultimately meet performance standards for assessment monitoring?	N/A
c.	Are the procedures well defined?	N/A

	Information Provided (Y/N/I)
d. Does the approach provide for monitoring wells similar in design and construction to the detection monitoring wells?	N/A
e. Does the approach employ taking samples during drilling or collecting core samples for further analysis?	N/A
13. Are the indirect methods to be used based on reliable and accepted geophysical techniques?	N/A
a. Are they capable of detecting subsurface changes resulting from contaminant migration at the site?	N/A
b. Is the measurement at an appropriate level of sensitivity to detect ground-water quality changes at the site?	N/A
c. Is the method appropriate considering the nature of the subsurface materials?	N/A
d. Does the approach consider the limitations of these methods?	N/A
e. Will the extent of contamination and constituent concentration be based on direct methods and sound engineering judgment? (using indirect methods to further substantiate the findings)	N/A
14. Does the assessment approach incorporate any mathematical modeling to predict contaminant movement?	N/A
a. Will site specific measurements be utilized to accurately portray the subsurface?	N/A
b. Will the derived data be reliable?	N/A
c. Have the assumptions been identified?	N/A

	Information Provided (Y/N/I)
d. Have the physical and chemical properties of the site-specific wastes and hazardous waste constituents been identified?	N/A

J. Conclusions:

1. Subsurface geology:

a. Has sufficient data been collected to adequately define petrography and petrographic variation?	N*
b. Has the subsurface geochemistry been adequately defined?	N*
c. Was the boring/coring program adequate to define subsurface geologic variation?	N*
d. Was the owner/operator's narrative description complete and accurate in its interpretation of the data?	N*
e. Does the geologic assessment address or provide means to resolve any information gaps?	N*

2. Ground-Water flowpaths:

a. Did the owner/operator adequately establish the horizontal and vertical components of ground-water flow?	N*
b. Were appropriate methods used to establish ground-water flowpaths?	N*
c. Did the owner/operator provide accurate documentation?	N*
d. Are the potentiometric surface measurements valid?	Y

* See Table 2-1 and Section 5.1.1 of this report.

	Information Provided (Y/N/I)
e. Did the owner/operator adequately consider the seasonal and temporal effects on the ground water?	N*
f. Were sufficient hydraulic conductivity tests performed to document lateral and vertical variation in hydraulic conductivity in the entire hydrogeologic subsurface below the site?	N*
3. Uppermost aquifer:	
a. Did the owner/operator adequately define the uppermost aquifer?	N
4. Monitoring well construction and design:	
a. Do the design and construction of the owner/operator's ground-water monitoring wells permit depth discrete ground-water samples to be taken?	Y
b. Are the samples representative of ground-water quality?	N**
c. Are the ground-water monitoring wells structurally stable?	Y
d. Does the ground-water monitoring well's design and construction permit an accurate assessment of aquifer characteristics?	I***

* See Table 2-1 and Section 5.1.1 of this report.

** Samples were very turbid.

*** Owner/operator has not adequately characterized uppermost aquifer.

	Information Provided (Y/N/I)
5. Detection monitoring:	
a. Downgradient wells: Do the location and screen lengths of the ground-water monitoring wells or clusters in the detection monitoring system allow the immediate detection of a release of hazardous waste or constituents from the hazardous waste management area to the uppermost aquifer?	N*
b. Upgradient wells: Do the location and screen lengths of the upgradient (background) ground-water monitoring wells ensure the capability of collecting ground-water samples representative of upgradient (background) ground-water quality including any ambient heterogeneous chemical characteristics?	N*
6. Assessment monitoring:	
a. Has the owner/operator adequately characterized site hydrogeology to determine contaminant migration?	N/A
b. Is the detection monitoring system adequately designed and constructed to immediately detect any contaminant release?	N*
c. Are the procedures used to make a first determination of contamination adequate?	N/A
d. Is the assessment plan adequate to detect, characterize, and track contaminant migration?	N/A

---

* See Section 5.1.3 of this report.

** See Section 5.1.4 of this report.

		Information Provided (Y/N/I)
e.	Will the assessment monitoring wells, given site hydrogeologic conditions, define the extent and concentration of contamination in the horizontal and vertical planes?	N/A
f.	Are the assessment monitoring wells adequately designed and constructed?	N/A
g.	Are the sampling and analysis procedures adequate to provide true measures of contamination?	N/A
h.	Do the procedures used for evaluation of assessment monitoring data result in determinations of the rate of migration, extent of migration, and hazardous constituent composition of the contaminant plume?	N/A
i.	Are the data collected at sufficient frequency and duration to adequately determine the rate of migration?	N/A
j.	Is the schedule of implementation adequate?	N/A
k.	Is the owner/operator's assessment monitoring plan adequate?	N/A
	o If the owner/operator had to implement his assessment monitoring plan, was it implemented satisfactorily?	N/A

APPENDIX B

Field Evaluation Checklist: Technical Evaluation of the Operation of the Ground-Water Monitoring System

---

Notes:

1. This checklist is adapted from OSWER Directive Number 9950.2, "Final RCRA Comprehensive Ground-Water Monitoring Evaluation (CME) Guidance Document."

2. One of these checklists must be completed for each CME field evaluation that is conducted; the completed checklist then must be included in the CME report.

3. This checklist is a tool to be used by the technical reviewers to assure that all elements of a CME field evaluation are covered and to identify data gaps. Each line in the right-hand column should be filled out using a "Y" (YES) or "N" (NO) for each corresponding question in the left-hand column. Where the information is incomplete or unavailable at the time of the field evaluation, use the designation "U" (UNKNOWN). As appropriate, attempt to obtain the necessary information after the field evaluation, or indicate in the CME report that the information is unavailable. Specify in the report where missing information constitutes violations of 40 CFR Parts 265 or 270.

Information Provided (Y/N/U)

I. Check of Ground-Water Monitoring System

Note: Responses in this section apply to all wells in the system.

A. Ground-water monitoring system design: Do the numbers, depths, and locations of monitoring wells correspond with those reported in the facility's monitoring plan? Y

B. Monitoring well construction:

1. Identify construction materials and well diameters:

	Material	Diameter (ID/OD)
a. Primary casing	*	*
b. Secondary or outside casing	Steel	6" OD
c. Screen	Stainless Steel	1.9"/2.375"

2. Is the upper portion of the borehole sealed with concrete to prevent infiltration from the surface? Y

3. Is the well fitted with an above-ground protective device? Y

---

* As-built drawings indicate a ten foot section of stainless steel casing between the screen and the bottom of the PVC and a two foot section of steel pipe at the top of the PVC. Two inch steel casing was visible at the surface.

		Information Provided (Y/N/U)
4.	Is the protective cover fitted with locks to prevent tampering?	Y

II. Review of Sample Collection Procedures

A. Measurement of well depth elevations:

1.	Are measurements made of both depth to standing water and depth to the bottom of the well?	Y
2.	Are measurements taken to the nearest 0.01 feet?	Y
3.	What measuring device is used? Wetted steel tape and Electric Sounder	
4.	Is there a reference point established by a licensed surveyor?	Y
5.	Is the measuring equipment properly cleaned between well locations to prevent cross-contamination?	N

B. Detection of immiscible layers:

1.	Are procedures used which will detect light-phase immiscible layers?	N
2.	Are procedures used which will detect dense-phase immiscible layers?	N

		Information Provided (Y/N/U)
C.	Sampling of immiscible layers:	
1.	Are the immiscible layers sampled separately prior to well evacuation?	N/A
2.	Do the procedures used minimize mixing with water-soluble phases?	N/A
D.	Well evacuation:	
1.	Are low-yielding wells evacuated to dryness?	N/A
2.	Are high-yielding wells evacuated so that at least three casing volumes are removed?	Y
3.	What device is used to evacuate the wells? Teflon Bailer	
4.	If any problems are encountered (e.g., equipment malfunction), are they noted in a field logbook?	Y
E.	Sample withdrawal:	
1.	For low-yielding wells, are samples for volatile, pH, and oxidation/reduction potential drawn first after the well recovers?	N/A

		Information Provided (Y/N/U)
2.	Are sampling devices either bottom valve bailers or positive gas displacement bladder pumps?	Y
3.	If bailers are used, is fluorocarbon resin-coated wire, single-strand stainless steel wire, or monofilament used to raise and lower the bailer?	N*
4.	If bladder pumps are used, are they operated in a continuous manner to prevent aeration of the sample?	N/A
5.	If bailers are used, are they lowered slowly to prevent degassing of the water?	Y
6.	If bailers are used, are the contents transferred to the sample container in a way that minimizes agitation and aeration?	N
7.	Is care taken to avoid placing clean sampling equipment on the ground or other contaminated surfaces prior to insertion into the well?	N
8.	If dedicated sampling equipment is not used, is equipment disassembled and thoroughly cleaned between samples?	Y**

* Retrieval line is braided propylene rope.

** Dedicated bailers are used.

		Information Provided (Y/N/U)
9.	If samples are for inorganic analysis, does the cleaning procedure for sampling equipment include the following sequential steps:	
	a. Nonphosphate detergent wash?	Y
	b. Dilute acid rinse (HNO_3 or HCl)?	N*
	c. Tap water rinse?	N**
	d. Type II reagent-grade water?	Y
10.	If samples are for organic analysis, does the cleaning procedure for sampling equipment include the following sequential steps:	
	a. Nonphosphate detergent wash?	Y
	b. Tap water rinse?	Y
	c. Distilled/deionized water rinse?	N***
	d. Acetone rinse?	N****
	e. Pesticide-grade hexane rinse?	N
11.	Is sampling equipment thoroughly dry before use?	Y

---

* Methanol.

** Distilled water.

*** Methanol.

**** Distilled water.

		Information Provided (Y/N/U)
12.	Are equipment blanks taken to ensure that sample cross-contamination has not occurred?	N*
13.	If volatile samples are taken with a positive gas displacement bladder pump, are pumping rates below 100 ml/min?	N/A

F. In-situ or field analyses:

1.	Are the following labile (chemically unstable) parameters determined in the field:	
	a. pH?	Y
	b. Temperature?	Y
	c. Specific conductivity?	Y
	d. Redox potential?	N
	e. Chlorine?	N
	f. Dissolved oxygen?	N
	g. Turbidity?	N
	h. Other (specify) _____	
2.	Are the in-situ determinations made after well evacuation and sample removal?	Y
3.	If a sample is withdrawn from the well, are parameters measured from a split portion?	Y

* The owner/operator took an equipment blank following discussions with the contractor.

		Information Provided (Y/N/U)
4.	Is monitoring equipment calibrated according to manufacturers' specifications and consistent with SW-846?	Y
5.	Is the date, procedure, and maintenance for equipment calibration documented in the owner/operator's field logbook?	Y

	Information Provided (Y/N/U)

III. Review of Sample Preservation and Handling Procedures

A. Sample containers:

1.	Are samples transferred from the sampling device directly to their compatible containers?	N*
2.	Are sample containers for metals (inorganics) analyses polyethylene with polypropylene caps?	Y
3.	Are sample containers for organics analyses glass bottles with fluorocarbon resin-lined caps?	Y
4.	If glass bottles are used for metals samples, are the caps fluorocarbon resin-lined?	N/A
5.	Are the sample containers for metal analyses cleaned using these sequential steps:	
	a. Nonphosphate detergent wash?	I**
	b. 1:1 nitric acid rinse?	I**
	c. Tap water rinse?	I**
	d. 1:1 hydrochloric acid rinse?	I**
	e. Tap water rinse?	I**
	f. Distilled/deionized water rinse?	I**

---

* Samples collected in clean polyethylene bailers and transferred to appropriate containers.

** Procedures for decontamination of sample containers for metal analyses were not provided in the Sampling and Analysis Plan.

		Information Provided (Y/N/U)
6.	Are the sample containers for organic analyses cleaned using these sequential steps:	
a.	Nonphosphate detergent/hot water wash?	Y
b.	Tap water rinse?	Y
c.	Distilled/deionized water rinse?	Y
d.	Acetone rinse?	Y
e.	Pesticide-grade hexane rinse?	Y
7.	Are trip blanks used for each sample container type to verify cleanliness?	N*

B. Sample preservation procedures:

1.	Are samples for the following analyses cooled to 4°C:	
a.	TOC?	Y
b.	TOX?	Y
c.	Chloride?	Y
d.	Phenols?	Y
e.	Sulfate?	Y
f.	Nitrate?	Y
g.	Coliform bacteria?	Y
h.	Cyanide?	N/A
i.	Oil and grease?	N/A
j.	Hazardous constituents (Modified Appendix IX)?	Y
k.	Fluoride?	Y
l.	Endrin?	Y
m.	Lindane?	Y
n.	Methoxychlor?	Y

* VOA containers only.

		Information Provided (Y/N/U)
o.	Toxaphene?	Y
p.	2,4, D?	Y
q.	2,4,5, TP Silvex?	Y
2.	Are samples for the following analyses field acidified to pH <2 with HNO_3:	
a.	Iron?	Y
b.	Manganese?	Y
c.	Sodium?	Y
d.	Total metals?	Y
e.	Dissolved metals?	Y
f.	Radium?	Y
g.	Gross alpha?	Y
h.	Gross beta?	Y
3.	Are samples for the following analyses field-acidified to pH <2 with H_2SO_4:	
a.	Phenols?	Y
b.	Oil and grease?	N/A
4.	Is the sample for TOC analysis field-acidified to pH <2 with HCl?	N*
5.	Is the sample for TOX analysis preserved with 1 ml of 1.1 M sodium sulfite?	N*
6.	Is the sample for cyanide analysis preserved with NaOH to pH >12?	N/A

* Acidified to pH <2 with H_2SO_4 with no headspace or bubbles.

		Information Provided (Y/N/U)
C.	Special handling considerations:	
1.	Are organic samples handled without filtering?	Y
2.	Are samples for volatile organics analyses transferred directly to the appropriate vials to eliminate headspace over the sample?	Y*
3.	Are samples for metals analyses split into two portions?	Y**
4.	Is the sample for dissolved metals filtered through a 0.45-micron filter?	Y**
5.	Is the second portion analyzed for total metals without being filtered?	Y
6.	Is one equipment blank prepared each day of ground-water sampling?	N***

---

* Samples for volatiles are agitated too much during transfer from bailer to vials.

** Facility analyses samples for total and dissolved metals even through EID does not require dissolved metals.

*** No equipment blanks were prepared.

	Information Provided (Y/N/U)
IV. Review of Chain-of Custody Procedures	
A. Sample labels:	
1. Are sample labels used?	Y
2. Do labels contain the following information:	
a. Sample identification number?	Y
b. Name of collector?	Y
c. Date and time of collection?	Y
d. Place of collection?	Y
e. Parameter(s) requested and preservatives used?	Y
3. Do the labels remain legible even if wet?	Y
B. Sample seals:	
1. Are sample seals placed on containers to ensure that the samples are not altered?	N*
C. Field logbook:	
1. Is a field logbook maintained by the owner/operator?	Y
2. Does the logbook document the following:	
a. Purpose of sampling (e.g., detection or assessment monitoring)?	N
b. Location of well(s)?	Y

* The owner/operator transports samples directly to the lab.

		Information Provided (Y/N/U)
c.	Total depth of each well?	Y
d.	Static water level depth and measurement technique?	Y
e.	Presence of immiscible layers and detection method?	N
f.	Collection method for immiscible layers and sample identification numbers?	N
g.	Well evacuation procedures?	Y
h.	Sample withdrawal procedure?	Y
i.	Date and time of collection?	Y
j.	Well sampling sequence?	Y
k.	Types of sample containers and sample identification number(s)?	N*
l.	Preservative(s) used?	Y
m.	Parameters requested?	Y
n.	Field analysis data and method(s)?	Y
o.	Sample distribution and transporter?	N
p.	Field observations?	
	o Unusual well recharge rates?	N
	o Equipment malfunction(s)?	N
	o Possible sample contamination?	N
	o Sampling rate?	N

D. Chain-of-custody record:

1.	Is a chain-of-custody record included with each sample?	Y
2.	Does it document the following:	
a.	Sample number?	Y

* Only sample identification.

		Information Provided (Y/N/U)
b.	Signature of collector?	Y
c.	Date and time of collection?	N*
d.	Sample type?	Y
e.	Station location?	Y
f.	Number of containers?	Y
g.	Parameters requested?	Y
h.	Signatures of persons involved in the chain-of-possession?	Y
i.	Inclusive dates of possession?	Y

E. Sample analysis request sheet:

1.	Does a sample analysis request sheet accompany each sample?	Y
2.	Does the request sheet document the following:	
a.	Name of person receiving the sample?	Y
b.	Date of sample receipt?	Y
c.	Laboratory sample number (if different than field number)?	Y
d.	Analyses to be performed?	Y

* Form does not request date or time of collection.

		Information Provided (Y/N/U)
V.	Review of Quality Assurance/Quality Control Program	
A.	Is the validity and reliability of the laboratory and field-generated data ensured by a Quality Assurance/Quality Control program?	Y
B.	Does the Quality Assurance/Quality Control program include:	
1.	Documentation of any deviations from approved procedures?	Y
2.	Documentation of analytical results for:	
a.	Blanks?	Y
b.	Standards?	Y
c.	Duplicates?	Y
d.	Spiked Samples?	Y
e.	Detectable limits for each parameter being analyzed?	Y
C.	Are approved statistical methods used?	Y
D.	Are QC samples used to correct data?	N
E.	Are all data critically examined to ensure it has been properly calculated and reported?	Y

		Information Provided (Y/N/U)
VI.	Surficial Well Inspection and Field Observations	
A.	Are the wells adequately maintained?	Y
B.	Are the monitoring wells protected and secure?	Y
C.	Do the wells have surveyed casing elevations?	Y
D.	Are the ground-water samples turbid?	Y*
E.	Have all physical characteristics of the site been noted in the inspector's field notes (i.e., surface waters, topography, surface features)?	Y
F.	Has a site sketch been prepared by the field inspector with a scale, north arrow, location(s) of buildings, location(s) of regulated units, location of monitoring wells, and a rough depiction of the site drainage pattern?	Y

* Some samples are slightly to moderately turbid and analytical results verify this. See Section 5.2.1 of report text.

APPENDIX C

PHILLIPS PETROLEUM-EUNICE
NATURAL GAS PLANT
FIELD LOG NOTES

Name Phebe Davol, Marianne Smith
Kearney Centaur
Address 225 Reinekers Lane
Alexandria VA 22314
Phone 703/683-7932

Projects R06-06-03 Phillips
Eunice Plant

R 36 E
T 21 S
Section 5

36E 21S 5 242
Facility Representative
Mike Ford
915/367-1316
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4001 Penbrook
Odessa 79762

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Projects (continued) .....

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Ac .....

Ph .....

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wate

DT-

Nov 2, 1988 1/1

Arrived at Eunice Plant 1000

Faulty flare was flaming from 0930 to 1000 due to shut down Turbine generator.

Weather ~ 65°F winds gusty from the SW ~ 15 to 20 knots

MW-1 - HNu readings < 10 ppm upgradient

Photo 1-24 1030 Facing South, View of MW-1, Faulty taking water depth measurement

115.18' 1st water depth measurement

115.18 2nd " " "

~~+28 pp~~

129.7' total depth of well

Photo 1-25 1039 View of Wastewater Tanks facing west. See Diagram next page

1/2

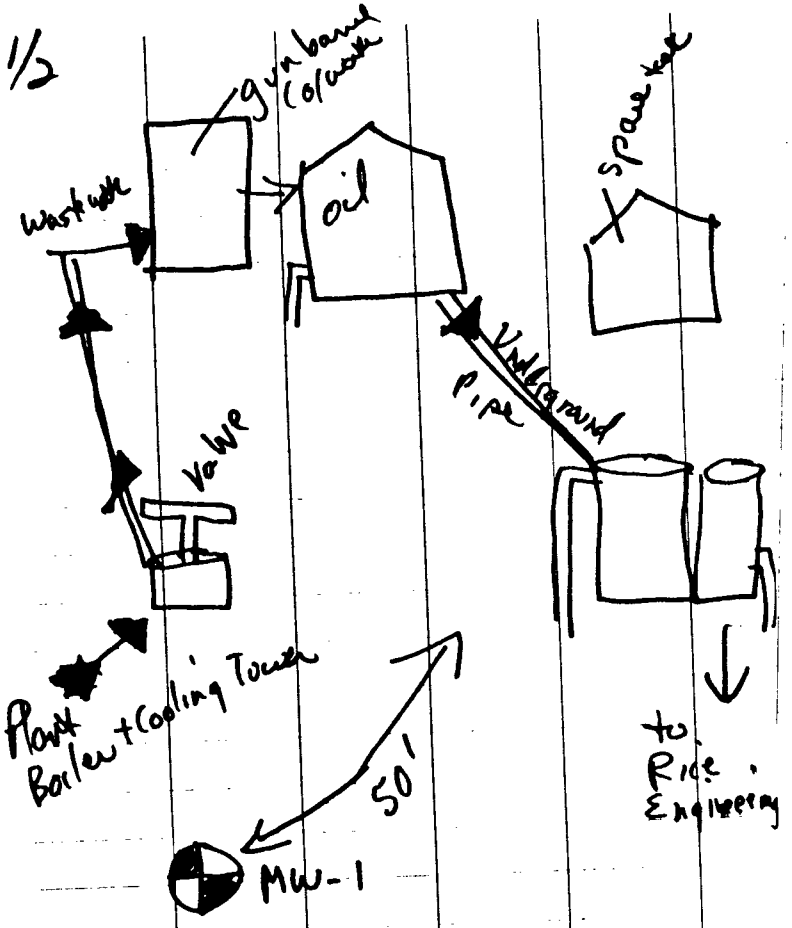


Photo 1-26 View facing east of MW-1. Impoundment in the background. Mud pit to the left (from MW installation

1/3

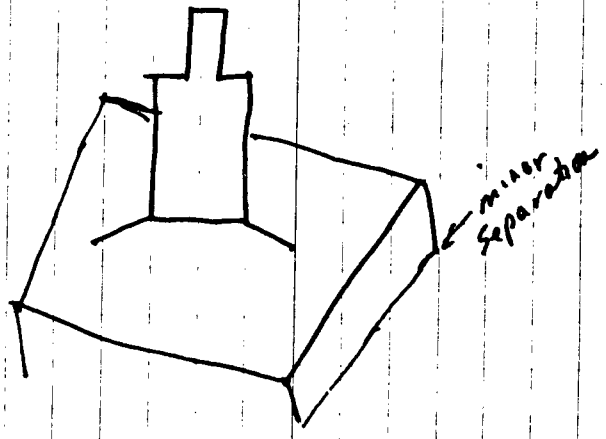
Photo 1-27 1045 Facing north, View of current MW-1 in foreground, old MW-1 in background.

Photo 1-28 1047 View of bailer (purging) from MW-1 - water clear

will purge 9 gallons

14.52 = h

Photo 1-29 1050 facing NW View of stratigraphy in mud pit



1/4

Surrounding vegetation - mesquite, sand burs, sagebrush

Reviewed chain of custody forms for Lee, Lusk, Arkstra. Info seemed adequate. Sample container types were not indicated on form. Lab sends containers, Mike's secretary labels the containers according to Lab's specifications (they send a form) All he has to do

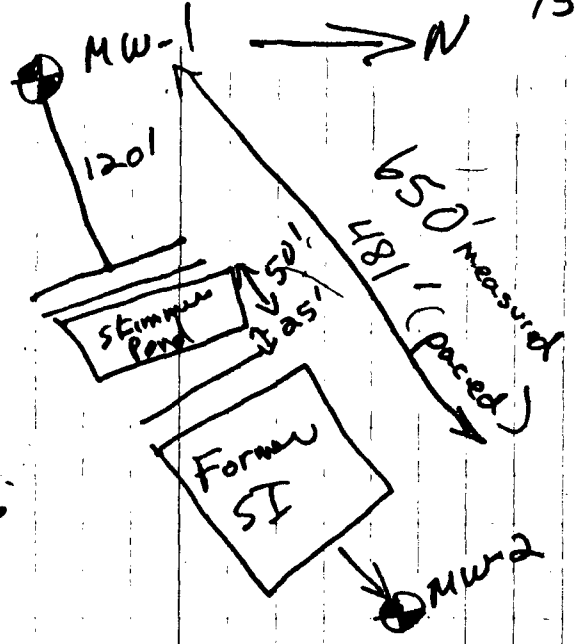
photo 1-30 View of flare facing SE from Lee & Eunice Plant.

photo 1-31 View of Former Surface Impoundment, facing SE.

photo 1-32 1130 View of oily residue in bottom of Impoundment

126.5
1.7
128.2

1/5



143 paces
2'86
120
50
25
481'

MW-2

① 118.07' depth to water
② 118.07'

photo 1-33 1154 View of MW-2 facing south. Note plastic sheeting and sage brush around well

128.2' depth of well measured

1/6

Facility will use reported depth of well 129.87 as the value

129.87
118.07
11.80

calculated 7.3 gallons for 3 well volumes. Will purge 8 gallons

all wells are 2.25" diameter SS pipe

HNu - 0 ppm readings

Photo 1-34 facing East, 1st bailer from MW-2

Water slightly yellow, sulfur (sour) smell noted in bailed water.

1/7

Photo 1-35 facing NE View of MW-2 1227 Bailing (purging) note welders shop in the background

Broke for lunch ~ 12:45
Return to Purge MW-3 + MW-4

1345 MW-3 Purging

No reading on HNu around cap or when cap was removed.

Photo 1-36 Facing west view of mud pit excavation for MW-3

117.80' depth to water
117.80' " " "

measured depth of well 131.7'
reported depth of well 129.92'

8.6 = 3 well volumes
will bail 9 gallons

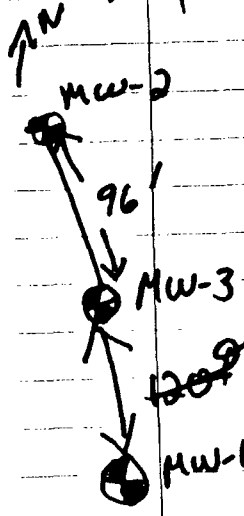
1/8

observation: faridity measures. to top of well casing which accounts for the different values for depth to water and depth of well

LSV bailer not turbid - sulfur smell

Photo 2-1 facing NE View of Plate taking notes w/ dust & bailer MW-3 in foreground

Weather 75° Very Gusty (25-30kts) very dusty



2/9

Photo 2-2 facing east view of SI, MW-3 in background next to Hertz Penske truck H Nu readings <1ppm.

Photo 2-3 View O/W Sep. facing SW - construction

Photo 2-4 View looking west across Skimmer Pond Plant drainage would flow towards foreground.

Photo 2-5 facing south - view of last bailer for 6 gallons

noted layer effect in bailer

Photo 2-6 view of layers in bailer facing south

1/10 Wastewater discharged to Skimmer Pond which overflowed to Evaporation Pond
scrubber blowdown – some H-Cs
cooling water blowdown

Nat gasoline
inlet → scrubber →

Photo 2-7 View of MW-3 facing SE – good pad & casing.

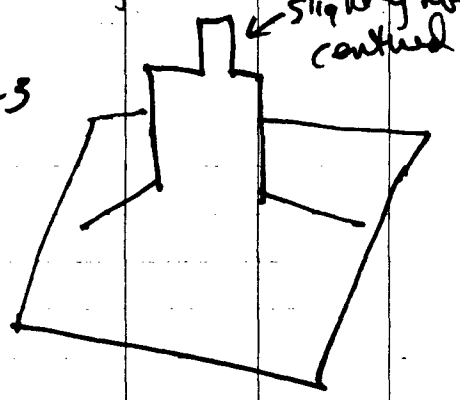


Photo 2-8 Facing west · view of construction activities occurring south of impoundments, east of MW-1. Photo taken adjacent to MW-4

Throughout the day very windy and very dusty due to equipment operators moving soil around.

MW-4 1/11

0 117.77' depth to water
117.77'

125.8	126.0
1.7	1.7
127.5	127.70
	117.77
	9.93'

~~Max~~ Reported depth of well	129.92
	117.77
	12.15'

7.5 = 3X Casing volumes.

Photo 2-9 facing S - View of MW-4

Photo 2-10 facing W view of last boulder for MW-4.

Left facility at 1630

1/12

Nov 3, 1988

Arrived at Ennis 0800

0830 prepared Equipment Blank

Weather Sunny 75° F Windy with winds from west ~ 15 knots

Watched Conductivity + pH standardizing used TDS/Conductivity Standardizing Solution - 442-1500 standardized at 20 70 µmhos
25° - pH = 7.0

Facility cleaned probe per manufacturers ~~request~~ recommendation last night prior to 10 days sampling. Had cleaned it prior to each facility
Facility requested BTEX (VOA) of our equipment blank.

Photo 2-11 Viewing Equipment Blank
2-12 preparation flowing east

1/13

Water depth MW-1 115.18'

0900 started sampling MW-6
no HNu readings detected around cap or after cap removed.
However the wind is extremely gusty.

0907 Photo # 2-13 : Collecting samples at MW-1

0922 photo 2-14 View of Tube filling of Methodist facility, flowing east

Field Parameters
Cond. 4.09 µmos @ 18.3°C & 10 K
pH 6.9 @ 18.3°C

Facility @ 21°C
Initial pH 6.89
final pH 6.9
Initial Cond. 3350 µmos
final cond 3700 µmos

1/14

Photo 2-15 View of blowing dirt, facing SE. former SI in background
1000

1000 - Current Temp 86°F

Finished Sampling MW-1 @ 0950

Photo 2-16 View of Strata directly east of MW-1 and south of Stymer Pond. Note Caliche layer beneath dark topsoil. Photo taken facing west

Photo 2-17 facing west view of construction (earth moving) activity south of SI. MW-1 in background

Photo 2-18 facing NW. View of Oil/grit/water Separator drain area

MW-2

1/15

Arrived at well. 1020
No. HNu readings

Depth to water measured 118.07'

Around MW-2 and MW-3 there is quite a bit of scrap debris & Tanks - possibly USTs (former)

Photo 2-19 View of MW-2 facing east - note scrap debris (possible former USTs to right. Former mud pit for well installation to right of tripod.

Facility is rinsing off tops of VOA vials w/ distilled water since there is so much dust

MW-2 Field Parameters
pH 6.8
Temp. 66° F
SC 2.91 on 10k scale

1/16

1054 Photo 2-20 } Dust stirred up by
1055 Photo 2-21 } heavy eq. operatin immediately upwind of Sampling at MW-2

Finished Sampling MW-2 11:25

Field Parameters as measured by Faulkner

Temp = 21°C
Initial pH = 6.91
final pH = 6.94
Initial Cond = 3000 µmos
final cond = 3000 µmos

Started 10:40
Stopped 10:30 pM

Off to MW-3
1140 arrived well
No readings on HNu

1150 Starts water level measurement
117.80' depth to water

1/17

1201 Photo 2-22 } collecting VOAs
1201 Photo 2-23 } at MW-3

Field parameters MW-3
pH = 6.85
Temp = 67°F
SC = 1973 on 1k scale

1217 Photo 2-24 } facility's sampling containers on ground prior to collecting samples. at MW-3.

Faulkners measurements
Temp 21°C
initial pH 6.95
final pH 7.02
initial cond 2350 µmos
final cond 2200 µmos

1250 finished MW-3

1300 off to MW-4

MW-4

photo 2-25 View of MW-4 facing southwest. Note that the mud pit has been filled in since Wednesday.

Time 1300
Depth to water level 117.77'

Started bailing for samples 1310

Will do duplicate on BNA for MW-4

photo 2-26 View of flare looking east adjacent to MW-4

photo 2-27 View of collecting VOA samples for MW-4 facing

Still very gusty with blowing soil

Field 20.5°C
pH 6.9
Conductivity 1993 μmhos } MW-4

Mike's Field Parameters for MW-4

PH	6.90	6.96
Temp	21°C	
SC	3550	3450

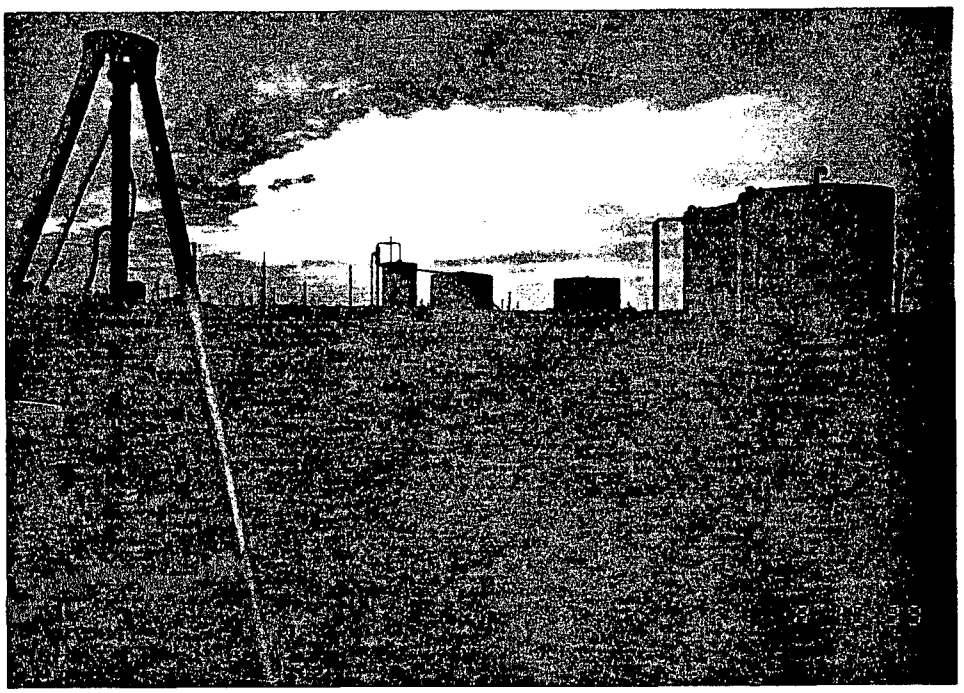
Finished at 1430 11/3/88

APPENDIX D

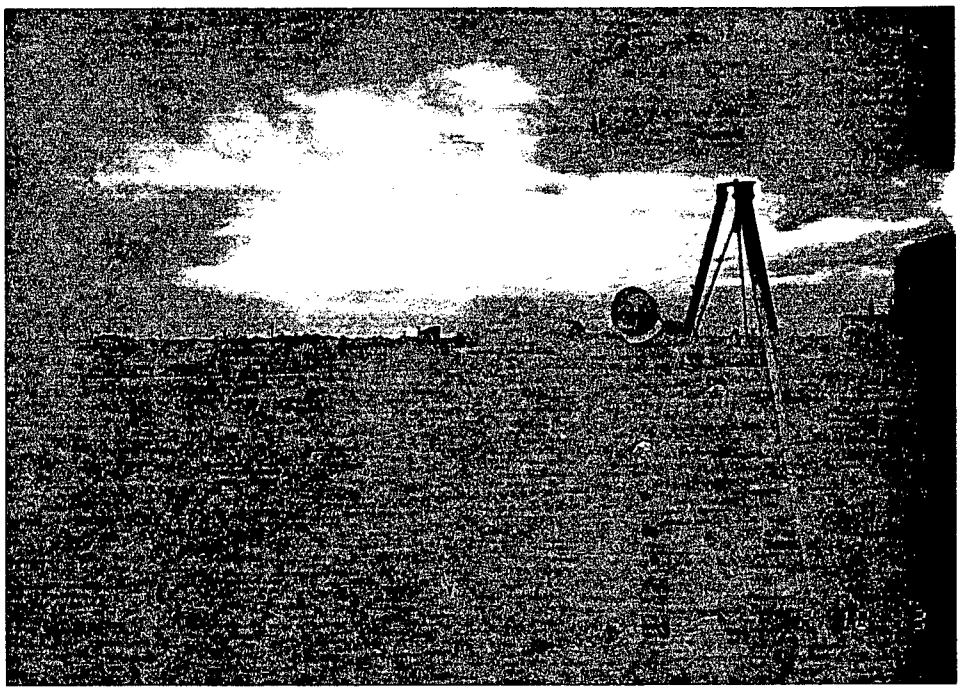
PHILLIPS PETROLEUM-EUNICE NATURAL GAS

PHOTOGRAPH LOG

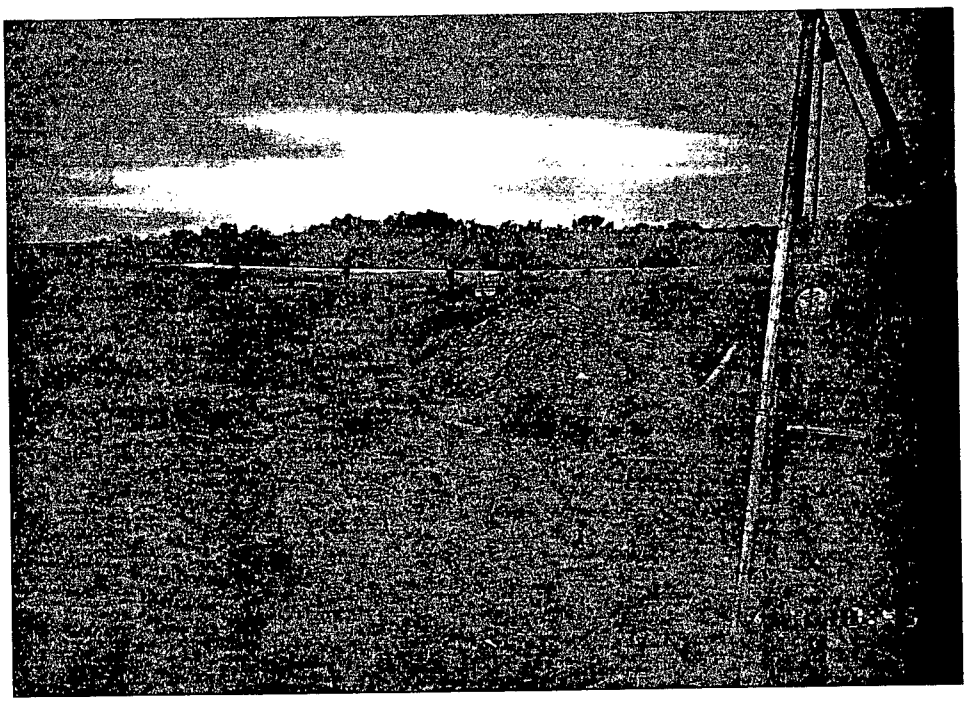
D-1 View of facility operator taking static water depth level of MW-1, facing south. Note the pad is in good condition.



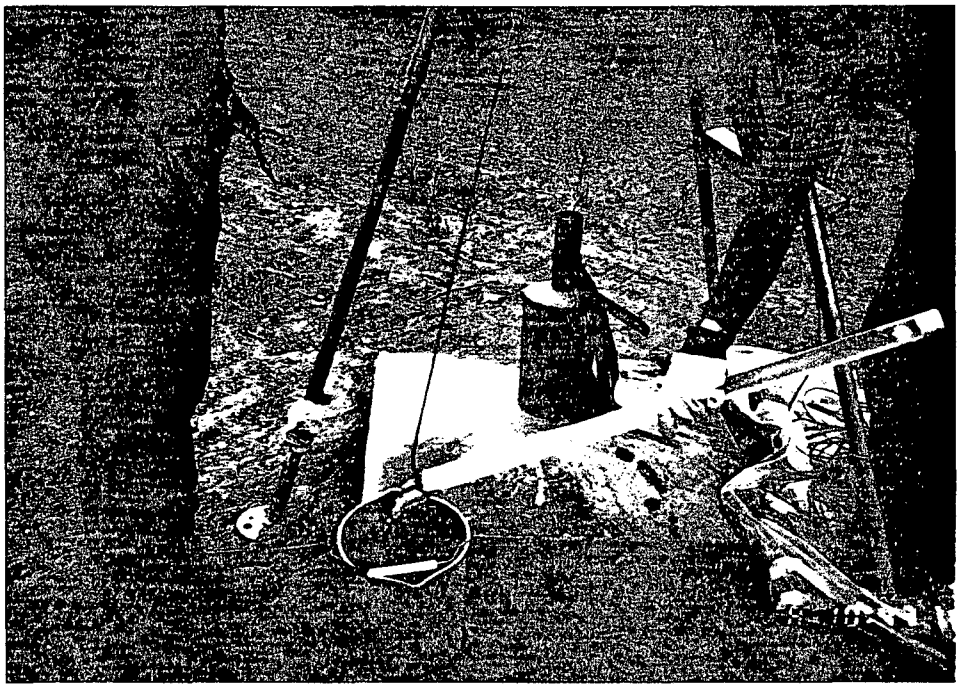
D-2 Wastewater tanks, located to the west and slightly upgradient from MW-1, facing west.



D-3 View of MW-1, facing east. Note the plastic lined pit to the left was used as a mud reservoir during well installation.

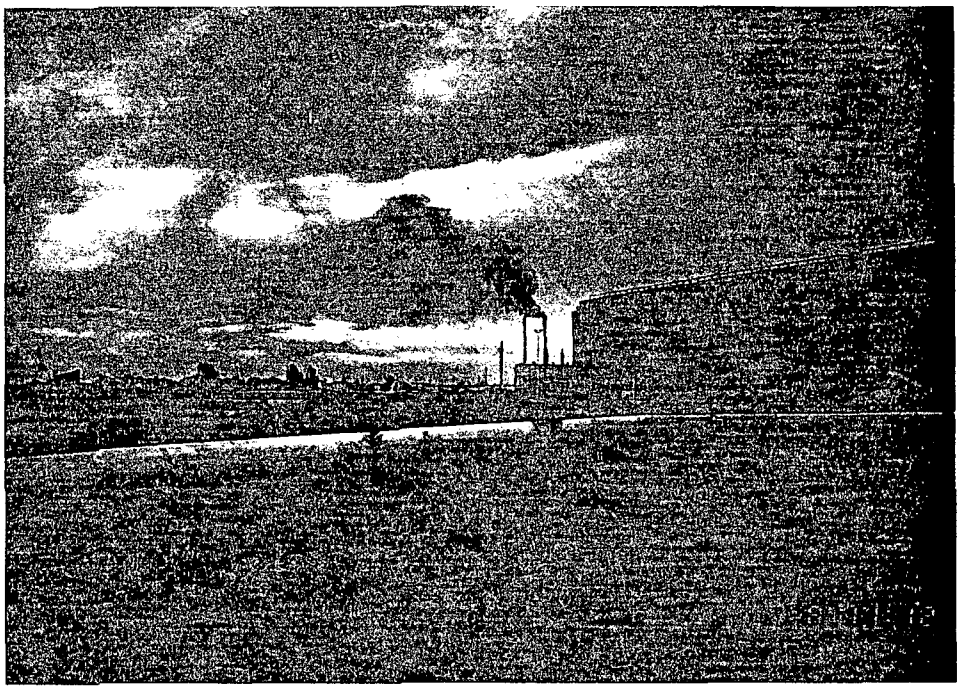


D-4 The former MW-1 is located in the middle of the photograph adjacent to the soil pile. The new MW-1 is to the right foreground, facing north.



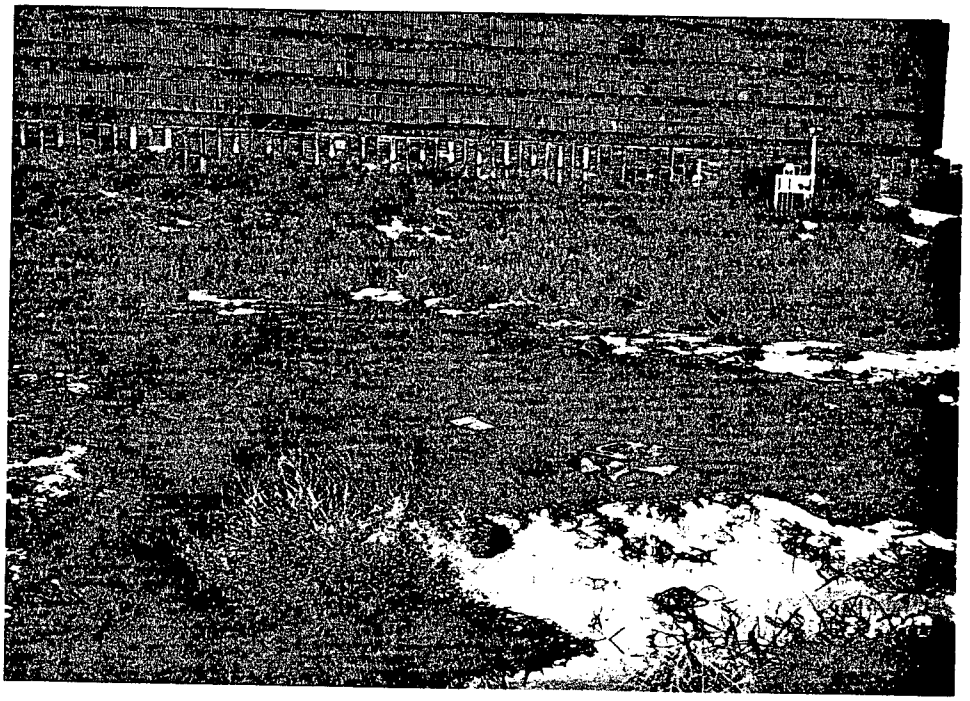
D-5 This first water withdrawn from MW-1 did not appear turbid. The view is facing southeast.

D-6 Close-up view of the soil profile in the former mud pit, facing northwest. Note the soil is compacted caliche with some sand and clay. Some of the structure appeared indurated.

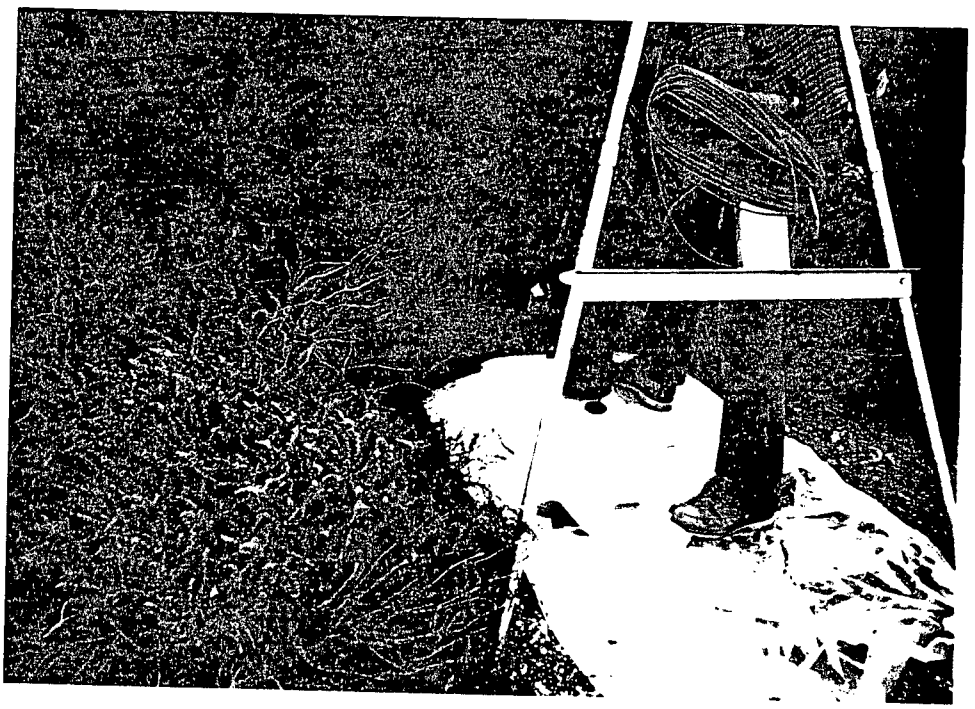


D-7 View of the facility flare, facing southeast from MW-1.

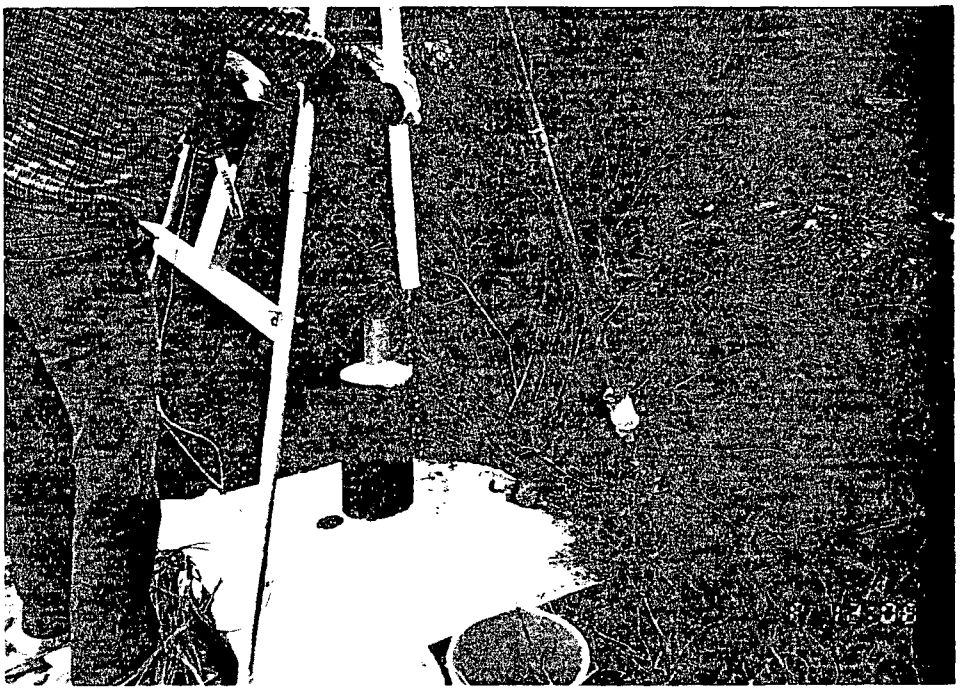
D-8 View of the former surface impoundment and oil/water separator, facing southeast.



-9 View of oil build up from the oil/water separator, facing south. The oily water is in a depression of the former surface impoundment.



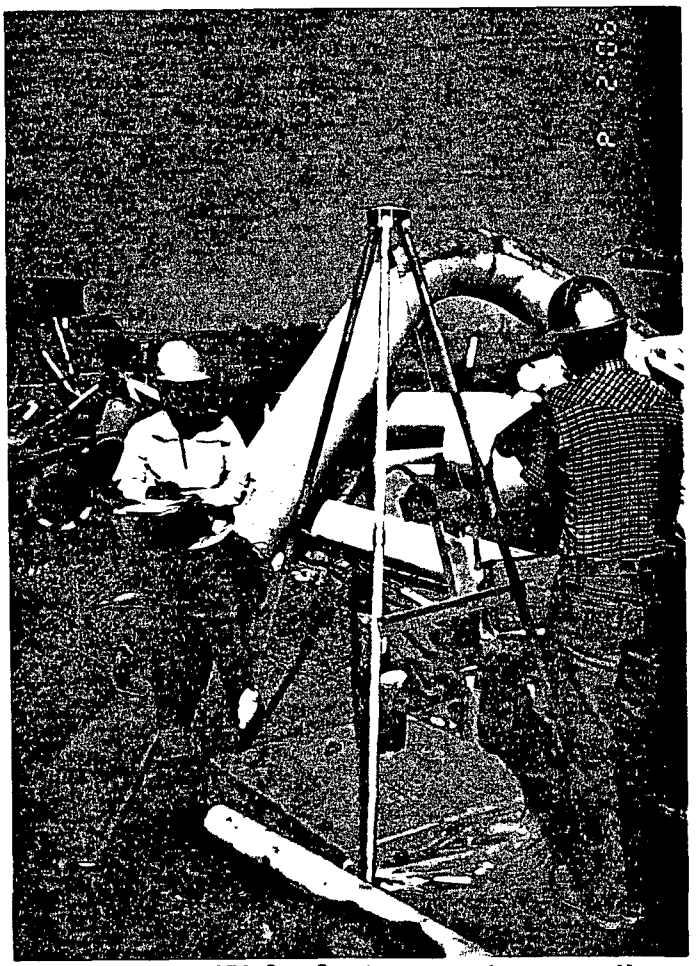
0 Close-up view of MW-2, facing south. Note the pad appears to be in good condition.



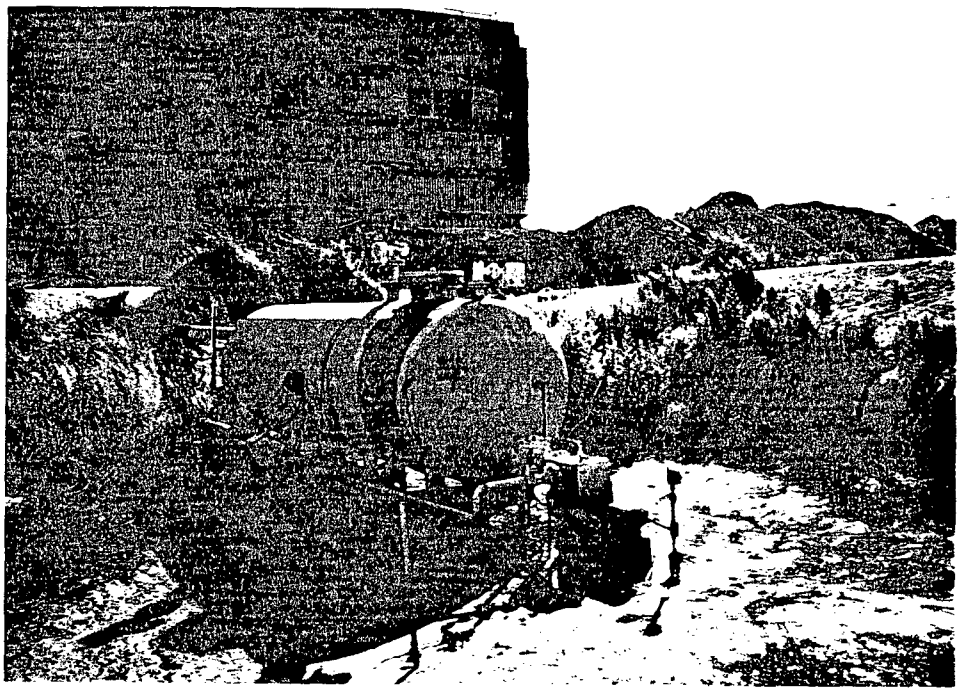
D-11 First water withdrawn from MW-2 during purging. Note water appears clear.

D-12 View of facility operator bailing MW-2, facing northeast. The welders shop is to the left background. Scrap material and sagebrush surrounds the well.

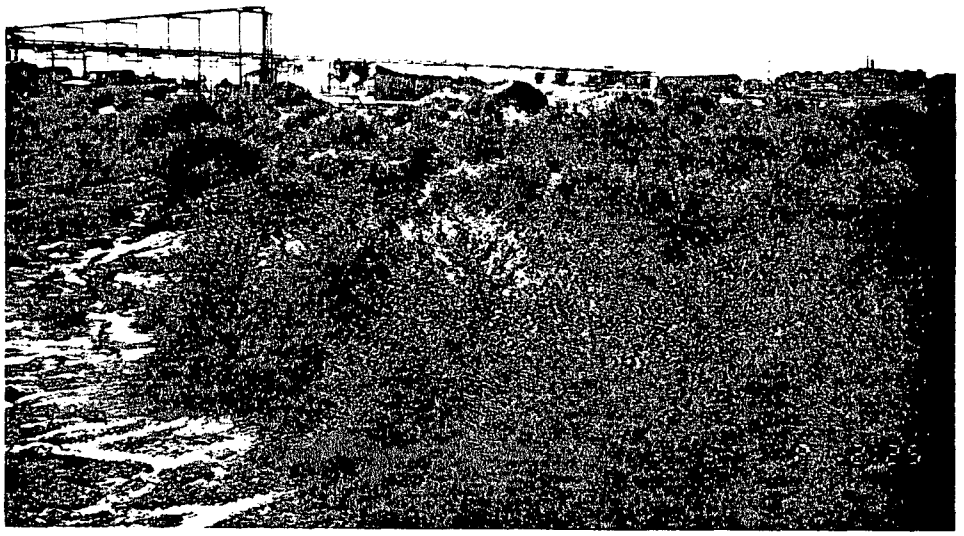
D-13 View of the mud pit used during MW-2 installation. Soil profile shows compacted clay and caliche.



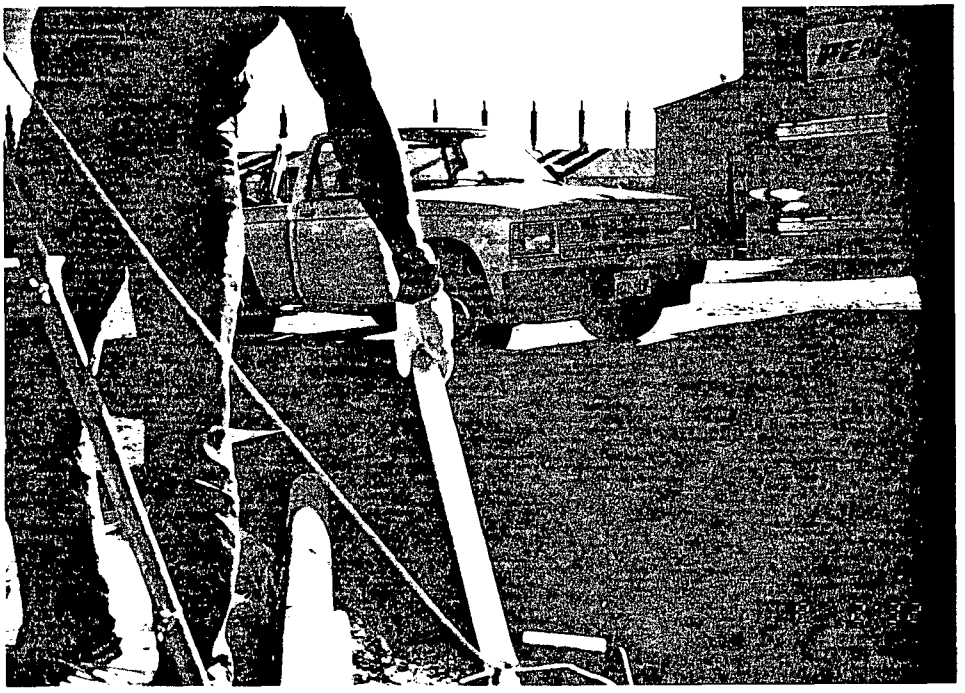
D-14 View of operator purging MW-3, facing northeast. Note well pad appears to be in good condition.



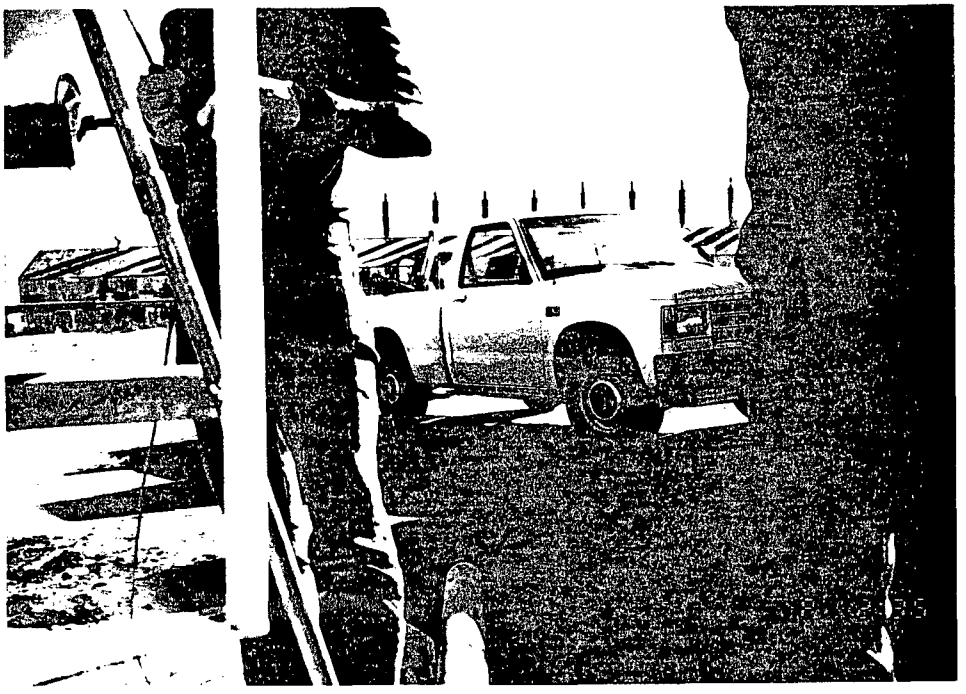
D-15 View of the oil/water separator located within the former surface impoundment, facing southwest. Note the bulldozer in the background is excavating a hole for cooling tower demolition material. The cooling tower is in the background.



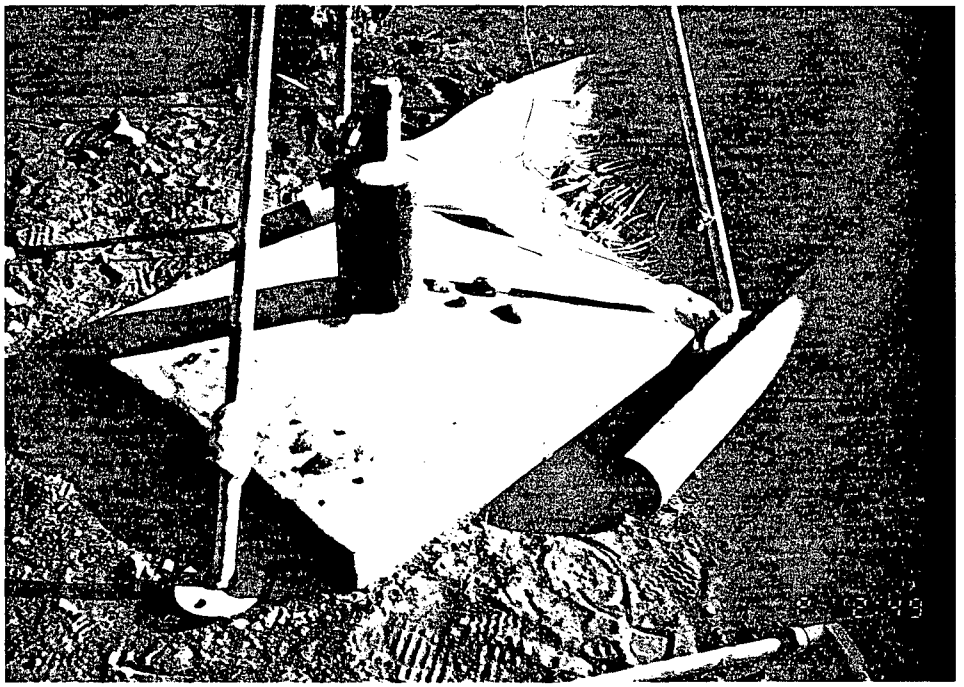
D-16 View facing southwest towards El Paso Natural Gas Plant from the edge of the skimmer pond. The upgradient well (MW-1) is located to the right background.



D-17 View of first water withdrawn from MW-3, facing southeast.

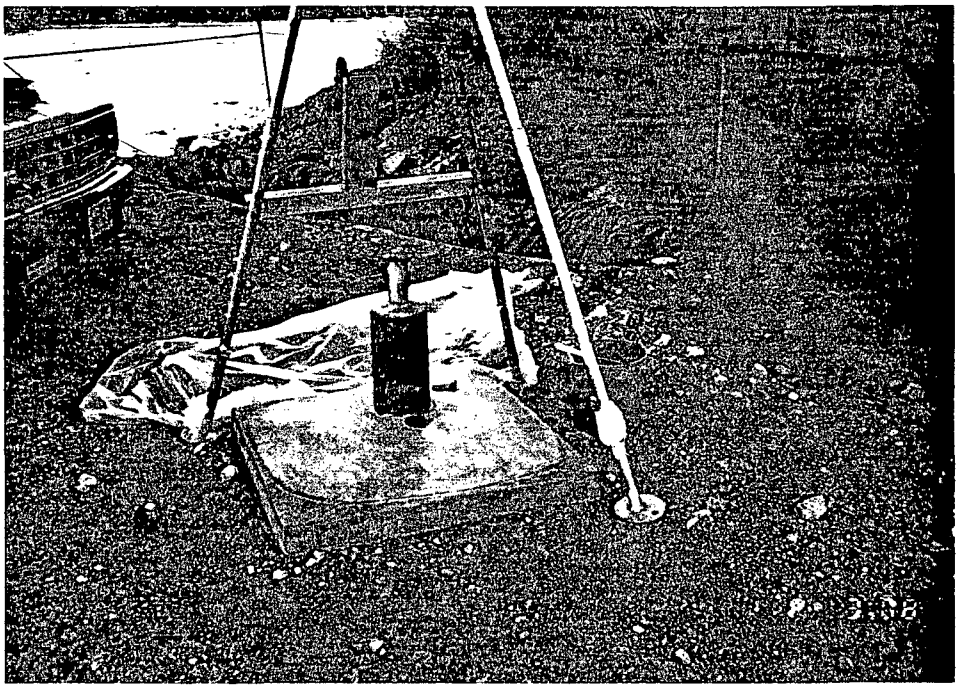


D-18 View of layers in the water withdrawn from MW-3, facing south. Note layer at top appears turbid.

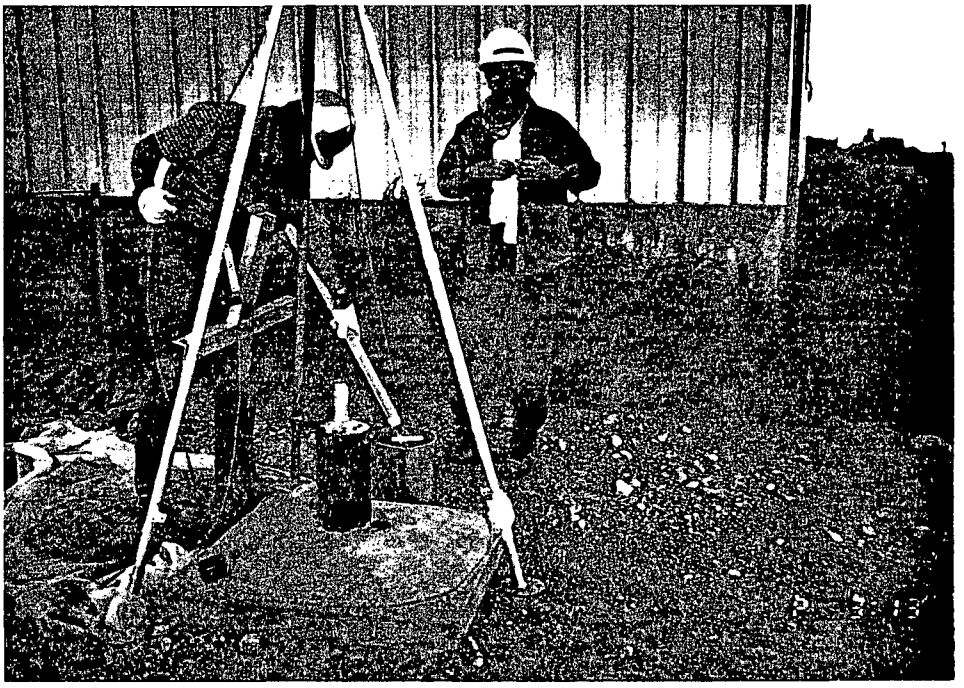


D-19 View of MW-3 well pad and casing, facing southeast. Note pad and casing appear to be in good condition.

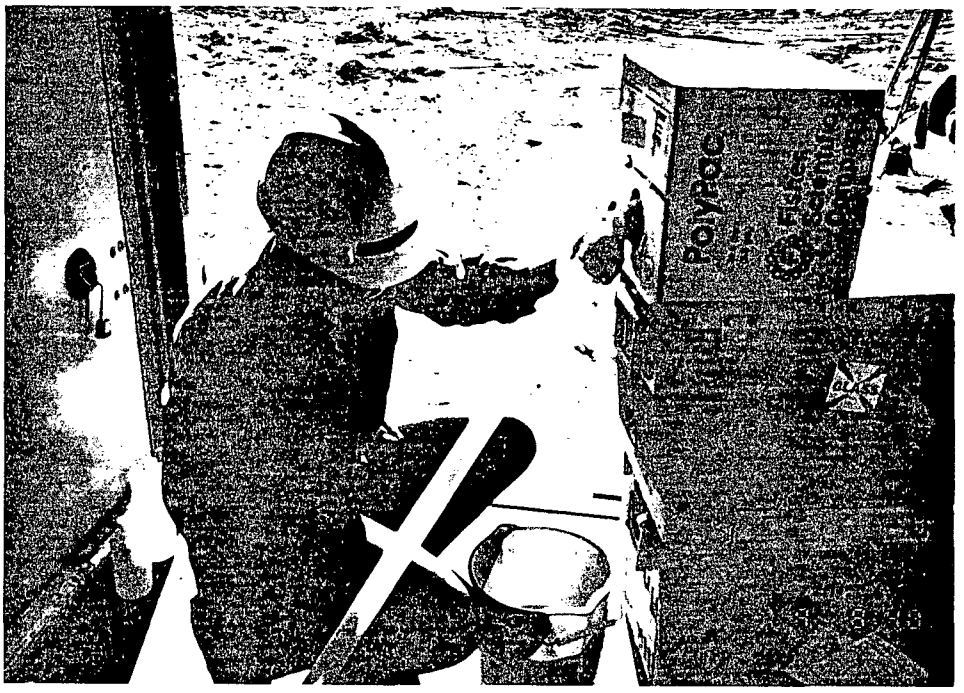
D-20 View, facing west, of earth moving activities adjacent to the cooling tower to be demolished. Photograph taken from vicinity of MW-4.



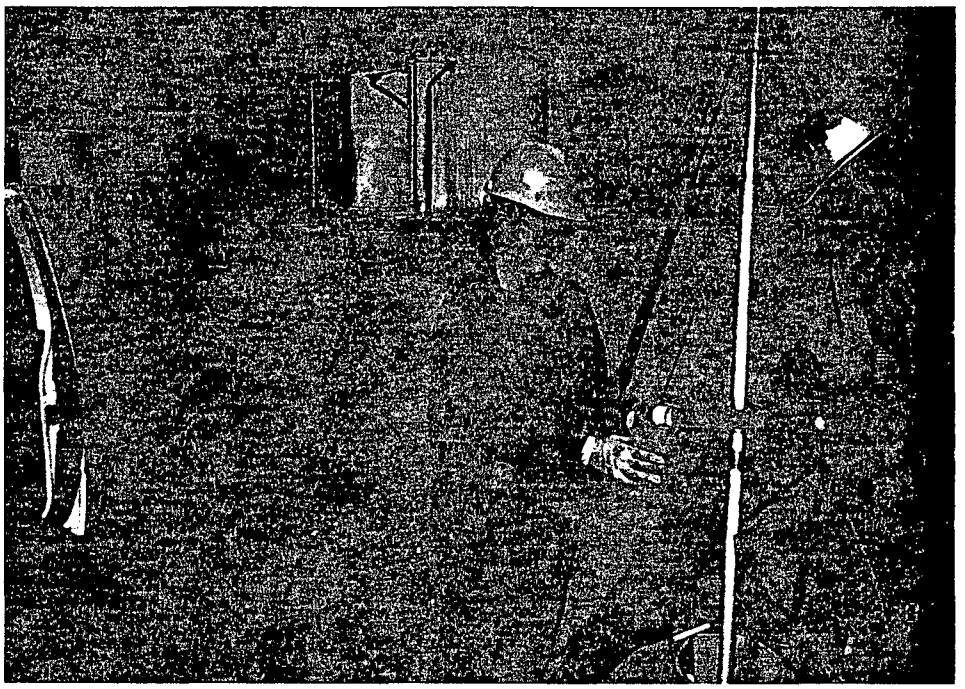
D-21 Facing south towards MW-4. Note the mud pit in the background was used for well installation. The pad and casing appear to be in good condition.



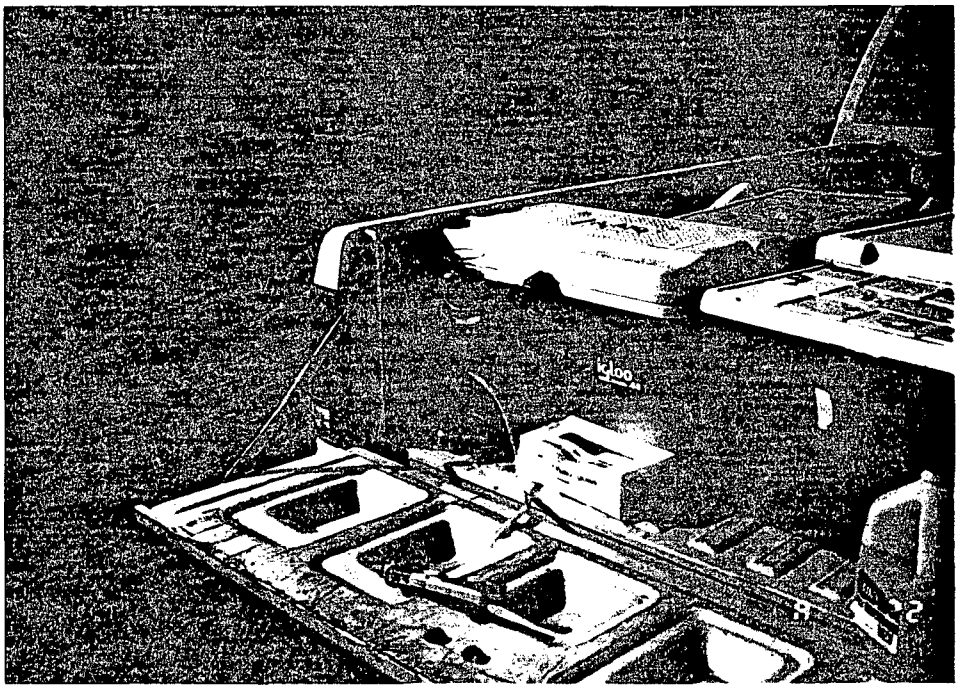
D-22 View of first water withdrawn from MW-4, facing west.



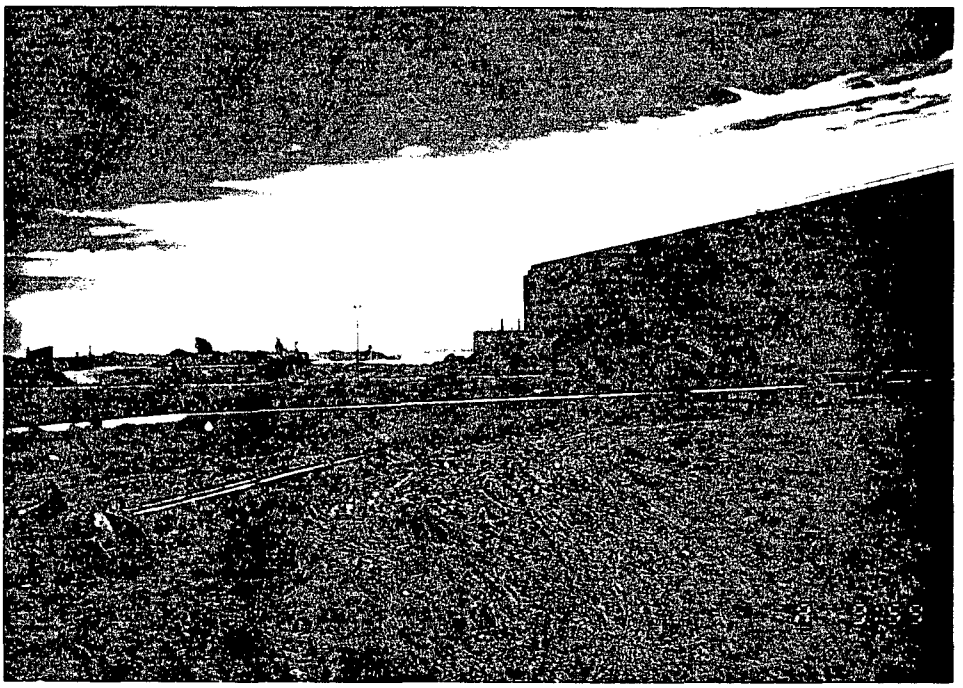
D-23 View of contractor preparing equipment blank, facing east.



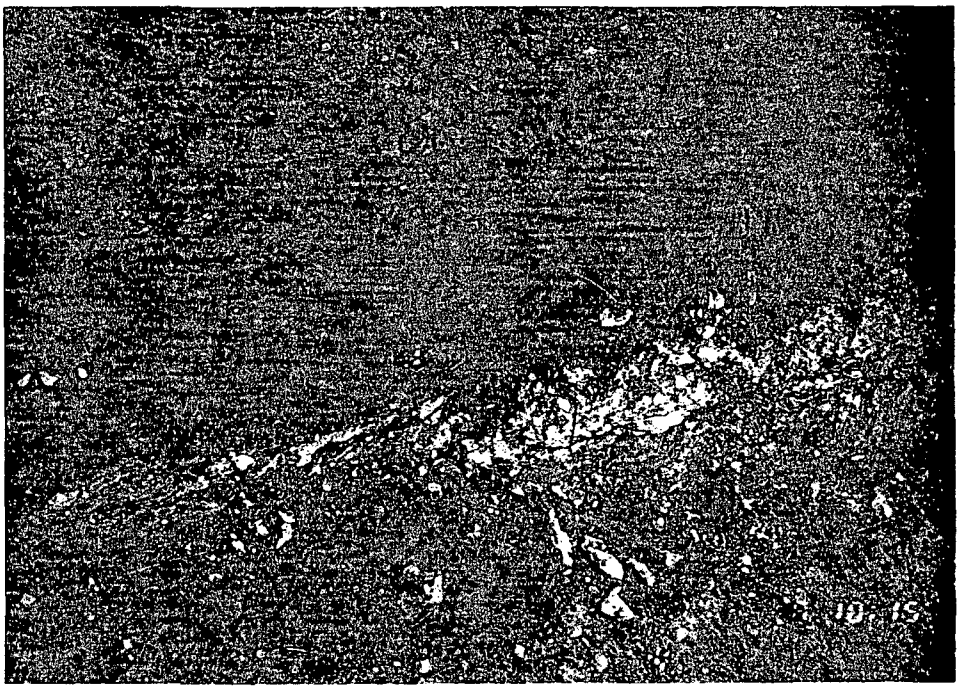
D-24 View of facility operator dispensing sample from MW-1 into a beaker for transferring to sample container, facing northwest. Note wastewater tanks are in the background.



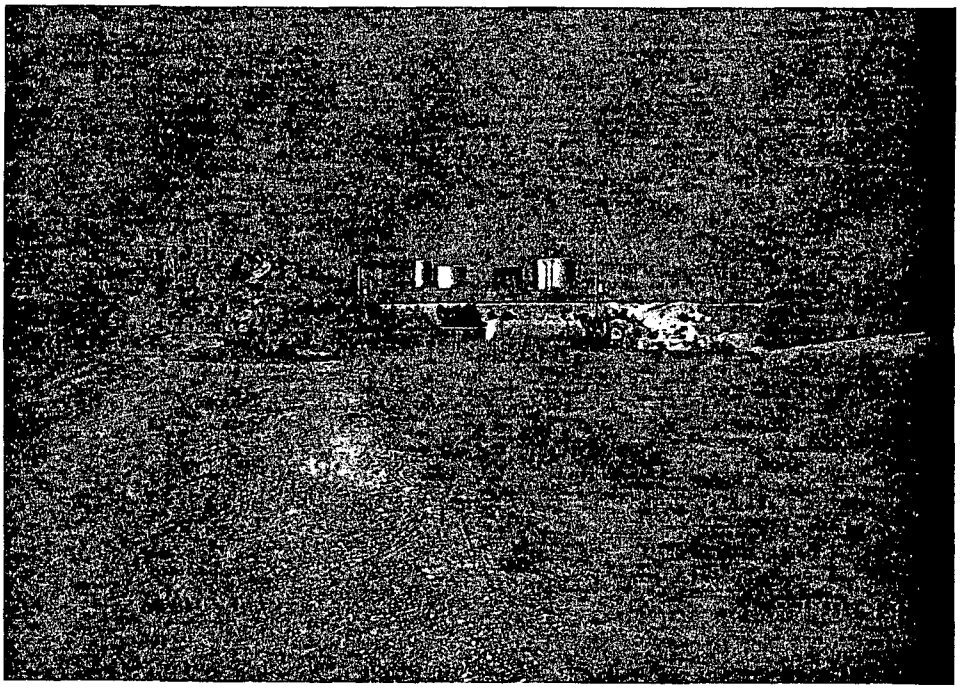
D-25 View of facility operator field filtering set-up for metal samples from MW-1, facing west.



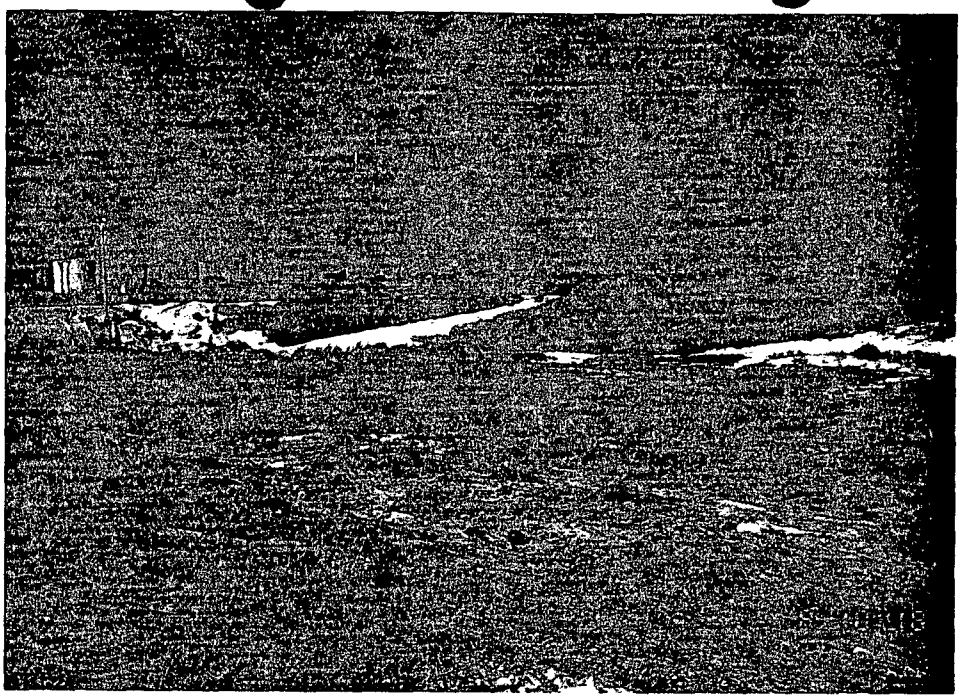
D-26 View looking towards MW-4 across the skimmer pond, facing southeast. The cooling tower to the right background will be demolished and placed in excavated hole adjacent to soil piles.



D-27 West view of soil profile from excavated area to the southeast of MW-1. Note soil consists of clay overlying indurated caliche.

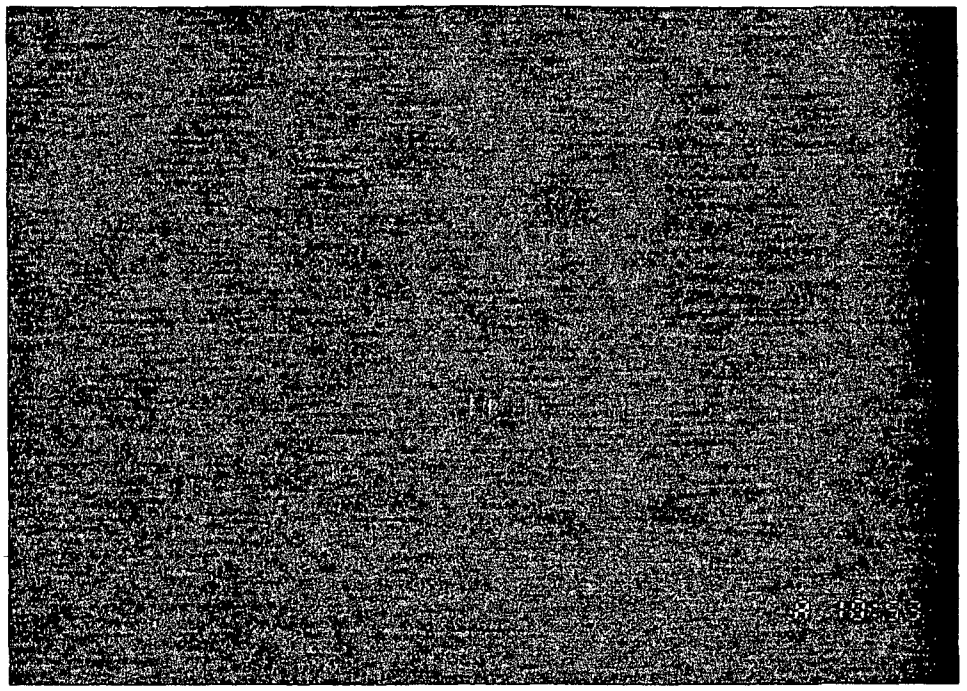


D-28 View of the earth moving activities immediately adjacent to the former surface impoundment, facing west. Note the upgradient well MW-1 is located in the background near the vertical wastewater tanks.

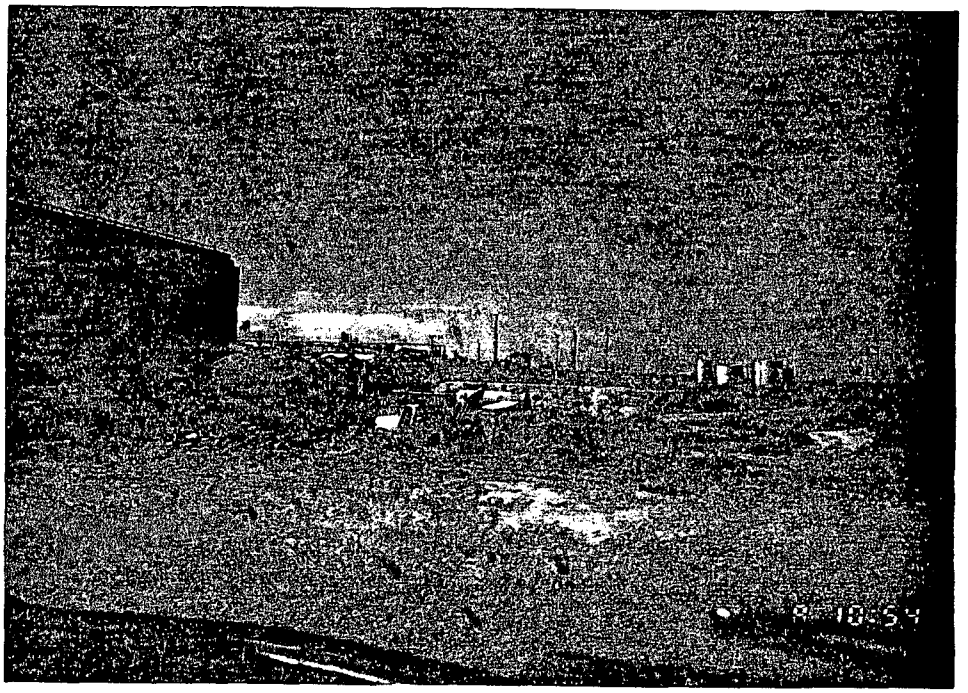


D-29 Facing northwest from the edge of the former surface impoundment. Note oil staining to the right is drainage from the oil/water separator.

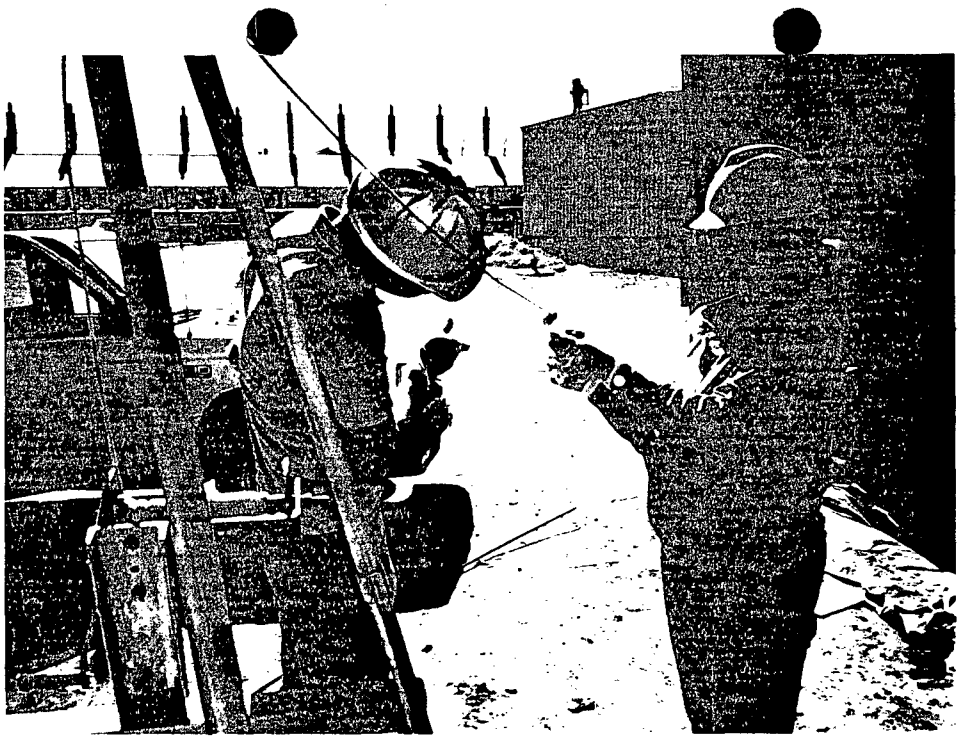
D-30 View of MW-2 beneath tripod to the left, facing east. The scrap debris and possible former underground storage tank surround the well.



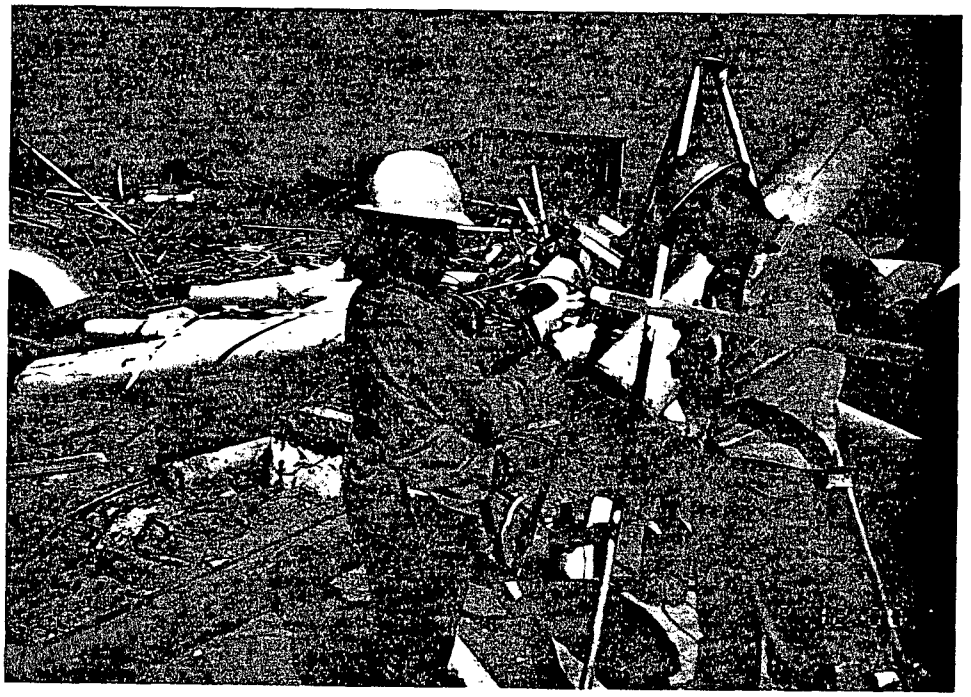
D-31 View of dust storm generated by high winds and the earth moving operations, facing northwest. The photograph was taken from MW-2.



D-32 View facing west across the former surface impoundment from MW-2. Note dust is from high winds and earth moving activities.



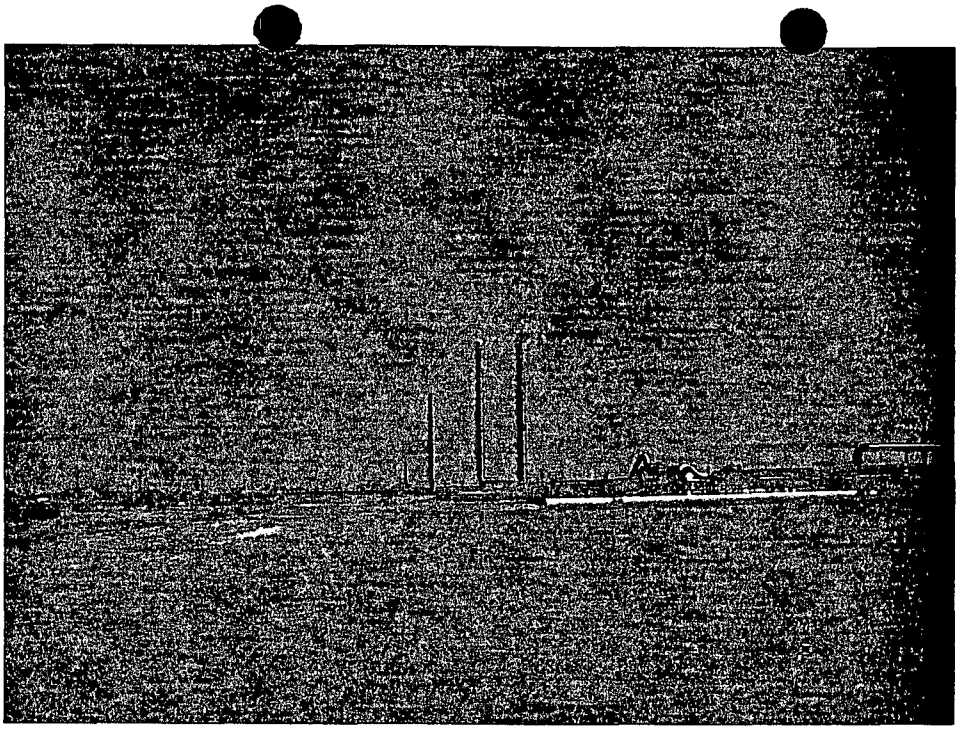
D-33 Facility operator and EPA contractor collection VOA sample from MW-3, facing south.



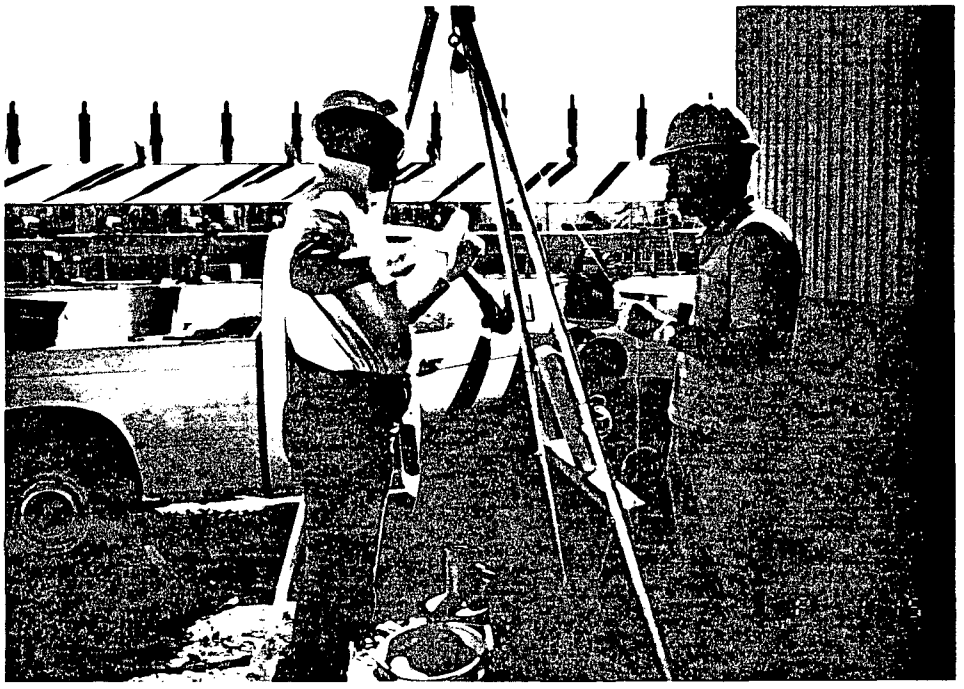
D-34 Facility operator collecting VOA sample from MW-3, facing northeast.

D-35 View of facility's sample containers on bare ground adjacent to MW-3, facing northeast.

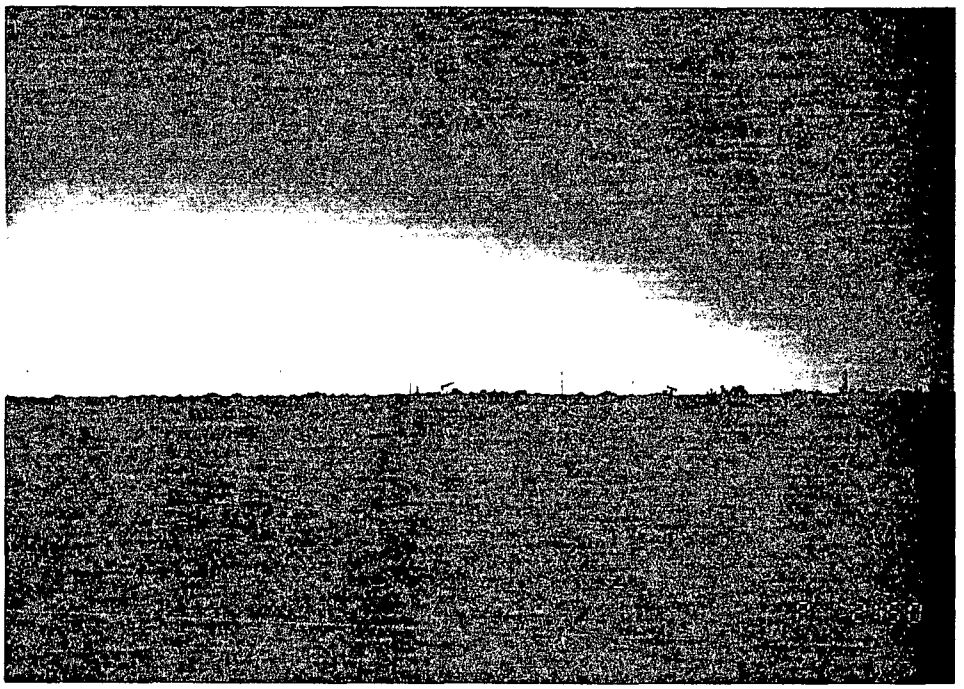
D-36 View of MW-4, facing south. Note the mud pit has been filled in since the previous day.



D-37 View of facility flare from MW-4, facing east.



D-38 Collecting VOA samples from MW-4, facing southeast.



D-39 View facing west toward the Eunice plant in the background. The stacks in the background are located at the facility.

APPENDIX E

PHILLIPS PETROLEUM-EUNICE
NATURAL GAS PLANT
ANALYTICAL RESULTS

ENVIRONMENTAL MONITORING AND SERVICES, INC.
Analytical Results Summary for A.T. KEARNEY
PHILLIPS - EUNICE
RFS: 80466

Client Sample I.D.	EMSI Number	Date Received	Rep	Method	Analyte	Result	Detection Limit (*)	Units	Date Analyzed	Dil Factor
MW-1	CAT-880030	11/04/88	Orig		TURBIDITY	15.0	.020	NTU	11/29/88	1.0
MW-2	CAT-880031	11/04/88	Orig		TURBIDITY	66.0	.020	NTU	11/29/88	1.0
MW-3	CAT-880032	11/04/88	Orig		TURBIDITY	105.	.020	NTU	11/29/88	1.0
			Dup		TURBIDITY	105.	.020	NTU	11/29/88	1.0
MW-4	CAT-880033	11/04/88	Orig		TURBIDITY	40.0	.020	NTU	11/29/88	1.0
MW-5	CAT-880034	11/04/88	Orig		TURBIDITY	.950	.020	NTU	11/29/88	1.0
MW-6	CAT-880035	11/04/88	Orig		TURBIDITY	.260	.020	NTU	11/29/88	1.0

* - To obtain the true detection limit, multiply this value by the value under the "Dil Factor" column.

ND - Not detected at the true detection limit.

1A

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

MW-1EUN

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 110788C15

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. ____ Date Analyzed: 11/07/88

Column: (pack/cap) CAP Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	2	J
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1E

EPA SAMPLE NO.

MW-1EUN

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 110788C15

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. ____ Date Analyzed: 11/07/88

Column (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

MW-2EUN

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1.0 (g/mL) ML Lab File ID: 110888C09

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. _____ Date Analyzed: 11/08/88

Column: (pack/cap) CAP Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	50	U
74-83-9	Bromomethane	50	U
75-01-4	Vinyl Chloride	50	U
75-00-3	Chloroethane	50	U
75-09-2	Methylene Chloride	25	U
67-64-1	Acetone	50	U
75-15-0	Carbon Disulfide	25	U
75-35-4	1,1-Dichloroethene	25	U
75-34-3	1,1-Dichloroethane	25	U
540-59-0	1,2-Dichloroethene (total)	25	U
67-66-3	Chloroform	25	U
107-06-2	1,2-Dichloroethane	25	U
78-93-3	2-Butanone	50	U
71-55-6	1,1,1-Trichloroethane	25	U
56-23-5	Carbon Tetrachloride	25	U
108-05-4	Vinyl Acetate	50	U
75-27-4	Bromodichloromethane	25	U
78-87-5	1,2-Dichloropropane	25	U
10061-01-5	cis-1,3-Dichloropropene	25	U
79-01-6	Trichloroethene	25	U
124-48-1	Dibromochloromethane	25	U
79-00-5	1,1,2-Trichloroethane	25	U
71-43-2	Benzene	210	
10061-02-6	Trans-1,3-Dichloropropene	25	U
75-25-2	Bromoform	25	U
108-10-1	4-Methyl-2-Pentanone	50	U
591-78-6	2-Hexanone	50	U
127-18-4	Tetrachloroethene	25	U
79-34-5	1,1,2,2-Tetrachloroethane	25	U
108-88-3	Toluene	9	J
108-90-7	Chlorobenzene	25	U
100-41-4	Ethylbenzene	25	U
100-42-5	Styrene	25	U
1330-20-7	Total Xylenes	120	

1E

EPA SAMPLE NO.

MW-2EUN

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1.0 (g/mL) ML Lab File ID: 110888C09

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. ____ Date Analyzed: 11/08/88

Column (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-3EUN

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 110788C18

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. ____ Date Analyzed: 11/07/88

Column: (pack/cap) CAP Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1E

EPA SAMPLE NO.

MW-3EUN

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 110788C18

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. _____ Date Analyzed: 11/07/88

Column (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-4EUN

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 110888C10

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. ____ Date Analyzed: 11/08/88

Column: (pack/cap) CAP Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1E

EPA SAMPLE NO.

MW-4EUN

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 110888C10

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. _____ Date Analyzed: 11/08/88

Column (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

MW-5EUN

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 110788C17

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. ____ Date Analyzed: 11/07/88

Column: (pack/cap) CAP Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	1	BJ
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

MW-5EUN

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 110788C17

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. ____ Date Analyzed: 11/07/88

Column (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 60-29-7	ETHYL ETHER	2.77	10	J
2. 000-00-0	UNKNOWN HYDROCARBON	5.50	15	J
3. 000-00-0	UNKNOWN	7.17	9.0	J

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-6EUN

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 110788C16

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. ____ Date Analyzed: 11/07/88

Column: (pack/cap) CAP Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	2	BJ
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

MW-6EUN

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 110788C16

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. _____ Date Analyzed: 11/07/88

Column (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 60-29-7	ETHYL ETHER	2.83	10	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO

MW-1EUN

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111688S16

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/17/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-1EUN

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111688S16

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/17/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	4	J
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	5	J
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U
90-12-0	1-Methylnaphthalene	10	U
108-39-4	meta-Cresol	10	U

(1) - Cannot be separated from Diphenylamine

57-97-6---------7,12-Dimethylbenzanthracene__	10	U	

(1) - Cannot be separated from Diphenylamine

1F

EPA SAMPLE NO.

MW-1EUN

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111688S16

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/17/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 000-00-0	UNKNOWN	16.45	24	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-2EUN

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111788S14

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/18/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	8	J
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	24	
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	5	J
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-2EUN

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111788S14

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/18/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	2	J
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	6	J
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U
90-12-0	1-Methylnaphthalene	10	U
108-39-4	meta-Cresol	10	U

(1) - Cannot be separated from Diphenylamine

57-97-6---------7,12-Dimethylbenzanthracene		10	U

(1) - Cannot be separated from Diphenylamine

1F

EPA SAMPLE NO.

MW-2EUN

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111788S14

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/18/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

Number TICs found: 20

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	000-00-0	DIMETHYL BENZENE ISOMERS	6.75	30	J
2.	000-00-0	METHYL ETHYL BENZENE ISOMER	8.20	10	J
3.	000-00-0	TRIMETHYL BENZENE ISOMER	8.34	12	J
4.	000-00-0	METHYL ETHYL BENZENE ISOMER	8.57	14	J
5.	000-00-0	METHYL ETHYL BENZENE ISOMER	8.72	12	J
6.	000-00-0	TRIMETHYL BENZENE ISOMER	8.85	32	J
7.	000-00-0	2 PROPANOL	8.95	10	J
8.	000-00-0	UNKNOWN	9.27	12	J
9.	000-00-0	TRIMETHYL BENZENE ISOMER	9.42	14	J
10.	000-00-0	UNKNOWN ALIPHATIC OXYGENATED	9.57	52	J
11.	000-00-0	UNKNOWN ALIPHATIC OXYGENATED	9.69	20	J
12.	000-00-0	UNKNOWN ALIPHATIC OXYGENATED	9.77	18	J
13.	000-00-0	DIMETHYL PHENOL ISOMER	10.89	12	J
14.	000-00-0	UNKNOWN	13.05	30	J
15.	000-00-0	UNKNOWN	13.60	20	J
16.	000-00-0	UNKNOWN	14.22	14	J
17.	000-00-0	PROPANOL ISOMER	14.30	24	J
18.	000-00-0	2-PROPANOL	14.44	80	J
19.	000-00-0	UNKNOWN	14.70	56	J
20.	000-00-0	UNKNOWN	15.82	70	J

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MW-3EUN

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111788S04

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/17/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-3EUN

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111788S04

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/17/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	2	J
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	3	J
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U
90-12-0	1-Methylnaphthalene	10	U
108-39-4	meta-Cresol	10	U

(1) - Cannot be separated from Diphenylamine

57-97-6	7,12-Dimethylbenzanthracene	10	U

(1) - Cannot be separated from Diphenylamine

1F

EPA SAMPLE NO.

MW-3EUN

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111788S04

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/17/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 000-00-0	2 PROPANOL	8.87	26	J
2. 000-00-0	UNKNOWN	19.47	22	J
3. 000-00-0	UNKNOWN HALOGEN	22.40	20	J

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MW-4EUN

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111788S07

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/17/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-4EUN

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111788S07

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/17/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U
90-12-0	1-Methylnaphthalene	10	U
108-39-4	meta-Cresol	10	U

(1) - Cannot be separated from Diphenylamine

57-97-6---------7,12-Dimethylbenzanthracene	10	U

(1) - Cannot be separated from Diphenylamine

1F

EPA SAMPLE NO.

MW-4EUN

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111788S07

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/17/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

Number TICs found: 2

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	000-00-0	ISOCYANATO METHYL BENZENE IS	17.30	20	J
2.	000-00-0	UNKNOWN HALOGEN	22.42	18	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-5EUN

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111788S05

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/17/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-5EUN

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111788S05

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/17/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	5	J
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	22	
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U
90-12-0	1-Methylnaphthalene	10	U
108-39-4	meta-Cresol	10	U

(1) - Cannot be separated from Diphenylamine

57-97-6	7,12-Dimethylbenzanthracene	10	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MW-5EUN

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111788S05

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/17/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

Number TICs found: 9

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	000-00-0	UNKNOWN ALPHATIC OXYGENATED	7.08	12	J
2.	000-00-2	UNKNOWN	10.24	50	BJ
3.	000-00-3	UNKNOWN ALPHATIC	10.40	100	BJ
4.	000-00-0	UNKNOWN ACID	13.05	10	J
5.	000-00-0	UNKNOWN	13.47	14	J
6.	000-00-0	1,2-BENZENE DICARBOXYLIC ACI	30.66	22	J
7.	000-00-0	1,2-BENZENE DICARBOXYLIC ACI	31.49	22	J
8.	000-00-0	1,2-BENZENE DICARBOXYLIC ACI	32.82	18	J
9.	000-00-0	1,2-BENZENE DICARBOXYLIC ACI	36.92	12	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-6EUN

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111788S06

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/17/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-6EUN

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111788S06

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/17/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	6	J
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U
90-12-0	1-Methylnaphthalene	10	U
108-39-4	meta-Cresol	10	U

(1) - Cannot be separated from Diphenylamine

57-97-6---------7,12-Dimethylbenzanthracene		10	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MW-6EUN

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111788S06

Level: (low/med) LOW Date Received: 11/04/88

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/17/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 000-00-0	UNKNOWN ALIPHATIC OXYGENATED	7.05	10	J
2. 000-00-0	TRIMETHYL BENZENE	8.89	20	J
3. 000-00-2	UNKNOWN ALIPHATIC	10.24	10	BJ
4. 000-00-3	UNKNOWN	10.39	20	BJ

4B

SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

Lab File ID: 112088S05 Lab Sample ID: _____

Date Extracted: 11/07/88 Extraction:(SepF/Cont/Sonc) CONT

Date Analyzed: 11/21/88 Time Analyzed: 0049

Matrix: (soil/water) WATER Level:(low/med) LOW

Instrument ID: 4500B

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	MW-1EUN		111688S16	11/17/88
02	MW-2EUN		111788S14	11/18/88
03	MW-3EUN		111788S04	11/17/88
04	MW-4EUN		111788S07	11/17/88
05	MW-5EUN		111788S05	11/17/88
06	MW-6EUN		111788S06	11/17/88

COMMENTS: 51407-0466 METHOD BLANK 11/07/88 (H2O)
1,5 MIN @ 35C, THEN 10C/MIN TO 300C (FINN 4500B)

1A

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

VBLK02

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 110888C07

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

% Moisture: not dec. ____ Date Analyzed: 11/08/88

Column: (pack/cap) CAP Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1E

EPA SAMPLE NO.

VBLK02

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 110888C07

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

% Moisture: not dec. ____ Date Analyzed: 11/08/88

Column (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

4A

VOLATILE METHOD BLANK SUMMARY

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

Lab File ID: 110788C05 Lab Sample ID: _____

Date Analyzed: 11/07/88 Time Analyzed: 0727

Matrix: (soil/water) WATER Level:(low/med) LOW

Instrument ID: 4021

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	MW-1EUN		110788C15	1316
02	MW-1LEE		110788C06	0806
03	MW-2EUN		110788C07	0842
04	MW-3EUN		110788C18	1438
05	MW-3LEE		110788C08	0913
06	MW-4LEE		110788C09	0939
07	MW-4LEEDL		110788C14	1250
08	MW-5EUN		110788C17	1410
09	MW-5LEE		110788C10	1029
10	MW-6EUN		110788C16	1341
11	MW-6LEE		110788C11	1101

COMMENTS: VBLK01 REAGENT BLANK S11028801
5C AT 5MIN THEN 6C/MIN TO 100C ON FINN 4021

4A

VOLATILE METHOD BLANK SUMMARY

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

Lab File ID: 110888C07 Lab Sample ID: _____

Date Analyzed: 11/08/88 Time Analyzed: 0836

Matrix: (soil/water) WATER Level:(low/med) LOW

Instrument ID: 4021

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	MW-2EUN		110888C09	0942
02	MW-4EUN		110888C10	1034
03	MW-1LEEMS		110888C11	1105
04	MW-1LEEMSD		110888C12	1134

COMMENTS: VBLK02
5C TO 100C @ 6C/MIN ON FINN 4021

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MW-4LEEMS

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111588S18

Level: (low/med) LOW Date Received: 11/02/88

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/03/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/15/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	4	J
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	2	J
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-4LEEMS

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111588S18

Level: (low/med) LOW Date Received: 11/02/88

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/03/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/15/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U
90-12-0	1-Methylnaphthalene	10	U
108-39-4	meta-Cresol	10	U

(1) - Cannot be separated from Diphenylamine

57-97-6---------7,12-Dimethylbenzanthracene	10	U

(1) - Cannot be separated from Diphenylamine

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-4LEEMSD

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111688S14

Level: (low/med) LOW Date Received: 11/02/88

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/03/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/17/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	4	J
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	2	J
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

4B

SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

Lab File ID: 111488S04 Lab Sample ID: _____

Date Extracted: 11/03/88 Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 11/14/88 Time Analyzed: 1216

Matrix: (soil/water) WATER Level: (low/med) LOW

Instrument ID: 4500B

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	MW-1LEE		111588S12	11/15/88
02	MW-2LEE		111588S13	11/15/88
03	MW-3LEE		111588S14	11/15/88
04	MW-4LEE		111588S15	11/15/88
05	MW-5LEE		111588S16	11/15/88
06	MW-6LEE		111588S17	11/15/88
07	MW-4LEEMS		111588S18	11/15/88
08	MW-4LEEMSD		111688S14	11/17/88

COMMENTS: 51407-0465 AT KEARNEY METHOD BLK 11/3/88 (H2O)
1.5 MIN @35C, THEN 10C/MIN TO 300C(FINN 4500B)

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-4LEEMSD

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111688S14

Level: (low/med) LOW Date Received: 11/02/88

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/03/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/17/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	12	
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U
90-12-0	1-Methylnaphthalene	10	U
108-39-4	meta-Cresol	10	U

(1) - Cannot be separated from Diphenylamine

57-97-6---------7,12-Dimethylbenzanthracene		10	U

(1) - Cannot be separated from Diphenylamine

2C

WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	OTHER	TOT OUT
01	MW-1EUN	60	71	68	49	34	15		0
02	MW-1LEE	73	72	57	85	69	74		0
03	MW-2EUN	68	76	74	88	82	89		0
04	MW-2LEE	72	71	49	85	62	48		0
05	MW-3EUN	63	64	60	82	87	80		0
06	MW-3LEE	74	74	55	78	69	67		0
07	MW-4EUN	68	65	64	66	59	72		0
08	MW-4LEE	78	77	65	77	57	66		0
09	MW-5EUN	55	62	93	83	92	83		0
10	MW-5LEE	59	61	81	86	79	78		0
11	MW-6EUN	47	53	94	49	89	76		0
12	MW-6LEE	71	72	68	96 *	80	80		1
13	MW-4LEEMS	72	71	63	76	59	60		0
14	MW-4LEEMSD	51	73	62	57	81	68		0
15	SBLK01	74	77	88	90	77	57		0
16	SBLK02	74	77	98	85	77	95		0

		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(35-114)
S2 (FBP)	= 2-Fluorobiphenyl	(43-116)
S3 (TPH)	= Terphenyl	(33-141)
S4 (PHL)	= Phenol-d5	(10-94)
S5 (2FP)	= 2-Fluorophenol	(21-100)
S6 (TBP)	= 2,4,6-Tribromophenol	(10-123)

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

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: MW-4LEE

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	200	49.4	186	68	12- 89
2-Chlorophenol	200	0	141	71	27-123
1,4-Dichlorobenzene	100	0	75.6	76	36 97
N-Nitroso-di-n-prop.(1)	100	0	80.8	81	41 116
1,2,4-Trichlorobenzene	100	0	72.6	73	39 98
4-Chloro-3-methylphenol	200	0	164	82	23 97
Acenaphthene	100	0	74.4	74	46-118
4-Nitrophenol	200	0	158	79	10- 80
2,4-Dinitrotoluene	100	0	77.0	77	24- 96
Pentachlorophenol	200	0	91.2	46	9-103
Pyrene	100	0	74.2	74	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	200	190	70	-3	42	12- 89
2-Chlorophenol	200	145	73	-3	40	27-123
1,4-Dichlorobenzene	100	70.2	70	8	28	36 97
N-Nitroso-di-n-prop.(1)	100	81.4	81	0	38	41 116
1,2,4-Trichlorobenzene	100	70.6	71	3	28	39 98
4-Chloro-3-methylphenol	200	161	81	1	42	23 97
Acenaphthene	100	79.2	79	-7	31	46-118
4-Nitrophenol	200	118	59	29	50	10- 80
2,4-Dinitrotoluene	100	75.6	76	1	38	24- 96
Pentachlorophenol	200	140	70	-41	50	9-103
Pyrene	100	82.0	82	-10	31	26-127

(1) N-Nitroso-di-n-propylamine

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

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

COMMENTS: 51407-0459 AT KEARNEY 880027 11/3 (H2O)
1.5 MIN @ 35C, THEN 10C/MIN TO 300C (FINN 4500B)

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK01

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 110788C05

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

% Moisture: not dec. ____ Date Analyzed: 11/07/88

Column: (pack/cap) CAP Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	3	J
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-1LEEMS

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 110888C11

Level: (low/med) LOW Date Received: 11/02/88

% Moisture: not dec. ____ Date Analyzed: 11/08/88

Column: (pack/cap) CAP Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-1LEEMSD

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 110888C12

Level: (low/med) LOW Date Received: 11/02/88

% Moisture: not dec. ____ Date Analyzed: 11/08/88

Column: (pack/cap) CAP Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK01

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111488S04

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

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/03/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/14/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

2A

WATER VOLATILE SURROGATE RECOVERY

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
01	MW-1EUN	89	105	98		0
02	MW-1LEE	109	107	101		0
03	MW-2EUN	101	104	97		0
04	MW-2EUN	104	114	93		0
05	MW-3EUN	94	109	104		0
06	MW-3LEE	91	99	89		0
07	MW-4EUN	105	114	92		0
08	MW-4LEE	104	112	56 *		1
09	MW-4LEEDL	88	98	92		0
10	MW-5EUN	98	114	109		0
11	MW-5LEE	100	104	93		0
12	MW-6EUN	93	109	99		0
13	MW-6LEE	108	112	102		0
14	MW-1LEEMS	104	113	98		0
15	MW-1LEEMSD	99	115	96		0
16	VBLK01	107	114	89		0
17	VBLK02	100	113	92		0

		QC LIMITS
S1 (TOL)	= Toluene-d8	(88-110)
S2 (BFB)	= Bromofluorobenzene	(86-115)
S3 (DCE)	= 1,2-Dichloroethane-d4	(76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: MW-1LEE

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50.0	0	44.7	89	61-145
Trichloroethene	50.0	0	42.6	85	71-120
Benzene	50.0	0	44.8	90	76-127
Toluene	50.0	0	44.6	89	76-125
Chlorobenzene	50.0	0	48.5	97	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	50.0	43.6	87	2	14	61-145
Trichloroethene	50.0	43.7	87	-2	14	71-120
Benzene	50.0	45.7	91	-1	11	76-127
Toluene	50.0	43.0	86	3	13	76-125
Chlorobenzene	50.0	47.4	95	2	13	75-130

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: AT KEARNEY (0465) MW-1 #880024
5C AT 5MIN THEN 6C/MIN TO 100C ON FINN 4021

1E

EPA SAMPLE NO.

VBLK01

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: EMSI Contract: 0465 0466

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 110788C05

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

% Moisture: not dec. ____ Date Analyzed: 11/07/88

Column (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK01

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111488S04

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

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/03/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/14/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U
90-12-0	1-Methylnaphthalene	10	U
108-39-4	meta-Cresol	10	U

(1) - Cannot be separated from Diphenylamine

57-97-6---------7,12-Dimethylbenzanthracene		10	U

(1) - Cannot be separated from Diphenylamine

1F

EPA SAMPLE NO.

SBLK01

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 111488S04

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

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/03/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/14/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 000-00-1	PROPENE ISOMER	8.30	16	J

1F

EPA SAMPLE NO.

SBLK02

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 112088S05

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

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/21/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 000-00-1	UNKNOWN	7.73	10	J
2. 000-00-2	UNKNOWN	10.19	34	J
3. 000-00-3	UNKNOWN	10.35	56	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK02

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 112088S05

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

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/21/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK02

Lab Name: EMSI Contract: 0452 0459

Lab Code: EMSI Case No.: ATK-2 SAS No.: _____ SDG No.: _____

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

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 112088S05

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

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/21/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U
90-12-0	1-Methylnaphthalene	10	U
108-39-4	meta-Cresol	10	U

(1) - Cannot be separated from Diphenylamine

57-97-6	7,12-Dimethylbenzanthracene	10	U

(1) - Cannot be separated from Diphenylamine

700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2500

Date Received	11/14/88	Lab No.	ICP-596	User Code	☐ 59400 ☐ 53400 ☒ 53300 ☐ 59300 ☐ 59500 ☐

COLLECTION DATE & TIME: yy 88 | mm 11 | dd 03 | hh 08 | mm 30

COLLECTION SITE DESCRIPTION: Ph. II, 5 mile MW-1

COLLECTED BY: Phillips Chevron Keaney Cogburn

TO: Jim Ashby

OWNER: Phillips

GROUND WATER & HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

SITE LOCATION:
County: Lea County

Township, Range, Section, Tract: (10N06E24342) 21S+31E+25+2121

ATTN: Julia Linnslow
PHONE: 827.2928

STATION/ WELL CODE: MW-1

LATITUDE, LONGITUDE: 323901N 1031111-0

SAMPLING CONDITIONS:

☒ Bailed ☐ Dipped ☐ Pump ☐ Tap	Water Level: 115.18	Discharge:	Sample Type: Groundwater

pH (00400)	Conductivity (Uncorr.)	Water Temp. (00010)	Conductivity at 25°C (00094)
6.9	3350 umho	21 18.3 °C	umho

FIELD COMMENTS: Sampled cold Sample has sulfur smell

SAMPLE FIELD TREATMENT Check proper boxes: Filtered and preserved with Nitric Acid

LAB ANALYSIS REQUESTED: Ca Mg Fe Mn Ni

☒ WPN: Water Preserved w/HNO_3 Non-Filtered	☐ WPF: Water Preserved w/HNO_3 Filtered	☒ ICAP Scan Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	0.2		Silicon	36.	
Barium	0.2		Silver	<0.1	<0.001
Beryllium	<0.1		Strontium	4.0	
Boron	0.8		Tin	0.2	
Cadmium	<0.1	<0.001	Vanadium	<0.1	
Calcium	290.		Zinc	<0.1	
Chromium	<0.1	0.006	Arsenic		0.060
Cobalt	<0.05		Selenium		<0.005
Copper	<0.1	<0.05	Mercury		
Iron	3.4				
Lead	<0.1	<0.005			
Magnesium	110.				
Manganese	2.3				
Molybdenum	<0.1				
Nickel	<0.1	<0.05			

RECEIVED
FEB 17 1989
HAZARDOUS WASTE SECTION

LAB COMMENTS: 5.0 mL HNO_3 added at SLD. DIGESTED. 11/16/88

ICAP Analyst: JAA
Analysis Date: 12/14/88

Reviewer:
Date Reviewed: 2/6/89

700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2500

Date Received	11/4/88	Lab No. ICP-598	User Code	☐ 59400 ☐ 53400 ☒ 53300 ☐ 59300 ☐ 59500 ☐

COLLECTION DATE & TIME: yy 88 | mm 11 | dd 03 | hh 10 | mm 30

COLLECTION SITE DESCRIPTION: Phillips Ennis MW-2

COLLECTED BY: Chris Neal / Karen Loftus

TO: Jim Ashby

OWNER: Phillips

GROUND WATER & HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

SITE LOCATION:
County: Lea County

Township, Range, Section, Tract: (10N06E24342)
21 | 15+ 31 | 45+ 01 | 5+ 21 | 41 | 3 |

ATTN: J. Shellshaw
PHONE: 827-3925

STATION/ WELL CODE: MW-2

LATITUDE, LONGITUDE: 32 | 31 | 01 | 103 | 11 | 13 | - | | |

SAMPLING CONDITIONS:

☐ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water Level: 18.07'	Discharge:	Sample Type: Groundwater

pH(00400)	Conductivity(Uncorr.)	Water Temp.(00010)	Conductivity at 25°C (00094)
6.8	3000 µmho	21 °C	µmho

FIELD COMMENTS: Monument well Sample has sulfur smell

SAMPLE FIELD TREATMENT Check proper boxes: Field acidified with HNO_3

☒ WPN: Water Preserved w/HNO_3 Non-Filtered
☐ WPF: Water Preserved w/HNO_3 Filtered

LAB ANALYSIS REQUESTED: DO NOT EXCEED

☒ ICAP Scan
Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	0.4		Silicon	30.	
Barium	1.2	✓ 1.2	Silver	<0.1	✓ <0.001
Beryllium	<0.1		Strontium	2.4	
Boron	0.5		Tin	0.1	
Cadmium	<0.1	☐ ✓ <0.001	Vanadium	<0.1	
Calcium	170.		Zinc	<0.1	
Chromium	<0.1	☐ ✓ 0.013	Arsenic		☐ ✓ 0.142
Cobalt	<0.05		Selenium		☐ ✓ <0.005
Copper	<0.1	✓ <0.05	Mercury		☐
Iron	13. ✓				☐
Lead	<0.1	☐ ✓ <0.005			☐
Magnesium	41.				☐
Manganese	0.17 ✓				☐
Molybdenum	<0.1				☐
Nickel	<0.1	✓ <0.05			☐

RECEIVED
FEB 17 1989
HAZARDOUS WASTE SECTION

LAB COMMENTS: 5.0ml HNO_3 added at SLD. DIGESTED 11/16/88

ICAP Analyst: AA
Analysis Date: 12/14/88

Reviewer: [illegible]
Date Reviewed: 2/9/89

700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2500

Date Received	11/14/88	Lab No.	ICP-600	User Code	☐ 59400 ☐ 53400 ☒ 53300 ☐ 59300 ☐ 59500 ☐

COLLECTION DATE & TIME: yy 88 | mm 11 | dd 23 | hh 12 | mm 00

COLLECTION SITE DESCRIPTION: Monitor Well MW-3

COLLECTED BY: Patrick Kinnan Intera

TO: Jim Ashley

GROUND WATER & HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

OWNER:

SITE LOCATION:
County: Lea County

Township, Range, Section, Tract: (10N06E24342)
21 1S+ 31 1E+ 01S+ 241 3

ATTN: Jim Ashley
PHONE: 827-2928

STATION/ WELL CODE: MW-3

LATITUDE, LONGITUDE: 32 33 0N 103 31 - 11 16

SAMPLING CONDITIONS:

☒ Bailed ☐ Pump ☐ Dipped ☐ Tap

Water Level:	Discharge:	Sample Type:
117.80		Groundwater

pH (00400)	Conductivity (Uncorr.)	Water Temp. (00010)	Conductivity at 25°C (00094)
6.95	2350 µmho	21 °C	µmho

FIELD COMMENTS: Turbid at 1 gal Sample has sulfur smell

SAMPLE FIELD TREATMENT Field acidified to pH < 2
Check proper boxes:

☐ WPN: Water Preserved w/HNO_3 Non-Filtered

☐ WPF: Water Preserved w/HNO_3 Filtered

LAB ANALYSIS REQUESTED: for TDS fields

☒ ICAP Scan
Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	2.9		Silicon	34.	
Barium	0.3	✓ 0.4	Silver	<0.1	✓ <0.001
Beryllium	<0.1		Strontium	2.0	
Boron	0.7		Tin	0.2	
Cadmium	<0.1	☐ ✓ <0.001	Vanadium	<0.1	
Calcium	210.		Zinc	<0.1	
Chromium	<0.1	☐ ✓ 0.005	Arsenic		☐ ✓ 0.10
Cobalt	<0.05		Selenium		☐ ✓ <0.01
Copper	<0.1	✓ <0.05	Mercury		☐
Iron	25.				☐
Lead	<0.1	☐ ✓ <0.005			☐
Magnesium	80.				☐
Manganese	0.29				☐
Molybdenum	<0.1				☐
Nickel	0.2	✓ 0.16			☐

RECEIVED
FEB 1 1989
HAZARDOUS WASTE SECTION

LAB COMMENTS: 5.0 ml HNO_3 added at SLD. 11/16/88 DIGESTED.

ICAP Analyst: JAA
Analysis Date: 12/14/88

Reviewer: [illegible]
Date Reviewed: 2/21/89

700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Te[illegible]one: (505)841-2500

Date Received	11/14/88	Lab No. ICP-602	User Code	☐ 59400 ☐ 59300	☐ 53400 ☐ 59500	☒ 53300 ☐

COLLECTION DATE & TIME:

yy	mm	dd	hh	mm
88	11	03	13	00

COLLECTED BY: [illegible] / [illegible]

COLLECTION SITE DESCRIPTION: [illegible] MW-4

TO: Jim Ashby

GROUND WATER & HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

OWNER: -

SITE LOCATION:
County: Lea County

Township, Range, Section, Tract: (10N06E24342)
21 15 + 36 E + 9 E + 2 4 [illegible]

ATTN: [illegible]
PHONE: [illegible]

STATION/ WELL CODE: MW-4

LATITUDE, LONGITUDE: 32 30 [illegible] 1 [illegible] 3 - [illegible]

SAMPLING CONDITIONS:

☐ Bailed ☐ Pump ☐ Dipped ☐ Tap	Water Level: 117.77	Discharge:	Sample Type: [illegible]

pH(00400)	Conductivity(Uncorr.)	Water Temp.(00010)	Conductivity at 25°C (00094)
6.9	1993 ~~[illegible]~~ umho	20.5 °C	umho

FIELD COMMENTS: [illegible] Sample has sulfursmell

SAMPLE FIELD TREATMENT [illegible]
Check proper boxes: [illegible]

☐ WPN: Water Preserved w/HNO_3 Non-Filtered
☐ WPF: Water Preserved w/HNO_3 Filtered

LAB ANALYSIS REQUESTED: [illegible]
☒ ICAP Scan
Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	1.4		Silicon	26.	
Barium	0.1	✓ 0.2	Silver	<0.1	✓ <0.001
Beryllium	<0.1		Strontium	3.7	
Boron	0.9		Tin	0.3	
Cadmium	<0.1	☐ ✓ <0.001	Vanadium	<0.1	
Calcium	360.		Zinc	<0.1	
Chromium	<0.1	☐ ✓ 0.026	Arsenic		☐ ✓ 0.062
Cobalt	<0.05		Selenium		☐ ✓ <0.005
Copper	<0.1	✓ <0.05	Mercury		☐
Iron	17.				☐
Lead	<0.1	☐ ✓ <0.005			☐
Magnesium	110.				☐
Manganese	0.42				☐
Molybdenum	<0.1				☐
Nickel	<0.1	✓ <0.05			☐

RECEIVED
FEB 1 [illegible]
HAZARDOUS WASTE SECTION

LAB COMMENTS: 11/16/88 DIGESTED.

[illegible]

ICAP Analyst: [illegible]
Analysis Date: 12/14/88

Reviewer: [illegible]
Date Reviewed: [illegible]

700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2500

Date Received	11/4/88	Lab No.	ICP-604	User Code	☐ 59400 ☐ 59300	☐ 53400 ☐ 59500	☒ 53300 ☐

COLLECTION DATE & TIME: yy 88 | mm 11 | dd 23 | hh 08 | mm 30

COLLECTED BY: Chris Ward / Warren Centers

COLLECTION SITE DESCRIPTION: Pinon Summer MW-5

TO: Jim Ashby

OWNER:

GROUND WATER & HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

SITE LOCATION:
County: Lea

Township, Range, Section, Tract: (10N06E24342)
21 15+36 E+05+2 4 1 3

ATTN: Julie Winslow
PHONE: 827-2955

STATION/ WELL CODE: MW-5

LATITUDE, LONGITUDE: 32 30 N 103 - W

SAMPLING CONDITIONS:

☒ Bailed ☐ Pump ☐ Dipped ☐ Tap | Water Level: — | Discharge: | Sample Type: distilled water

pH(00400)	Conductivity(Uncorr.)	Water Temp.(00010)	Conductivity at 25°C (00094)
—	— umho	— °C	umho

FIELD COMMENTS: Equipment Blank

SAMPLE FIELD TREATMENT Check proper boxes: Field Acidified with Nitric Acid

☒ WPN: Water Preserved w/HNO_3 Non-Filtered
☐ WPF: Water Preserved w/HNO_3 Filtered

LAB ANALYSIS REQUESTED: Dis Ng + Fe Cr

☒ ICAP Scan
Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	<0.1		Silicon	<0.1	
Barium	<0.1	~~<0.1~~ JTA	Silver	<0.1	☐ <0.001
Beryllium	<0.1		Strontium	<0.1	
Boron	<0.1		Tin	<0.1	
Cadmium	<0.1	☐ <0.001	Vanadium	<0.1	
Calcium	0.9		Zinc	<0.1	
Chromium	<0.1	☐ <0.005	Arsenic		☐ <0.005
Cobalt	<0.05		Selenium		☐ <0.005
Copper	<0.1	<0.05	Mercury		☐
Iron	<0.1				☐
Lead	<0.1	☐ <0.005			☐
Magnesium	<0.1				☐
Manganese	<0.05				☐
Molybdenum	<0.1				☐
Nickel	<0.1	<0.03			☐

RECEIVED
FEB 17 1989
HAZARDOUS WASTE SECTION

LAB COMMENTS: 5.0 ml HNO_3 added at SLD.

ICAP Analyst: JTA
Analysis Date: 1/9/89
Reviewer:
Date Reviewed: 2/1/89

700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2500

Date Received	1/4/88	Lab No. ICP-606	User Code	☐ 59400	☐ 53400	☒ 53300
				☐ 59300	☐ 59500	☐

COLLECTION DATE & TIME: yy 88 | mm 11 | dd 03 | hh 11 | mm 45

COLLECTION SITE DESCRIPTION: Eubanks Well #1

COLLECTED BY: [illegible] / Karen Watkins

TO: Jim Ashby

OWNER:

GROUND WATER & HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

SITE LOCATION:
County: Lea County

Township, Range, Section, Tract: (10N06E24342)
21S+36E+25+2413

ATTN: Julio Manshardt
PHONE: 827-2922

STATION/ WELL CODE: M-1

LATITUDE, LONGITUDE: 32 30 14 103 - 11 0

SAMPLING CONDITIONS:

☒ Bailed ☐ Dipped ☐ Pump ☐ Tap	Water Level:	Discharge:	Sample Type: Distribution System

pH(00400)	Conductivity(Uncorr.)	Water Temp.(00010)	Conductivity at 25°C (00094)
—	— µmho	— °C	µmho

FIELD COMMENTS: [illegible]

SAMPLE FIELD TREATMENT Field filtered with 0.45 µ filter
Check proper boxes:

☐ WPN: Water Preserved w/HNO_3 Non-Filtered

☐ WPF: Water Preserved w/HNO_3 Filtered

LAB ANALYSIS REQUESTED: Priority Pollut.

☒ ICAP Scan
Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	<0.1		Silicon	<0.1	
Barium	<0.1	X <0.1	Silver	<0.1	X <0.001
Beryllium	<0.1		Strontium	<0.1	
Boron	<0.1		Tin	<0.1	
Cadmium	<0.1	☐ X <0.001	Vanadium	<0.1	
Calcium	<0.1		Zinc	<0.1	
Chromium	<0.1	☐ X <0.005	Arsenic		☐ X <0.005
Cobalt	<0.05		Selenium		☐ X <0.005
Copper	<0.1	X <0.05	Mercury		☐
Iron	<0.1 X				☐
Lead	<0.1	☐ X <0.005			☐
Magnesium	<0.1				☐
Manganese	<0.05				☐
Molybdenum	<0.1				☐
Nickel	<0.1	X <0.05			☐

RECEIVED
FEB 1 1988
HAZARDOUS WASTE SECTION

LAB COMMENTS: 5.0 ml HNO_3 added at SLD.

ICAP Analyst: JM

Analysis Date: 1/9/88

Reviewer: [illegible]

Date Reviewed: 2/1/88

New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED 11/4/88	LAB NO. WC-4574	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 53300	
Collection DATE 88/11/03	SITE INFORM-ATION ►	Sample location Phillips Lee Eunice	RECEIVED
Collection TIME 0830		Collection site description MW-1	NOV 2
Collected by — Person/Agency Mike Davis Keamy/Watson			

SEND FINAL REPORT TO ►
GROUND WATER & HAZARDOUS WASTE BUREAU
NM ENVIRONMENT IMPROVEMENT DIVISION/HED
PO Box 968
Santa Fe, NM 87504-0968
Attn: Julie Wanslow

GROUND WATER/HAZARDOUS WASTE BUREAU

Station/well code MW-1
Owner Phillips - Eunice

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped ☐ Pump ☐ Tap	Water level 115.18'	Discharge	Sample type Groundwater
pH (00400) 6.9	Conductivity (Uncorrected) 3350 µmho	Water Temp. (00010) 21 °C	Conductivity at 25°C (00094) µmho

Field comments: Upgradient Well Sample has sulfur smell

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted: 1

☒ NF: Whole sample (Non-filtered) ☐ F: Filtered in field with 0.45 µmembrane filter ☐ A: 2 ml H_2SO_4/L added

☒ NA: No acid added ☐ Other-*specify:*

ANALYTICAL RESULTS from SAMPLES

NF, NA		Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)		µmho	
☐ Total non-filterable residue (suspended) (00530)		mg/l	
☒ Other:	turbidity 12.3		11/14
☐ Other:			
☐ Other:			

F, NA		Units	Date analyzed
☐ Calcium (00915)		mg/l	
☐ Magnesium (00925)		mg/l	
☐ Sodium (00930)		mg/l	
☐ Potassium (00935)		mg/l	
☐ Bicarbonate (00440)		mg/l	
☐ Chloride (00940)		mg/l	
☐ Sulfate (00945)		mg/l	
☐ Total filterable residue (dissolved) (70300)		mg/l	
☐ Other:			

RECEIVED NOV 8 HAZARDOUS WASTE SECTION

NF, A-H_2SO_4			
☐ Nitrate-N +, Nitrate-N total (00630)		mg/l	
☐ Ammonia-N total (00610)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Chemical oxygen demand (00340)		mg/l	
☐ Total organic carbon ( )		mg/l	
☐ Other:			
☐ Other:			

F, A-H_2SO_4			
☐ Nitrate-N +, Nitrate-N dissolved (00631)		mg/l	
☐ Ammonia-N dissolved (00608)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Other:			

Analyst	Date Reported	Reviewed by
	11/14/88	

Laboratory remarks: Analyze Turbidity immediately after shaking.
Relinquished by Mike Davis 11-03-88 at 5pm

New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

SSC WMN

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED 11 / 4 / 88	LAB NO. WC-4576	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 5330
Collection DATE 88 / 11 / 03	SITE INFORMATION ►	Sample location Phillips ~~Lee~~ PPW 11/3/88 Eunice
Collection TIME 1030		Collection site description MW-2
Collected by — Person/Agency Phil Durrel Kearney / Century		

RECEIVED
NOV 21 1988
GROUND WATER / HAZARDOUS WASTE BUREAU

SEND FINAL REPORT TO ►
GROUND WATER & HAZARDOUS WASTE BUREAU
NM ENVIRONMENT IMPROVEMENT DIVISION/HED
PO Box 968
Santa Fe, NM 87504-0968
Attn: Julie Wanslow

Station/ well code MW-2
Owner Phillips - Eunice

SAMPLING CONDITIONS

☒ Bailed ☐ Pump ☐ Dipped ☐ Tap	Water level 118.07'	Discharge	Sample type Groundwater
pH (00400) 6.8	Conductivity (Uncorrected) 3000 μmho	Water Temp. (00010) 21 °C	Conductivity at 25°C (00094) μmho

Field comments Downgradient Well Sample has sulfur smell

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted 1 | ☒ NF: Whole sample (Non-filtered) | ☐ F: Filtered in field with 0.45 μmembrane filter | ☐ A: 2 ml H_2SO_4/L added

☒ NA: No acid added ☐ Other-*specify:*

ANALYTICAL RESULTS from SAMPLES

NF, NA		Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)		μmho	
☐ Total non-filterable residue (suspended) (00530)		mg/l	
☒ Other:	Turbidity	Sc	[illegible]
☐ Other:			
☐ Other:			

NF, A-H_2SO_4		Units	Date analyzed
☐ Nitrate-N + , Nitrate-N total (00630)		mg/l	
☐ Ammonia-N total (00610)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Chemical oxygen demand (00340)		mg/l	
☐ Total organic carbon ( )		mg/l	
☐ Other:			
☐ Other:			

F, NA		Units	Date analyzed
☐ Calcium (00915)		mg/l	
☐ Magnesium (00925)		mg/l	
☐ Sodium (00930)		mg/l	
☐ Potassium (00935)		mg/l	
☐ Bicarbonate (00440)		mg/l	
☐ Chloride (00940)		mg/l	
☐ Sulfate (00945)		mg/l	
☐ Total filterable residue (dissolved) (70300)		mg/l	
☐ Other:			

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NOV 22 1988
HAZARDOUS WASTE SECTION

F, A-H_2 SO_4		Units	Date analyzed
☐ Nitrate-N + , Nitrate-N dissolved (00631)		mg/l	
☐ Ammonia-N dissolved (00608)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Other:			

Analyst	Date Reported	Reviewed by
	11 / 14 / 88	[illegible]

Laboratory remarks [illegible]

SLD 726 (8/85) *DISTRIBUTION:* **WHITE** — EID, GW&HW Bureau **CANARY** — WS System **PINK** — EID Local Office **GOLDENROD** — SLD

850
WRR

New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DI[illegible]ON
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

GE[illegible]RAL WATER CHEMISTRY an[illegible] NITROGEN ANALYSIS

DATE RECEIVED 11 / 4 / 88	LAB NO. WC-4578	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 53300	
Collection DATE 88 / 11 / 13	SITE INFORMATION ►	Sample location Phillips [illegible] Eunice	
Collection TIME 1200		Collection site description MW-3	
Collected by — Person/Agency [illegible] Kenney Cortez			

SEND FINAL REPORT TO ►
GROUND WATER & HAZARDOUS WASTE BUREAU
NM ENVIRONMENT IMPROVEMENT DIVISION/HED
PO Box 968
Santa Fe, NM 87504-0968
Attn: [illegible]

RECEIVED
NOV 21 1988
GROUND WATER/HAZARDOUS WASTE BUREAU

Station/well code MW-3
Owner Phillips - Eunice

SAMPLING CONDITIONS

☒ Bailed ☐ Pump ☐ Dipped ☐ Tap	Water level 117.80'	Discharge	Sample type Groundwater
pH (00400) 6.95	Conductivity (Uncorrected) 2350 µmho	Water Temp. (00010) 21 °C	Conductivity at 25°C (00094) µmho

Field comments [illegible] well — Sample has sulfur smell

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted 1	☒ NF: Whole sample (Non-filtered)	☐ F: Filtered in field with 0.45 µmembrane filter	☐ A: 2 ml H_2SO_4/L added

☒ NA: No acid added ☐ Other-*specify*:

ANALYTICAL RESULTS from SAMPLES

NF, NA		Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)		µmho	
☐ Total non-filterable residue (suspended) (00530)		mg/l	
☑ Other:	[illegible]	>200	[illegible]
☐ Other:			
☐ Other:			

F, NA		Units	Date analyzed
☐ Calcium (00915)		mg/l	
☐ Magnesium (00925)		mg/l	
☐ Sodium (00930)		mg/l	
☐ Potassium (00935)		mg/l	
☐ Bicarbonate (00440)		mg/l	
☐ Chloride (00940)		mg/l	
☐ Sulfate (00945)		mg/l	
☐ Total filterable residue (dissolved) (70300)		mg/l	
☐ Other:			

RECEIVED
NOV 2[illegible]
HAZARDOUS WASTE SECTION

$NF, A-H_2SO_4$		Units	Date analyzed
☐ Nitrate-N +, Nitrate-N total (00630)		mg/l	
☐ Ammonia-N total (00610)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Chemical oxygen demand (00340)		mg/l	
☐ Total organic carbon ( )		mg/l	
☐ Other:			
☐ Other:			

$F, A-H_2SO_4$		Units	Date analyzed
☐ Nitrate-N +, Nitrate-N dissolved (00631)		mg/l	
☐ Ammonia-N dissolved (00608)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Other:			

Analyst	Date Reported	Reviewed by
	11 / 14 / 88	[illegible]

Laboratory remarks [illegible]
[illegible]

SLD 726 (8/85) *DISTRIBUTION:* WHITE — EID, GW&HW Bureau CANARY — WS System PINK — EID Local Office GOLDENROD — SLD

850 WMW

New Mexico Health and Environment Department
SCIENTIFIC LABORATORY D[illegible]ION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

GE[illegible]RAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED 11 / 4 / 88	LAB NO. WC-4580	USER CODE ☐ 59300 ☐ 59600 ☐ OTHER:	
Collection DATE 83 / 11 / 03	SITE INFORMATION ►	Sample location: Phillips Eunice	RECEIVED
Collection TIME 1300		Collection site description: Mw-4	NOV 21 1983
Collected by — Person/Agency: [illegible]			GROUND WATER/HAZARDOUS WASTE BUREAU

SEND FINAL REPORT TO ►
GROUND WATER & HAZARDOUS WASTE BUREAU
NM ENVIRONMENT IMPROVEMENT DIVISION/HED
PO Box 968
Santa Fe, NM 87504-0968
Attn: Julie Warslow

Station/well code: MW-4
Owner: Phillips - Eunice

SAMPLING CONDITIONS

[✓ Bailed] ☐ Pump ☐ Dipped ☐ Tap	Water level 117.77	Discharge	Sample type Groundwater
pH (00400) 6.9	Conductivity (Uncorrected) 1993 μmho	Water Temp. (00010) 20.5 °C	Conductivity at 25°C (00094) μmho

Field comments: Downgradient well — Sample has sulfur smell

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted: 1	[✓ NF: Whole sample (Non-filtered)]	☐ F: Filtered in field with 0.45 μmembrane filter	☐ A: 2 ml H_2SO_4/L added

[✓ NA: No acid added] ☐ Other-*specify:*

ANALYTICAL RESULTS from SAMPLES

NF, NA		Units	Date analyzed
Conductivity (Corrected) 25°C (00095)		μmho	
Total non-filterable residue (suspended) (00530)		mg/l	
✓ Other:	Turbidity 71		11/14
☐ Other:			
☐ Other:			

F, NA		Units	Date analyzed
☐ Calcium (00915)		mg/l	
☐ Magnesium (00925)		mg/l	
☐ Sodium (00930)		mg/l	
☐ Potassium (00935)		mg/l	
☐ Bicarbonate (00440)		mg/l	
☐ Chloride (00940)		mg/l	
☐ Sulfate (00945)		mg/l	
☐ Total filterable residue (dissolved) (70300)		mg/l	
☐ Other:			

RECEIVED NOV 2 1983 HAZARDOUS WASTE SECTION

NF, A-H_2SO_4		Units	Date analyzed
☐ Nitrate-N +, Nitrate-N total (00630)		mg/l	
☐ Ammonia-N total (00610)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Chemical oxygen demand (00340)		mg/l	
☐ Total organic carbon ( )		mg/l	
☐ Other:			
☐ Other:			

F, A-H_2SO_4		Units	Date analyzed
☐ Nitrate-N +, Nitrate-N dissolved (00631)		mg/l	
☐ Ammonia-N dissolved (00608)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Other:			

Analyst	Date Reported	Reviewed by
	11 / 14 / 83	[illegible]

Laboratory remarks: [illegible]
[illegible]

New Mexico Health and Environment Department
SCIENTIFIC LABORATORY D ION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

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GE RAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED 11 / 4 / 88	LAB NO. WC-4582	USER CODE ☐ 59300 ☐ 59600 ☑ OTHER: 53300
Collection DATE 88 / 11 / 03	SITE INFORMATION ►	Sample location Phillips - Eunice
Collection TIME 0830		Collection site description MW-5
Collected by — Person/Agency [illegible]		

RECEIVED
DEC 20 1988
GROUND WATER B

Station/well code: MW-5
Owner: Phillips - Eunice

SEND FINAL REPORT TO ►
GROUND WATER & HAZARDOUS WASTE BUREAU
NM ENVIRONMENT IMPROVEMENT DIVISION/HED
PO Box 968
Santa Fe, NM 87504-0968
Attn: Julie Wanslow

SAMPLING CONDITIONS

✓ Bailed ☐ Pump ☐ Dipped ☐ Tap	Water level —	Discharge —	Sample type [illegible]
pH (00400) —	Conductivity (Uncorrected) — μmho	Water Temp. (00010) — °C	Conductivity at 25°C (00094) μmho

Field comments: Equipment Blank

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted: 1	✓ NF: Whole sample (Non-filtered)	☐ F: Filtered in field with 0.45 μmembrane filter	☐ A: 2 ml H_2SO_4/L added

✓ NA: No acid added ☐ Other-specify:

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DEC 22 1988
HAZARDOUS WASTE

ANALYTICAL RESULTS from SAMPLES

NF, NA		Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)		μmho	
☐ Total non-filterable residue (suspended) (00530)		mg/l	
✓ Other:	[illegible]		11/[illegible]
☐ Other:			
☐ Other:			

F, NA		Units	Date analyzed
☐ Calcium (00915)		mg/l	
☐ Magnesium (00925)		mg/l	
☐ Sodium (00930)		mg/l	
☐ Potassium (00935)		mg/l	
☐ Bicarbonate (00440)		mg/l	
☐ Chloride (00940)		mg/l	
☐ Sulfate (00945)		mg/l	
☐ Total filterable residue (dissolved) (70300)		mg/l	
☐ Other:			

NF, A-H_2SO_4		Units	Date analyzed
☐ Nitrate-N +, Nitrate-N total (00630)		mg/l	
☐ Ammonia-N total (00610)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Chemical oxygen demand (00340)		mg/l	
☐ Total organic carbon ( )		mg/l	
☐ Other:			
☐ Other:			

F, A-H_2SO_4		Units	Date analyzed
☐ Nitrate-N +, Nitrate-N dissolved (00631)		mg/l	
☐ Ammonia-N dissolved (00608)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Other:			

Analyst	Date Reported	Reviewed by
	11 / 30 / 88	[illegible]

Laboratory remarks: [illegible]

SLD 726 (8/85) *DISTRIBUTION:* **WHITE** — EID, GW&HW Bureau **CANARY** — WS System **PINK** — EID Local Office **GOLDENROD** — SLD

New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DI[illegible]ON
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

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GE[illegible]RAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED 11 / 4 / 86	LAB NO. WC-4584	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 53300
Collection DATE 88 / 11 / 03	SITE INFORMATION ►	Sample location Phillips Ernie
Collection TIME 1145		Collection site description MW-6
Collected by — Person/Agency [illegible]		

SEND FINAL REPORT TO ►
GROUND WATER & HAZARDOUS WASTE BUREAU
NM ENVIRONMENT IMPROVEMENT DIVISION/HED
PO Box 968
Santa Fe, NM 87504-0968
Attn: Julie Winslow

RECEIVED
NOV [illegible]
GROUND WATER [illegible] WASTE BUREAU

Station/ well code: MW-6
Owner: Phillips-Ernie

SAMPLING CONDITIONS

☒ Bailed ☐ Pump ☐ Dipped ☐ Tap	Water level —	Discharge —	Sample type Distilled Water
pH (00400) —	Conductivity (Uncorrected) — μmho	Water Temp. (00010) — °C	Conductivity at 25°C (00094) μmho

Field comments: Field Blank

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted: 1
☒ **NF:** Whole sample (Non-filtered)
☐ **F:** Filtered in field with 0.45 μmembrane filter
☐ **A:** 2 ml H_2SO_4/L added
☒ **NA:** No acid added
☐ Other-*specify:*

ANALYTICAL RESULTS from SAMPLES

NF, NA

		Units	Date analyzed
Conductivity (Corrected) 25°C (00095)		μmho	
☐ Total non-filterable residue (suspended) (00530)		mg/l	
☒ Other:	[illegible]		[illegible]
☐ Other:			
☐ Other:			

NF, A-H_2SO_4

		Units	Date analyzed
☐ Nitrate-N +, Nitrate-N total (00630)		mg/l	
☐ Ammonia-N total (00610)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Chemical oxygen demand (00340)		mg/l	
☐ Total organic carbon ( )		mg/l	
☐ Other:			
☐ Other:			

F, NA

		Units	Date analyzed
☐ Calcium (00915)		mg/l	
☐ Magnesium (00925)		mg/l	
☐ Sodium (00930)		mg/l	
☐ Potassium (00935)		mg/l	
☐ Bicarbonate (00440)		mg/l	
☐ Chloride (00940)		mg/l	
☐ Sulfate (00945)		mg/l	
☐ Total filterable residue (dissolved) (70300)		mg/l	
☐ Other:			

RECEIVED NOV [illegible] HAZARDOUS WASTE SECTION

F, A-H_2SO_4

		Units	Date analyzed
☐ Nitrate-N +, Nitrate-N dissolved (00631)		mg/l	
☐ Ammonia-N dissolved (00608)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Other:			

Analyst	Date Reported	Reviewed by
	11 / 14 / 88	[illegible]

Laboratory remarks: [illegible]

SLD 726 (8/85) *DISTRIBUTION:* **WHITE** — EID, GW&HW Bureau **CANARY** — WS System **PINK** — EID Local Office **GOLDENROD** — SLD