SCREENING SITE INSPECTION REPORT
FOR
CITY OF BELGRADE
BELGRADE, MINNESOTA

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TEXT

1.0 EXECUTIVE SUMMARY

On May 2-5, 1988, and June 7-8, 1988, the Minnesota Pollution Control Agency (MPCA) staff conducted a Screening Site Inspection (SSI) at the Belgrade Municipal Well Field (Site), Belgrade, Stearns County, Minnesota. The purpose of the SSI was to determine the extent of subsurface contamination in and around the Site. Previous testing of Belgrade's municipal wells had shown high levels of tetrachloroethene in Municipal Well No. 2.

Work conducted during the SSI included sampling soils from six soil borings, drilled to approximately 20 feet. Soils were analyzed for Acid Base Neutrals (ABNs), polychlorinated biphenyls (PCBs), pesticides, metals and cyanide. Monitoring wells were installed in each of the soil borings. Water samples from the monitoring wells and the two municipal wells were analyzed for volatiles (VOA), ABNs, PCBs, pesticides, metals and cyanide.

Laboratory analysis detected tetrachloroethene in Municipal Well No. 2 at a level below the Minnesota Department of Health (MDH) Recommended Allowable Limit (RAL). Tetrachloroethene was not detected in any other soil or water samples. Analysis of all samples showed no significant contamination on site.

2.0 INTRODUCTION

The MPCA under a Cooperative Agreement with the U.S. Environmental Protection Agency (EPA), has conducted a SSI at the Site. In February and March of 1984, the MDH sampled the municipal wells at Belgrade, Minnesota and found trace amounts [at 1 part per billion (ppb) or less] of benzene and toluene in Municipal Well No. 2. In November and December of 1986, MDH sampled the municipal wells again and detected tetrachloroethene in Municipal Well No. 2 at concentrations of 160 ug/l and 260 ug/l, respectively. The Site was placed on EPA's Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) inventory. A Preliminary Assessment (PA) of the Site was conducted by Ms. Rebecca Lofgren of the MPCA staff and submitted to EPA on June 19, 1987.

The MPCA staff prepared and submitted a SSI work plan for review by EPA Region V staff. The SSI was conducted on May 2-5, 1988, and June 7-8, 1988. Six soil borings were conducted and six soil samples were obtained. Six monitoring wells were installed and water samples were obtained from these wells in addition to the municipal wells.

The objectives of an SSI have been stated by EPA in a directive outlining Pre-Remedial Strategies. The directive states:

> All sites will receive a screening SI to: 1) collect additional data beyond the PA to enable a more refined preliminary Hazard Ranking Score (HRS); 2) establish priorities among sites most likely to quality for the National Priorities List (NPL); and 3) identify the most critical data requirements for the listing SI step. A screening SI will not have rigorous data quality objectives (DQOs). Based on the refined preliminary

HRS and other technical judgment factors, the site will then either be designated as No Further Remedial Action Planned (NFRAP) or carried forward as an NPL listing candidate. A listing SI will not automatically be done on these sites, however. First, they will be through a management evaluation to determine whether they can be addressed by another authority such as Resource Conservation and Recovery Act (RCRA)... Sites that are designated NFRAP or deferred to other statutes are not candidates for a listing SI.

The listing SI will address all the data requirements of the revised HRS using field screening and NPL level DQOs. It may also provide needed data in a format to support remedial investigation work plan development. Only sites that appear to score high enough for listing and that have not been deferred to another authority will receive a listing SI (U.S. EPA 1988).

3.0 SITE DATA

3.1 Site Description

The Site is located in Belgrade, Stearns County, Minnesota (Figure 3.1). Two municipal wells are located at Not Responsive. The city of Belgrade has a population of 815, and the entire population is served by municipal water (MDH 1989). The municipal well field and soil boring/monitoring well locations are in the city's business district area.

3.2 Site Background

Belgrade's Municipal Wells No. 1 and No. 2 were installed in 1962 and 1950 respectively. In February and March of 1984, the MDH sampled the wells and found trace amounts (at 1 ppb or less) of benzene and toluene. Sampling of the wells in October 1985, detected no volatile organic chemicals (VOCs). In November and December of 1986, the wells were again sampled and tetrachloroethene was detected in Municipal Well No. 2 at concentrations of 160 ug/l and 260 ug/l respectively. At that time, the MDH sent a letter to the

Not Responsive

Mayor of Belgrade, Mr. George Borgerding, recommending that use of Municipal Well No. 2 be discontinued and that monitoring for VOCs be continued at both wells.

Additional sampling done by MPCA on May 11, 1987, showed 57 ug/l of tetrachloroethene in Municipal Well No. 2. Sampling of sand point wells in the vicinity, conducted at the same time, detected no VOCs (MPCA files).

Requests for information were sent to five businesses in Belgrade which use compounds related to those found in Municipal Well No. 2. Information received did not reveal a positive source of contamination. Tetrachloroethene is used as a solvent, degreaser, and dry cleaning agent.

In November 1987, the city of Belgrade was issued a National Pollutant Discharge Elimination System (NPDES) Permit to waste the water pumped from Municipal Well No. 2 to a storm sewer which ultimately discharges to a marshy area.

3.3 Municipal Wells

The city of Belgrade has two municipal wells that provide 815 people with drinking water. The well locations are shown in Figure 3.3. Both wells are screened in glacial outwash deposits. Municipal Well No. 2 is screened in a surficial outwash sand deposit that terminates at a clay (till) layer at 48 feet. Municipal Well No. 1 is screened in a buried outwash (sand) deposit between 160 and 200 feet and is defined in well drillers logs as alternate layers of sand and gravel shale (Appendix D).

Not Responsive

4.0 SSI OBJECTIVES

The primary objective of this SSI was to determine if and where any potential sources of contamination were migrating to the municipal well field. Monitoring wells were strategically placed between potential sources of contamination and the well field.

5.0 GEOLOGY

5.1 Site Topography

The land forms of Stearns County were formed by glaciers during late Wisconsin time. The surface relief of the county ranges from Outwash Plains, Till Plains, gently rolling ground moraine, to hummocky end moraine (USGS 1974). The Site is relatively flat as a result of being situated on an outwash plain.

5.2 Hydrology

The hydrological budget for this portion of the Crow Wing River Watershed is a quantitative balance between total water gains and losses for a period of time. The average annual water budget for a 30 year period (1939 to 1968) indicates that of the 27.6 inches of precipitation entering the system each year, 24.2 inches are lost through evapotranspiration, 3.3 inches are lost through surface run-off, and 0.1 inches are lost through ground water run-off (USGS 1974).

5.3 Bedrock Geology

Igneous and metamorphic bedrock of Precambrian age are the oldest and lowermost bedrock types in the Crow Wing Watershed of South-Central Minnesota. These rocks consist of gneiss, granite, and schist with a small area of argillite along the northern boundaries of the watershed. Overlying these older rocks are sedimentary deposits of Cretaceous and Quaternary age. The Cretaceous sedimentary bedrock deposits are composed of predominantly shales with traces of sandstone (Figure 5.3, USGS 1974).

5.4 Quaternary Geology

Overlying the Cretaceous bedrock are the Quaternary deposits. In Stearns County these deposits include glacial till and outwash. Distinctive land forms resulting from glaciation include end moraines, ground moraine and outwash plains. An end moraine consist of unsorted glacial material ranging in size from clay particles to boulders and may contain stratified sand and gravel. An end moraine typically is a ridge with a rolling to hummocky surface. A ground moraine is composed of clay rich till sediments, and forms undulating plains marked by gently sloping swells, sags and depressions. Outwash plains consist of stratified sand and gravel deposits, interbedded with silt clay and organic material. These deposits are found on flood plains of major streams and are represented by train valleys and alluvial fans (Flint 1971).

HYDROLOGIC COLUMN

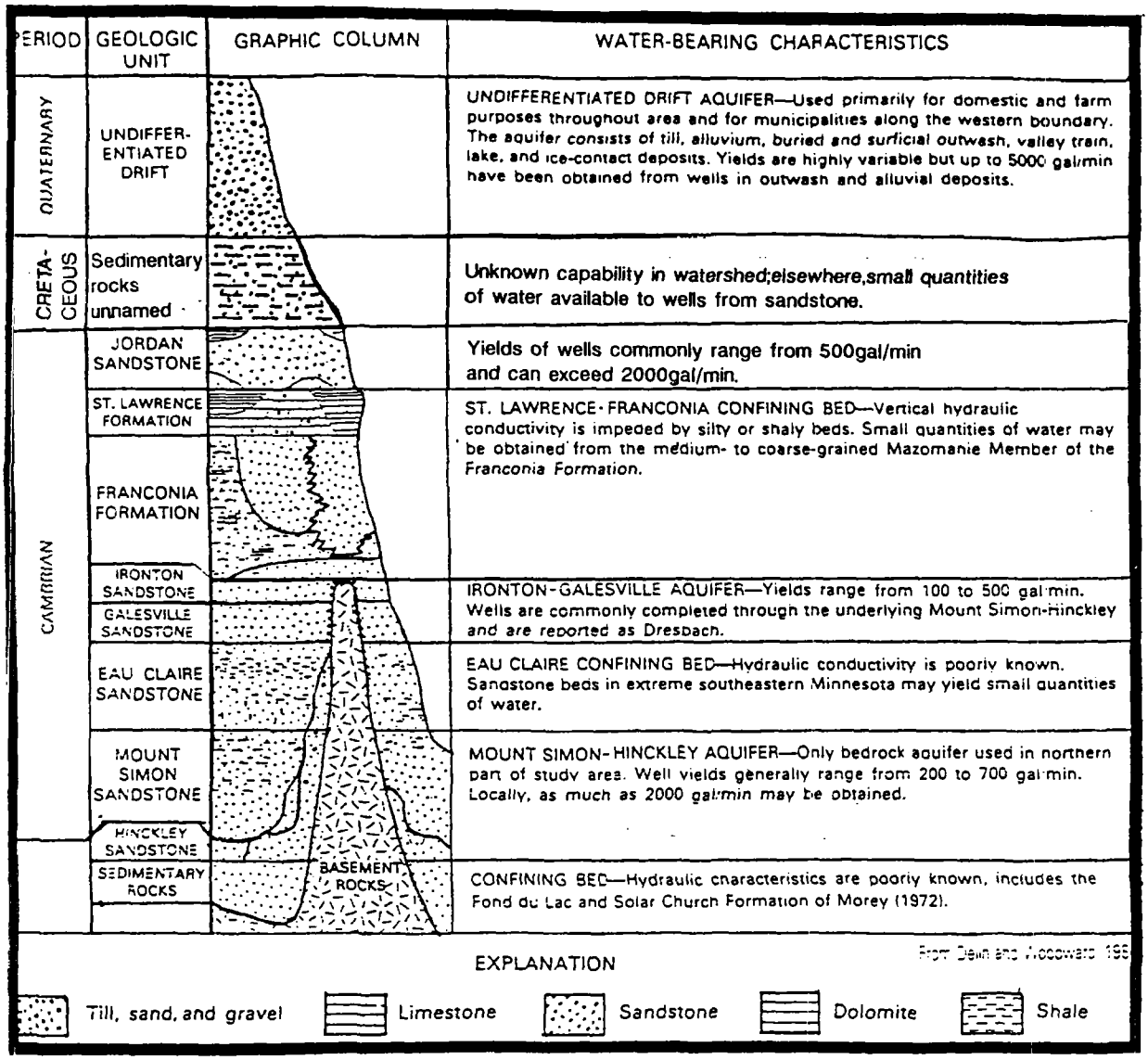


Figure: 5.3

The thickness of the Quaternary deposits in Stearns County range from 150 to 400 feet. The total thickness of these deposits beneath the Site is approximately 210 feet. Minnesota Geological Survey (MGS) unique well logs from the area support these findings (Appendix D).

5.5 Soils

Soil units at the Site include the Regal-Loam complex, and the Osakis Loam. The Regal-Loam complex consists of a black to a dark grayish calcaeous sandy loam and gravel while the Osakis Loam is represented by a very dark grayish brown sandy loam grading into a yellowish brown sandy loam (Soil Survey of Stearns County 1980). A continuous layer of top soil, two to five feet in thickness was encountered in borings throughout the Site (Appendix E).

5.6 Hydrogeology

Throughout Stearns County, all potable water supplies are obtained from ground water. The principle ground water source within the watershed is the Glacial Drift aquifer.

The Glacial Drift deposits beneath the Site consist of 210 feet of glacial outwash deposits containing water bearing stratifield silty sand, gravel and calcareous till (clay) layers (Appendix D).

The most significant aquifer within these deposits is the surficial outwash sands present throughout the area to depths of 40 to 50 feet. Water table depths in this aquifer fluctuate between 5 and 15 feet. This system is known to support high yield withdrawals and is used for irrigation, stock and domestic needs (USGS 1974). Numerous sandpoint wells are also used in the city of Belgrade for watering lawns and gardens.

Municipal Well No. 2 is screened in these surficial outwash sand deposits that terminates at a clay (till) layer at 48 feet. All six monitoring wells which were installed in the city were also screened in the surficial sand deposits, ranging in depth from 18.5 to 21 feet.

The regional ground water flow direction for the upper surficial sands is in a southeasterly direction, flowing from a higher morained area located in the north fork portion of the Crow Wing River to the lower south fork portion of Crow Wing River drainage system located in the southeast (USGS 1974).

Well logs from the municipal well system and from other wells in the Belgrade area show relatively thick till deposits below the surficial outwash sands and are lying directly above buried sand, gravel, and sandy to coarse grained shale deposits. The till (clay) deposits appears to act as a confining layer to the lowermost outwash aquifer and prevents the migration of contaminants from entering this deeper system.

Municipal Well No. 1 is screened in these sandy shale and gravel deposits between 160 and 200 feet (Appendix D).

5.7 Ground Water Quality

The ground water in the vicinity of the Site is classified as a "calcium-magnesium bicarbonate type," which is consistent with glacial aquifers throughout Crow Wing River Watershed. The water hardness in the area is high (130-690 mg/l) due to leaching of calcium from calcareous clays. Naturally elevated levels of iron, magnesium, manganese, chlorides and sulfates also result from mineral leaching of these calcareous deposits. Treatment of municipal wells for hardness and iron is common throughout the region (USGS 1974).

6.0 SURFACE WATER

The Belgrade Site is located in the upper northeastern portion of the Minnesota River Basin. The region has a drainage network consisting of several small tributaries which discharge into the Crow River (USGS 1974).

7.0 FIELD PROCEDURES

7.1 Soil Boring and Sampling Procedures

Soil borings were advanced with a CME55 truck mounted drill rig. Boring methods consisted of advancing a 4¼" internal diameter hollow stem auger (HSA) with an inter pilot assembly to sampling depths. Samples were obtained with a 1-3/8" internal diameter steel split spoon barrel. The split spoon was driven approximately two feet with a 140 pound hammer falling 30 inches. Upon opening

of the split spoon the sample was monitored with either an OVA or an Hnu. The results of this monitoring can be found in Appendix E.

After monitoring, the soil sample was transferred from the split spoon to a sampling tray with a plastic or stainless steel scoop. The sample was then packed in the proper sample bottle obtained from the EPA Sample Bottle Repository. The soil samples were packaged and shipped in accordance with U.S. EPA required procedures and the Minnesota Site Inspection Quality Assurance Project Plan (QAPP 1986). As directed by the EPA, all soil samples were analyzed for U.S. EPA Target Compound List (TCL) by Wilson Laboratories in Salina, Kansas. The U.S. EPA Target Analyte List (TAL) was completed by Versar, Inc. in Springfield, Virginia.

All soil samples were split with Geotechnical Engineering Corporation (Contractor). A portion of the sample was retained by the Contractor to classify the soils in accordance with ASTM D248F, "Unified Soil Classification System" and ASTM D2488, "Recommended Practices for Visual and Manual Description of Soils." Boring logs were constructed by the Contractor using the retained soils and drillers field notes (Appendix E). The MPCA hydrologist on-site also constructed boring logs from field notes taken during the SSI (Appendix E).

Standard decontamination procedures were adhered to during the collection of all soil samples. The procedures included steam cleaning the drill rigs, auger, drill rod, split spoons and tools between each boring location. Sampling equipment (e.g., split spoon barrels, scoops and sampling trays) was scrubbed in a trisodium phosphate solution, followed by a rinse in clean water and allowed to air dry between each sampling interval (QAPP 1988).

7.2 Soil Boring and Sample Locations

A total of six soil borings were conducted on-site and monitoring wells installed in each boring once sampling procedures were completed. Soil samples were collected prior to monitoring well installation to provide a reference point for comparison of natural Site soils to potentially contaminated Site soils.

A potential background soil boring indicated as SB-2 (MW-6) was installed 485 feet northwest of the city of Belgrade's Municipal Well system. The location of SB-2 was chosen because of the considerable distance from the wells where contaminants were detected and what appeared to be considerably clean soils.

Borings SB-1 (MW-1), SB-3 (MW-2), SB-4 (MW-5), SB-5 (MW-3) and SB-6 (MW-4) were installed to characterize the Site. Boring SB-1 (MW-1) was installed 45 feet south of Municipal Well #1 and 70 feet southeast of Municipal Well #2. Borings SB-5 (MW-3) and SB-6 (MW-4) were installed parallel to Highway 55 directly across from the municipal system. Boring SB-4 (MW-5) was installed in a vacant lot approximately 230 feet north of the corner of Highway 55 and Martin Street. Boring SB-3 (MW-2) was installed 20 feet south of Highway 55 and 110 feet south of SB-5 (MW-3). The boring locations can be seen on Figure 3.3.

Six composite soil samples were collected from the six soil borings during the SSI field work. Table 7.2 correlates the sample number to the boring number and the sampling depth.

Table 7.2

Boring #	Sample #	Location	Sample Depth
SB-1 (MW-1)	SØ1	City property behind well house.	Composite
SB-2 (MW-6)	SØ2	City Hall parking lot.	Composite
SB-3 (MW-2)	SØ3	Gerald Speldrich property (ERA Building)	Composite
SB-4 (MW-5)	SØ4	Commercial Club's empty lot.	Composite
SB-5 (MW-3)	SØ5	Belgrade Ford Service Garage	Composite
SB-6 (MW-4)	SØ6	Mathison Service Garage	Composite

7.3 Monitor Well Installation

The original MPCA work plan dated January 5, 1988, proposed that six ground water monitoring wells be installed on-site. The proposal was based on information collected and outlined in the Preliminary Assessment and pre-Site Inspection.

The monitoring wells were installed to sample the water table in and around the Belgrade municipal well field. The wells were strategically placed between what was believed to be the potential contaminant sources and the well field in an attempt to intercept contaminants believed to be drawn towards Municipal Well #2 within the surficial outwash sand aquifer.

Monitoring wells MW-1, MW-2, MW-3, MW-4, MW-5 and MW-6 were installed in soil borings SBØ1, SBØ3, SBØ5, SBØ6, SBØ4 and SBØ2, respectively. All monitoring wells were finished in a medium grained sand (glacial outwash) deposit at a depth of 20 to 22 feet. The wells were constructed in accordance with the Minnesota Department of Health, Water Well Construction Code (MDH 1988). Monitoring well design and construction procedures are illustrated and defined in Geotechnical Engineering Corporation's report of test borings and monitoring wells located in Appendix F.

7.4 Monitor Well and Municipal Well Sampling

The ground water monitoring wells were successfully developed and stabilized by MPCA on-site Hydrologist on May 18, 1988. A copy of the development methods and stabilization procedures can be found in Appendix E.

Ground water samples were obtained with a stainless steel bailer immediately following the completion of stabilization. Dedicated bailers were used for each well to prevent cross contamination. Table 7.4 indicates the sample numbers to the sample locations.

Belgrade's municipal wells were sampled at the well-head from spigots located within the well house. Prior to sampling, Municipal Well #2 had been pumped for 15 days at 80 gallons/min. Municipal Well #1 was in operation supplying water to the water tower.

The ground water samples were packaged and shipped in accordance with U.S. EPA required procedures and the Minnesota Site Inspection Quality Assurance Project Plan (QAPP 1988). As directed by U.S. EPA, all ground water samples were analyzed for TCL compounds, Regular Analytical Service (RAS) by Cenref Labs in Brighton, Colorado and for TCL compound, Special Analytical Service (SAS) by Versar, Inc., Springfield, Virginia. Ground water samples were analyzed for TAL analytes RAS by CSM RI Analytical, Inc. in Golden, Colorado and TAL analytes, SAS by Chemtech Consulting Group, New York, New York.

8.0 ANALYTICAL RESULTS

Results of chemical analysis performed on soil samples are presented in Table 8.1. Analysis for VOCs was not performed on soil samples. A single semi-volatile Target Compound List (TCL) compound, several Tentatively Identified Compounds (TIC), and several Target Analyte List (TAL) analytes were detected.

Results of RAS water chemical analysis are presented in Table 8.2. Chemicals from the TCL, TAL and TIC semi-volatile fraction groups were detected.

Table 7.4

Ground Water Sampling Locations

Well #	Sample #	Location
MW-1	S07	City property - behind well house.
MW-2	S08	Gerald Speldrich Property - ERA Building - back yard.
MW-3	S09	Belgrade Ford Service Garage.
MW-4	S10	Mathison Service Garage.
MW-5	S11	Comercial Club's Empty Lot.
MW-6	S12	City Property - City Hall Parking Lot.
Duplicate	D01	Duplicate of S12.
Munic. Well	S13	Across from Belgrade Ford Service Garage.
Duplicate	D02	Duplicate of S13.
Munic. Well	S14	Next of Municipal Well #1.

Results of SAS water chemical analysis performed on the two municipal wells are presented in Table 8.3. Chemicals from the TCL, TAL and TIC semi-volatile and volatile fraction groups were found. Tetrachloroethene was found in Municipal Well No. 2 at a concentration of 1.4 ug/l, which is below the RAL of 6.6 ug/l.

Figure 8.0 illustrates the concentration of tetrachloroethene in Municipal Well No. 2 over a period of thirty-two months. Sampling for volatile organic compounds by MDH in October of 1985, detected no compounds. Continued monitoring by MDH in November and December of 1986, revealed concentrations of 160 ug/l and 260 ug/l, at which time MDH recommended that Municipal Well No. 2 not be used for municipal supply. Between the period of December 1986 and May 1987, the city of Belgrade pumped an undetermined amount of water from Municipal Well No. 2 and discharged the water to a nearby ditch. The exact dates of pumping are not known. During this time, samples were analyzed by MDH and Minnesota Valley Testing Laboratories. In May 1987, MPCA informed the city of Belgrade that an NPDES permit was required to discharge potentially contaminated water, at which time pumping of Municipal Well No. 2 was stopped. MPCA issued an NPDES permit to the city in September 1987, and the December 22, 1987, value of 4 ug/l was the result of a sample taken after Municipal Well No. 2 was pumped for two days. The four samples, December 22, 1987, through April 6, 1988, were collected by the city of Belgrade and analyzed by Twin City Testing according to NPDES permit requirements. The final two samples were collected by MPCA staff. This graph shows that continued pumping appears to be decreasing the concentration of tetrachloroethene in Municipal Well No. 2. Samples taken since December 22, 1987, have all been below the MDH RAL of 6.6 ug/l.

Table 8.1

Summary of
Chemical Analysis For
Soils-Organic (Semi-Volatile Compounds)

Sample Collection Information and Detected Parameters	Sample Number S01	S02	S03	S04	S05	S06		
Date	5/02/88	5/02/88	5/03/88	5/04/88	5/04/88	5/05/88		
Time	1330	1525	1440	0900	1430	0930		
Organic Traffic Report Number	ET841	ET842	ET851	ET852	ET853	ET854		
Inorganic Traffic Report Number								
Compound Detected (ug/kg ppb unless indicated)								
Bis(2-ethylphthalate)		45J						
Hexadecanoic Acid				240J	150J	300J		
Unknown Hydrocarbons				590J				
Unknown Hydrocarbons	230J	290J	560J		430J	470J		
Hexanedioic Acid,Mono(2-eth)	29000J	15000J	1400J	21000J	36000J	440J		

J - Indicates an estimated value.

Table 8.1

Summary of
Chemical Analysis For
Soils-Organics (Pesticides/PCB)

	Sample Number							
Sample Collection Information and Detected Parameters	S01	S02	S03	S04	S05	S06		
Date	5/02/88	5/02/88	5/03/88	5/04/88	5/04/88	5/05/88		
Time	1330	1525	1440	0900	1430	0930		
Organic Traffic Report Number	ET481	ET482	ET851	ET852	ET853	ET854		
Inorganic Traffic Report Number								
Compound Detected (ug/L ppb unless indicated)								
No compounds detected								

Table 8.1

Summary of
Chemical Analysis For
Soils-Inorganic (Metals/Cyanide)

Sample Collection Information and Detected Parameters	Sample Number S01	S02	S03	S04	S05	S06		
Date	5/02/88	5/02/88	5/03/88	5/04/88	5/04/88	5/05/88		
Time	1330	1525	1440	0900	1430	0930		
Organic Traffic Report Number								
Inorganic Traffic Report Number	MEW614	MEW624	MEW625	MEW633	MEW634	MEW635		
Compound Detected (mg/kg unless indicated)								
Aluminum	2510	2170	2040	1900	1850	2350		
Antimony	16	14	12	16	12	17		
Arsenic			4.3		5.0	2.0		
Barium	28	23	17	34	19	25		
Beryllium	0.78	0.84						
Calcium	60900	62100	35300	37500	58700	65000		
Chromium	12	8.4	9.6	11	10	11		
Cobalt	2.8	1.8	2.2	2.5	1.9	1.6		
Copper	3.6	2.9	2.3	4.7	2.0	3.5		
Iron	8050	7030	6280	8340	6840	8940		
Lead	1.4	1.8	10	13	1.6	1.4		

Table 8.1 (continued)

Compound(s) Detected (mg/kg)	Sample Number S01	S02	S03	S04	S05	S06		
Magnesiuim	17000	19100	11100	13900	21900	28700		
Manganese	288	307	278	374	258	289		
Mercury				0.35				
Nickel	7.3		8.2	4.0	6.0			
Potassium	399							
Sodium	108	91	77	84	94	94		
Vanadium	12	9.3	7.9	8.7	8.5	13		
Zinc	17	16	12	45	14	16		
Cyanide				0.77				

Table 8.2

Summary of
Chemical Analysis For
Water - RAS Organics (Volatile Compounds)

Sample Collection Information and Detected Parameters	Sample Number S07	S08	S09	S10	S11	S12	D01
Date	6/07/88	6/07/88	6/08/88	6/08/88	6/07/88	6/07/88	6/07/88
Time	1218	1445	0925	1025	1905	1645	1645
Organic Traffic Report Number	EY623	EY624	EY625	EY626	EY627	EY628	EY629
Inorganic Traffic Report Number							
Compound Detected (ug/L ppb unless indicated)							
Toluene							3J

Sample Collection Information and Detected Parameters	Sample Number R01	R03					
Date	6/07/88	6/08/88					
Time	1000	0930					
Organic Traffic Report Number	EY633	EY635					
Inorganic Traffic Report Number							
Compound Detected (ug/L ppb unless indicated)							
Toluene	3J						
Trimethyl-Silanol	10J						

Table 8.2

Summary of
Chemical Analysis For
Water - RAS Organics (Semi-Volatile Compounds)

Sample Collection Information and Detected Parameters	Sample Number S07	S08	S09	S10	S11	S12	D01
Date	6/07/88	6/07/88	6/08/88	6/08/88	6/07/88	6/07/88	6/07/88
Time	1218	1445	0925	1025	1905	1645	1645
Organic Traffic Report Number	EY623	EY624	EY625	EY626	EY627	EY628	EY629
Inorganic Traffic Report Numbe							
Compound Detected (ug/L ppb unless indicated)							
bis(2-ethylhexyl)phthalate	10J						8J
Unknown Hydrocarbon		10J	13J			19J	30J
Unknown Alkene			26J				
Heptadecane							30J

Table 8.2

Summary of
Chemical Analysis For
Water - RAS Organics (Pesticides/PCB)

	Sample Number						
Sample Collection Information and Detected Parameters	S07	S08	S09	S10	S11	S12	D01
Date	6/07/88	6/07/88	6/08/88	6/08/88	6/07/88	6/07/88	6/07/88
Time	1218	1445	0925	1025	1905	1645	1645
Organic Traffic Report Number	EY623	EY624	EY625	EY626	EY627	EY628	EY629
Inorganic Traffic Report Number							
Compound Detected (ug/L ppb unless indicated)							
No Compounds Detected							

Table 8.2

Summary of
Chemical Analysis For
Water - RAS Inorganics (Metals/Cyanide)

Sample Collection Information and Detected Parameters	Sample Number S07	S08	S09	S10	S11	S12	D01
Date	6/07/88	6/07/88	6/08/88	6/08/88	6/07/88	6/07/88	6/07/88
Time	1218	1445	0925	1025	1905	1645	1645
Organic Traffic Report Number							
Inorganic Traffic Report Number	MEW644	MEW645	MEW646	MEW647	MEW648	MEW649	MEW650
Compound Detected (ug/L ppb unless indicated)							
Aluminum	159	165	145	136	210	163	214
Barium	162	131	121	59	56	101	111
Beryllium							1
Calcium	78700	80200	89200	89300	76700	81500	81000
Iron	68	56	41	79	66	18	50
Magnesium	22900	22000	26100	23600	22700	24300	24200
Manganese	891	693	1210	229	91	130	176
Nickel			12				
Potassium	3110	3400	2900	2540	3180	2760	2400
Sodium	10000	6620	7850	9670	10800	7190	7560
Zinc	22	19	13	13	11	76	17

Table 8.3

Summary of
Chemical Analysis For
Water - SAS Organics (Volatile Compounds)

Sample Collection Information and Detected Parameters	Sample Number S13	D02	S14	R02			
Date	6/08/88	6/08/88	6/08/88	6/08/88			
Time	1125	1125	1145	0800			
Organic Traffic Report Number	EY630	EY631	EY632	EY634			
Inorganic Traffic Report Number							
Compound Detected (ug/L ppb unless indicated)							
Tetrachloroethene			1.4				
Butane,2,2,3,3-Tetramethyl			2J				
Unknown Hydrocarbon			1J				

Table 8.3

Summary of
Chemical Analysis For
Water - SAS Organics (Semi-Volatile Compounds)

	Sample Number						
Sample Collection Information and Detected Parameters	S13	D02	S14				
Date	6/08/88	6/08/88	6/08/88				
Time	1125	1125	1145				
Organic Traffic Report Number	EY630	EY631	EY632				
Inorganic Traffic Report Number							
Compound Detected (ug/L ppb unless indicated)							
Bis(2-ethylphthalate)		0.30J					
Unknown			34J				

Table 8.3

Summary of
Chemical Analysis For
Water - SAS Organics (Pesticides/PCB)

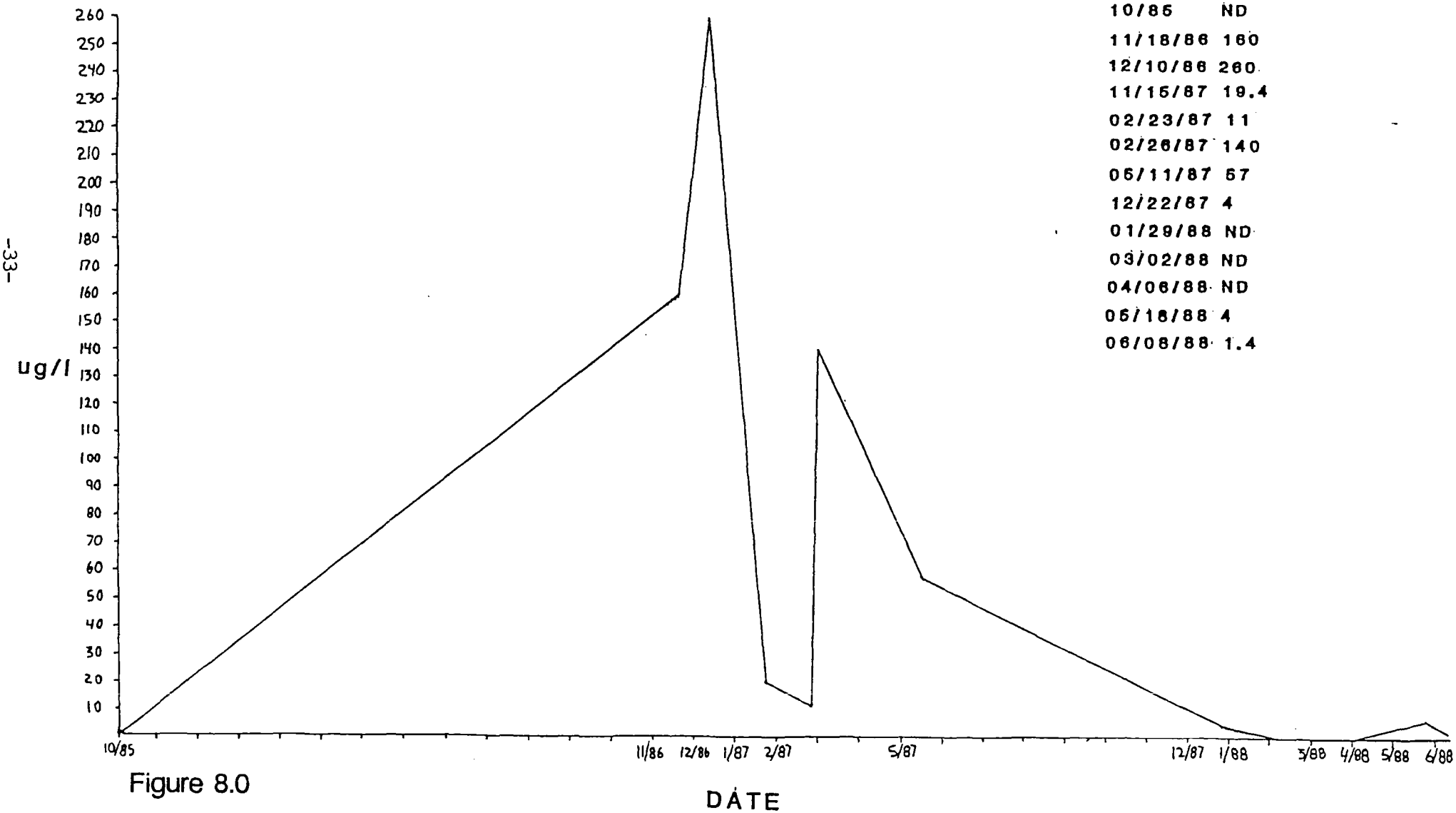
Sample Collection Information and Detected Parameters	Sample Number						
	S13	D02	S14				
Date	6/08/88	6/08/88	6/08/88				
Time	1125	1125	1145				
Organic Traffic Report Number	EY630	EY631	EY632				
Inorganic Traffic Report Number							
Compound Detected (ug/L ppb unless indicated)							
No Compounds Detected							

Table 8.3

Summary of
Chemical Analysis For
Water - SAS Inorganics (Metals/Cyanide)

Sample Collection Information and Detected Parameters	Sample Number						
	S13	D02	S14				
Date	6/08/88	6/08/88	6/08/88				
Time	1125	1125	1145				
Organic Traffic Report Number							
Inorganic Traffic Report Number	MEW651	MEW652	MEW653				
Compound Detected (ug/L ppb unless indicated)							
Arsenic	5.0						
Barium	227	252	139				
Calcium	66000	67900	86100				
Copper	34	28	48				
Iron	1170	1120	800				
Lead	4.4	4.3	15				
Magnesium	20200	20800	22800				
Manganese	27	22	616				
Mercury	0.20						
Potassium	1800	1400	1400				
Sodium	17200	17700	6110				
Zinc	[10]	[10]	[19]				

Belgrade Municipal Well No. 2 - Tetrachloroethene Concentrations



DATE	ug/l
10/85	ND
11/18/86	160
12/10/86	260
11/15/87	19.4
02/23/87	11
02/26/87	140
05/11/87	57
12/22/87	4
01/29/88	ND
03/02/88	ND
04/06/88	ND
05/18/88	4
06/08/88	1.4

Figure 8.0

9.0 DISCUSSION OF MIGRATION PATHWAYS

9.1 Ground Water

TIC compounds, TCL compounds and TAL analytes were detected in all soil borings that were sampled during the SSI. The TIC compounds detected were bis (2-ethylphalate), Hexadecanoic Acid, Hexanedioic Acid, Mono (2-eth) and six unknown hydrocarbons. The bis (2-ethylphalate) is known to be a common laboratory artifact, while Hexadecanoic Acid, and Hexanedioic Acid, Mono (2-eth) appear naturally in soils.

Chemical analysis of ground water samples taken from monitoring wells MW-1, MW-2, MW-3, MW-4, MW-5 and MW-6 detected TIC compounds, TCL compounds and TAL analytes. The TIC compounds detected in MW-1 and MW-2 were bis (2-ethylhexyl) phthalate at 10.0 ug/l and 8.0 ug/l respectively and six unknown hydrocarbons. The bis (2-ethylhexyl) is known to be a common laboratory artifact, while the hydrocarbons were detected at relatively low levels. The remaining analytes appear to be consistent with levels associated with water from within the Crow Wing Watershed (USGS 1974).

Chemical Analysis of the two municipal wells detected TIC compounds, TCL compounds and TAL analytes. The TIC compounds detected were Butane, 2,2,3,3-Tetramethyl at 2.0 ug/l detected in Municipal Well #2, bis (2-ethylphthalate) at .30 ug/l detected in Municipal Well #1, and two unknown hydrocarbons. Butane 2,2,3,3-Tetramethyl and the two hydrocarbons were detected at very low levels. Bis (2-ethylphthalate) is known to be a common laboratory artifact. The TCL compound detected was Tetrachloroethane at 1.4

ug/l, considerably lower than the RAL drinking water standards of 6.6 ug/l. A total of 12 TAL analytes were detected in the municipal well water samples. Of those, only arsenic and Mercury were detected in the Municipal Well #1 water sample. Arsenic was detected at 5.0 ug/l considerably lower than the RAL drinking water standard of 50 ug/l, and Mercury detected at .20 ug/l, below the RAL limit of 1.1 ug/l. The remaining analytes appear to be consistent with other water located within the Crow Wing Watershed (USGS 1974).

The city of Belgrade is currently served by two municipal wells finished in glacial outwash sand and gravel deposits. Municipal Well #2 is finished in the surficial aquifer system in sand and gravel deposits at a depth of 48 feet while Municipal Well #1 is finished in sandy shale and gravel deposits at a depth of 200 feet. Of these two systems, only the shallow surficial aquifer has been impacted by contaminants. It appears that the clay (till) deposits that separate these two systems is acting as a confining layer and is preventing the contaminants from leaching vertically into the deeper aquifer.

Since the detection of contaminants in Municipal Well #2 in December 1986, an undetermined amount of water has been discharged from the system into a ditch for flushing purposes, and a recommendation made by the MDH not to use the water for drinking.

A graph compiling analytical results of Tetrachloroethene from 1986 to 1988 can be seen in Figure 8.0. The graph compares the detection level of Tetrachloroethene at 260 ug/l as was detected in the initial stages of sampling,

to the most recent detection level of 1.4 ug/l, considerably lower than the RAL drinking water standards of 6.6 ug/l. MPCA staff believes that the drastic reduction in levels indicates the following:

1. As a result of pumping water out of the system, contamination has been reduced considerably.
2. The actual cause or course of the contamination may be a result of a one-time incident meaning that a solvent, paint remover, degreasing agent or a product containing tetrachloroethane may have been improperly disposed of on the surface and eventually leaching into the surficial aquifer with the aid of precipitation.

9.2 Surface Water

The flat terrain associated with the Site makes the potential for migration of contaminants via surface discharge very low. The surface soils are highly permeable (10^{-2} to 10^{-4} cm/sec) resulting in fairly rapid infiltration of precipitation.

9.3 Air

No release of hazardous substances to the air has been documented at the Site. Air was monitored on-site with an Organic Vapor Analyzer (OVA) or HNu and contamination was not detected.

9.4 Fire and Explosion

According to MPCA file information, there are no documented incidences of fire or explosion at the Site. MPCA staff observations during the SSI indicated no apparent potential for fire or explosion.

9.5 Direct Contact

According to MPCA file information, there are no documented incidents of direct contact with hazardous substances at the Site. Potential for direct contact is extremely low as any contamination is in subsurface soil or ground water.

REFERENCES

Federal Emergency Management Agency, 1980, Flood Insurance Study, city of Belgrade, Minnesota, Stearns County, Federal Insurance Administration Number 270106.

Flint, Richard F., 1971, Glacial and Quaternary Geology, John Wiley & Sons Inc., New York, New York.

Geotechnical Engineering Corporation, June 20, 1988, Report of Test Borings and Monitoring Wells, Roseville, Minnesota.

Lindholm, G.F., Farrell, D.F., Helgesen, O.J., 1974, Water Resources of the Crow Wing Watershed, South-Central Minnesota Hydrogeologic Investigation Atlas, U.S. Geological Survey.

Liukkonen, Barbara, Minnesota Sea Grant, "Drinking Water Standards," Minnesota Extension Service, University of Minnesota.

Minnesota Department of Health, 1989, Public Water Supply Data, Division of Environmental Health, Minneapolis, Minnesota.

Minnesota Department of Health, November 16, 1988, Recommended Allowable Limits for Drinking Water Contaminants, Section of Health Risk Assessment, Release Number 2, Minneapolis, Minnesota.

MPCA, August 24, 1987, Potential Hazardous Waste Site Preliminary Assessment for the city of Belgrade, U.S. EPA ID#: MND981785322, prepared by Byron A. Adams, St. Paul, Minnesota.

MPCA, city of Belgrade, Site Investigation File, Ground Water and Solid Waste Division, Program Development Section, Site Assessment Unit, St. Paul, Minnesota.

MPCA, Preliminary Assessment/Site Inspection Cooperative Agreement, No. V005848-01, Ground Water and Solid Waste Division, Program Development Section, Site Assessment Unit, St. Paul, Minnesota.

MPCA, May 22, 1987, Site Inspection Quality Assurance Project Plan (QAPP), Ground Water and Solid Waste Division, Program Development Section, Site Assessment Unit, St. Paul, Minnesota.

Soil Survey of Stearns County, 1980, U.S. Department of Agriculture.

U.S. EPA, Office of Solid Waste and Emergency Response, February 12, 1988, Pre-Remedial Strategy and Implementing SARA, Directive No. 9345.10, Washington, D.C.

U.S. Geological Survey, 1967, Padua, Elrosa, Belgrade, Georgeville quadrangles, Minnesota, 7.5 Minute Series: 1:24,000.

A

SDMS US EPA Region V

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4 MILE RADIUS MAP

☐ **Other:**

B

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 5/2/88

Time 1330 a.m. p.m.

Direction N

Weather 65° clear

Photographed by: B. Lofgren

Sample ID # 88YL08S01

Description Soil boring #1 for sample S01

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 5/2/88

Time 1330 a.m. p.m.

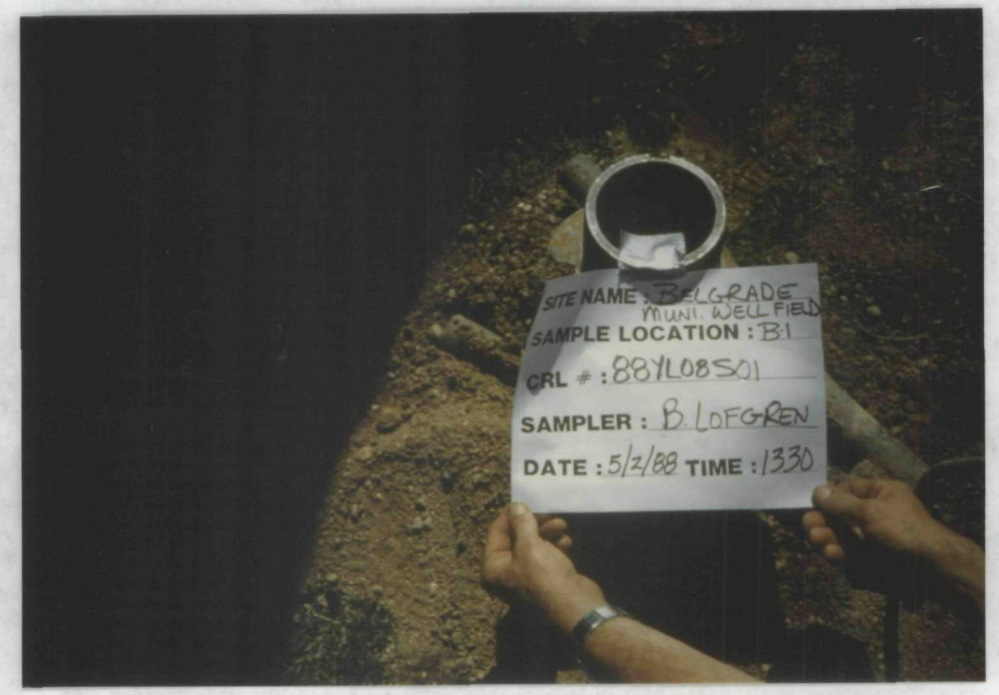
Direction NE

Weather 65° clear

Photographed by: B. Lofgren

Sample ID# 88YL08S01

Description Soil Boring #1 for sample S01



Site Belgrade Municipal Well Field

EPA # MND981785322

Date 6/7/88

Time 1245 a.m. p.m.

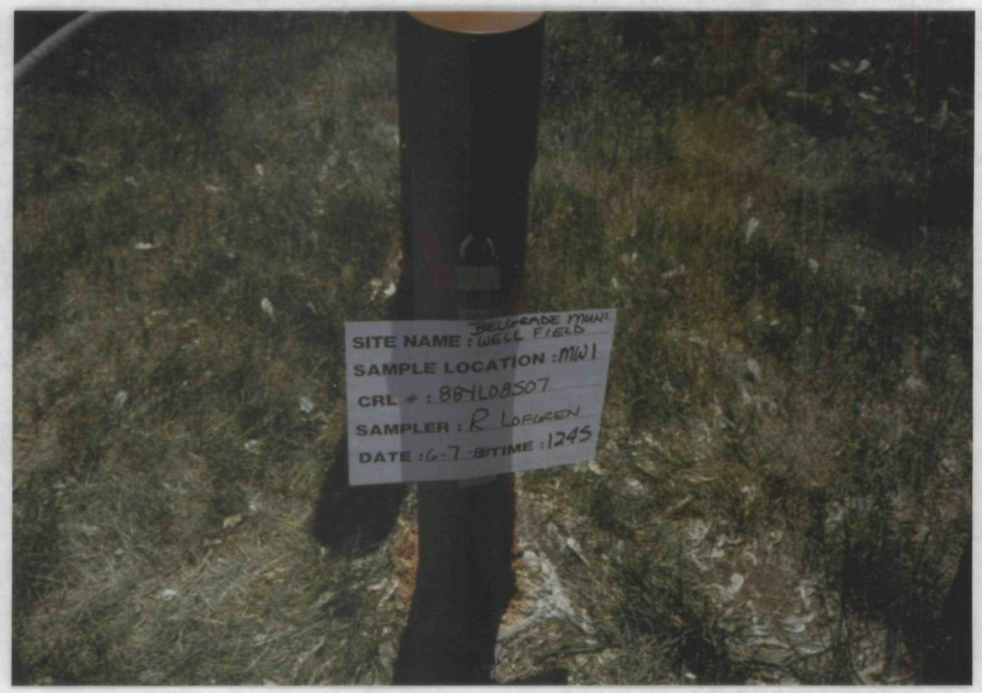
Direction W

Weather 70° clear

Photographed by: B. Lofgren

Sample ID # 88YL08507

Description Monitoring well #1, for sample 507. Well placed in soil boring #1



Site Belgrade Municipal Well Field

EPA # MND981785322

Date 5/2/88

Time 1525 a.m. p.m.

Direction W

Weather 65° clear

Photographed by: B. Lofgren

Sample ID# 88YL08502

Description Soil Boring #2 for sample 502

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 5/2/88

Time 1525 a.m. p.m.

Direction W

Weather 70° clear

Photographed by: B. Lofgren

Sample ID # 88YL08S02

Description Soil Boring # 2 for Sample S02

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 5/2/88

Time 1630 a.m. p.m.

Direction S

Weather 70° clear

Photographed by: B. Lofgren

Sample ID# 88YL08S12

Description Monitoring well #6 for samples S12, D01. Well placed in Soil boring # 2

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 5/3/88

Time 1440 a.m. p.m.

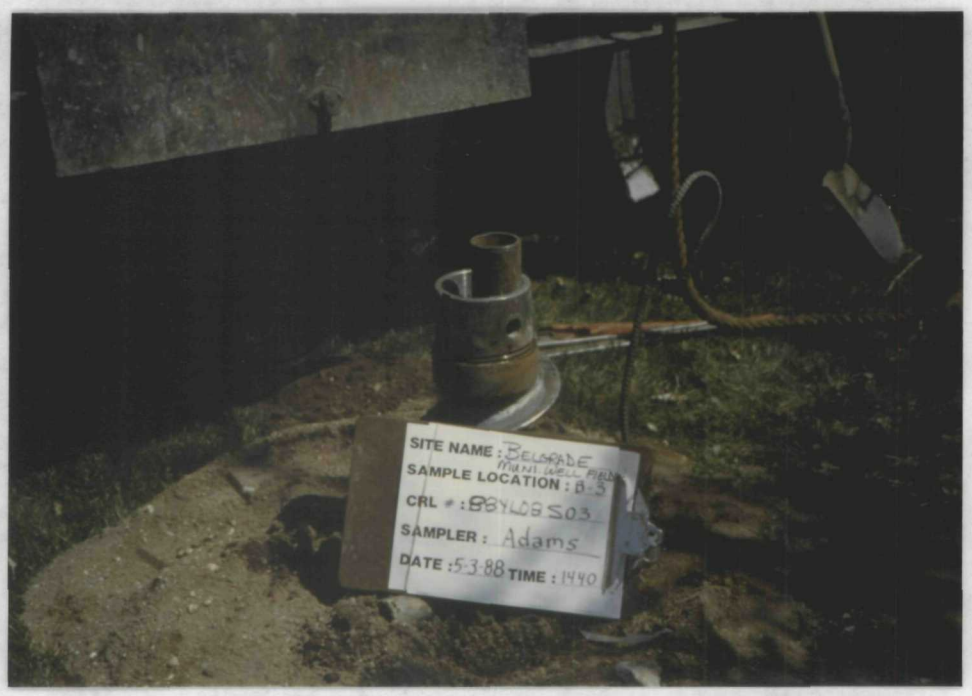
Direction E

Weather 75° Clear

Photographed by: B. Lofgren

Sample ID # 88YL08S03

Description Soil Boring #3 for sample S03



Site Belgrade Municipal Well Field

EPA # MND981785322

Date 5/3/88

Time 1440 a.m. p.m.

Direction E

Weather 75° clear

Photographed by: B. Lofgren

Sample ID# 88YL08S03

Description Soil Boring #3 for sample S03

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 5/3/88

Time 1530 a.m. p.m.

Direction E

Weather 75° clear

Photographed by: B. Lofgren

Sample ID # 88YL08S08

Description Monitoring Well #2 for sample S08. Well placed in soil boring #3.

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 6/7/88

Time 1600 a.m. p.m.

Direction E

Weather 75° clear

Photographed by: B. Lofgren

Sample ID# 88YL08S02

Description Monitoring Well #2 for sample S08. Well placed in soil boring #3.

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 5/4/88

Time 0900 a.m. p.m.

Direction SW

Weather 65° Clear

Photographed by: B. Lofgren

Sample ID # 88Y108S04

Description Soil Boring #4 for Sample S04.

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 5/4/88

Time 0900 a.m. p.m.

Direction SW

Weather 65° Clear

Photographed by: B. Lofgren

Sample ID# 88Y108S04

Description Soil Boring #4 for sample S04.

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 5/4/88

Time 1000 a.m. p.m.

Direction SW

Weather 65° clear

Photographed by: B. Lofgren

Sample ID # 88YL08S11

Description Monitoring Well #5 for sample S11. Well placed in soil boring #4

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 6/7/88

Time 1915 a.m. p.m.

Direction S

Weather 70° clear

Photographed by: B. Lofgren

Sample ID# 88YL08S11

Description Monitoring Well #5 for sample S11. Well placed in soil boring #4

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 5/4/88

Time 1430 a.m. p.m.

Direction S

Weather 75° clear

Photographed by: B. Lofgren

Sample ID # 88LY08S05

Description Soil Boring #5 for Sample S05.

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 5/4/88

Time 1430 a.m. p.m.

Direction S

Weather 75° clear

Photographed by: B. Lofgren

Sample ID# 88LY08S05

Description Soil Boring #5 for sample S05

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 5/4/88

Time _____ a.m. p.m.

Direction E

Weather 75° clear

Photographed by: B. Lofgren

Sample ID # 88Y108509

Description Monitoring Well #3 for sample 509. Well placed in soil boring #5

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 5/5/88

Time 0930 a.m. p.m.

Direction W

Weather 65° clear

Photographed by: B. Lofgren

Sample ID# 88Y108506

Description Soil boring #6 for sample 506

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 6/8/88

Time 1030 a.m. p.m.

Direction N

Weather 70° clear

Photographed by: B. Lofgren

Sample ID # 88YL08S10

Description Monitoring Well #4 for Sample S10. Well placed in soil boring # 6

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 5/5/88

Time 1130 a.m. p.m.

Direction W

Weather 65° clear

Photographed by: B. Lofgren

Sample ID# 88YL08S10

Description Monitoring well #4 for sample S10. Well placed in soil boring #6.

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 5/5/88

Time 1100 a.m. p.m.

Direction E

Weather 70° clear

Photographed by: B. Lofgren

Sample ID # 88YL08

Description Monitoring Wells 4 (foreground) and MW #3 (background)

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 6/8/88

Time 1230 a.m. p.m.

Direction

Weather

Photographed by: B. Lofgren

Sample ID# 88YL08S13/D02

Description Municipal Well #1 for samples S13 and D02

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 6/8/88

Time 1230 a.m. p.m.

Direction NE

Weather 75° clear

Photographed by: B. Lofgren

Sample ID #

Description municipal well #1

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 6/8/88

Time 1145 a.m. p.m.

Direction

Weather

Photographed by: B. Lofgren

Sample ID# 88YL08S14

Description municipal Well #2 for Sample S14

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 6/8/88

Time 1145 a.m. p.m.

Direction NE

Weather 75° clear

Photographed by: B. Lofgren

Sample ID #

Description municipal well #2

Site Belgrade Municipal Well Field

EPA # MND981785322

Date 6/8/88

Time 1200 a.m. p.m.

Direction S

Weather 75° clear

Photographed by: B. Lofgren

Sample ID#

Description Belgrade municipal wells building.

C

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MN	D981785322

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER				
Belgrade Municipal Well Field	Not Responsive				
03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Belgrade	MN	56312	Stearns	145	07

09 OWNER (If known)	10 TYPE OF OWNERSHIP (Check one)
Not Responsive	☐ A. PRIVATE ☐ B. FEDERAL _____ ☐ C. STATE ☐ D. COUNTY ☒ E. MUNICIPAL ☐ F. OTHER _____ ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
05 02 88 (MONTH DAY YEAR)	☒ ACTIVE ☐ INACTIVE	1950 (BEGINNING YEAR) ____ (ENDING YEAR) ____ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply)

☐ A. EPA ☐ B. EPA CONTRACTOR _____ (Name of firm) ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR _____ (Name of firm)

☒ E. STATE ☐ F. STATE CONTRACTOR _____ (Name of firm) ☐ G. OTHER _____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO
Rebecca Infgren	Pollution Control Specialist	MPCA	(612) 296-7783

09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
Not Responsive			
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
			( )
Tony Olson	City Engineer	P.O. Box 296 Belgrade, MN 56312	(612) 254-3342
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	1200	65° Clear

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
Ron Klinker	MPCA	(612) 296-7783

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO	08 DATE
Ron Klinker / Brad Nordberg	MPCA		612-296-7783	09 25 88 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MN	D981785322

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- ☐ A. SOLID
- ☐ B. POWDER, FINES
- ☐ C. SLUDGE
- ☐ D. OTHER _____ (Specify)
- ☐ E. SLURRY
- ☒ F. LIQUID
- ☐ G. GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS _____
CUBIC YARDS Unknown
NO. OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

- ☒ A. TOXIC
- ☐ B. CORROSIVE
- ☐ C. RADIOACTIVE
- ☒ D. PERSISTENT
- ☐ E. SOLUBLE
- ☐ F. INFECTIOUS
- ☐ G. FLAMMABLE
- ☐ H. IGNITABLE
- ☒ I. HIGHLY VOLATILE
- ☐ J. EXPLOSIVE
- ☐ K. REACTIVE
- ☐ L. INCOMPATIBLE
- ☐ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS	Unknown		found in Municipal Well No. 2
PSD	PESTICIDES			
OCD	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
So	Tetrachloroethene	127184		1.4	ug/l
	See Tables 8.1 – 8.3	for Complete	Soil and water	chemical	Data

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS	N/A		FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

MPCA Belgrade Municipal Well Field Files
USGS

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MN	D981785322

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. GROUNDWATER CONTAMINATION — 02 [X] OBSERVED (DATE: 6/9/88) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 1126
04 NARRATIVE DESCRIPTION

See Section 8.0 SSI Report

01 [ ] B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: ____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ____
04 NARRATIVE DESCRIPTION

N/A

01 ☐ C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE: ____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ____
04 NARRATIVE DESCRIPTION

N/A

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE: ____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ____
04 NARRATIVE DESCRIPTION

N/A

01 ☐ E. DIRECT CONTACT — 02 ☐ OBSERVED (DATE: ____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ____
04 NARRATIVE DESCRIPTION

N/A

01 ☐ F. CONTAMINATION OF SOIL — 02 ☐ OBSERVED (DATE: ____) — ☐ POTENTIAL — ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: ____ (Acres)
04 NARRATIVE DESCRIPTION

None observed

01 [X] G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: ____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 1126
04 NARRATIVE DESCRIPTION

See Section 8.0 SSI Report

01 ☐ H. WORKER EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: ____) — ☐ POTENTIAL — ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: ____
04 NARRATIVE DESCRIPTION

N/A

01 ☐ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: ____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ____
04 NARRATIVE DESCRIPTION

N/A

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE: MN
02 SITE NUMBER: D981785322

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

None observed

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)

None observed

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Unknown

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES (Spills, Runoff, Standing liquids, Leaking drums) — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☒ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 1126 — 04 NARRATIVE DESCRIPTION

Spills or dumping in the past may have been the source of contamination in municipal well No. 2

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

N/A

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

None observed

01 ☒ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

See Section 8.0

01 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

None Known

III. TOTAL POPULATION POTENTIALLY AFFECTED: 1123

IV. COMMENTS

Samples analyzed since December 22, 1987 have had levels of Tetrachloroethene below Minnesota Department of Health's Recommended Allowable limit.

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

MPCA Files,
USGS

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MN	D981785322

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☒ A. NPDES	MN 0051281	9/30/87	9/30/92	
☐ B. UIC				
☐ C. AIR				
☐ D. RCRA				
☐ E. RCRA INTERIM STATUS				
☐ F. SPCC PLAN				
☐ G. STATE (Specify)				
☐ H. LOCAL (Specify)				
☐ I. OTHER (Specify)				
☐ J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☐ A. SURFACE IMPOUNDMENT		
☐ B. PILES		
☐ C. DRUMS, ABOVE GROUND		
☐ D. TANK, ABOVE GROUND		
☐ E. TANK, BELOW GROUND		
☐ F. LANDFILL		
☐ G. LANDFARM		
☐ H. OPEN DUMP		
☒ I. OTHER Unknown (Specify)		

04 TREATMENT (Check all that apply)

- ☐ A. INCENERATION
- ☐ B. UNDERGROUND INJECTION
- ☐ C. CHEMICAL/PHYSICAL
- ☐ D. BIOLOGICAL
- ☐ E. WASTE OIL PROCESSING
- ☐ F. SOLVENT RECOVERY
- ☐ G. OTHER RECYCLING/RECOVERY
- ☒ H. OTHER Unknown (Specify)

05 OTHER

- ☒ A. BUILDINGS ON SITE

06 AREA OF SITE

1 (Acres)

07 COMMENTS

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☒ A. ADEQUATE, SECURE ☐ B. MODERATE ☐ C. INADEQUATE, POOR ☐ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

N/A

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☐ YES ☒ NO

02 COMMENTS

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

MPCA Files

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MN	D981785322

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check one or more)	SURFACE	WELL	02 STATUS: ENDANGERED	AFFECTED	MONITORED	03 DISTANCE TO SITE
COMMUNITY	A. ☐	B. ☒	A. ☐	B. ☒	C. ☐	A. 0 (mi)
NON-COMMUNITY	C. ☐	D. ☐	D. ☐	E. ☐	F. ☐	B. ____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☒ A. ONLY SOURCE FOR DRINKING ☐ B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available) ☐ C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available) ☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER 1126

03 DISTANCE TO NEAREST DRINKING WATER WELL 0 (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
18.0 (ft)	South east	18.0 (ft)	unknown (gpd)	☒ YES ☐ NO

09 DESCRIPTION OF WELLS (Including usage, depth, and location relative to population and buildings)

the two municipal wells. It is screen between Municipal well #1 is the most used well of 200 in sand and gravel outwash deposits. Municipal well #2 is screened in outwash sand deposits between 38-48 feet. This well is used as a back up system. Numerous shallow sand point wells are found throughout Belgrade but are used only for lawns.

10 RECHARGE AREA	COMMENTS	11 DISCHARGE AREA	COMMENTS
☐ YES ☒ NO		☐ YES ☒ NO	

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☐ A. RESERVOIR, RECREATION DRINKING WATER SOURCE ☐ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES ☐ C. COMMERCIAL, INDUSTRIAL ☒ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME	AFFECTED	DISTANCE TO SITE
N/A	☐	____ (mi)
	☐	____ (mi)
	☐	____ (mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A. 816 NO. OF PERSONS	B. 979 NO. OF PERSONS	C. 1126 NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION 0 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE 294

04 DISTANCE TO NEAREST OFF-SITE BUILDING <.1 (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

The site is in the business district area of Belgrade. Belgrade is a rural community with a population of 815.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MN	D981785322

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A. 10^{-6} – 10^{-8} cm/sec ☐ B. 10^{-4} – 10^{-6} cm/sec ☒ C. 10^{-4} – 10^{-3} cm/sec ☐ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A. IMPERMEABLE (Less than 10^{-6} cm/sec) ☒ B. RELATIVELY IMPERMEABLE (10^{-4} – 10^{-6} cm/sec) ☐ C. RELATIVELY PERMEABLE (10^{-2} – 10^{-4} cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH
200 (ft)	unknown (composite) (ft)	5.5 - 7.0

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
27.6 (in)	2.2 (in)	— %	flat	0 - 1.9 %

09 FLOOD POTENTIAL: SITE IS IN 100 YEAR FLOODPLAIN

10 ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE: A. none (mi)

OTHER: B. none (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

— (mi)

ENDANGERED SPECIES: N/A

13 LAND USE IN VICINITY

DISTANCE TO

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AGRICULTURAL LANDS: AG LAND
A. — (mi)	B. — (mi)	C. ½ (mi)	D. ½ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

Site is considerably flat, and is located in an outwash plain region, the site is surrounded by gentle rolling hills (moraine) and is mainly utilized for agriculture.

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Adequate TOPO map, USGS 1974, MPCA Files.

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MN	D981785322

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER		RAS Organics - Centrel Labs, Brighton, Colorado RAS Inorganics - CSMRI Analytical, Inc. Golden, Colorado	Received
SURFACE WATER		SAS Organics - Versar, Inc., Springfield, Virginia SAS Inorganics - Chemtech Consulting Group, New York, New York	
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL		Organics - Wilson Laboratories, Salina, Kansas Inorganics - Versar, Inc. Springfield, Virginia	Received
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
Groundwater Temp.	analyzed to determine when water in monitoring
Groundwater Conductivity	wells has stabilized
HNu, OVA	Used to monitor air around soil borings / monitoring wells

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☒ GROUND ☐ AERIAL

02 IN CUSTODY OF MN Pollution Control Agency - Site Assessment Unit (Name of organization or individual)

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS MN Pollution Control Agency

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

MPCA Files

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MN	D981785322

II. CURRENT OWNER(S)						PARENT COMPANY (If applicable)				
01 NAME			02 D+B NUMBER			08 NAME			09 D+B NUMBER	
City of Belgrade										
03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE			10 STREET ADDRESS (P.O. Box, RFD #, etc.)			11 SIC CODE	
330 Wells Street East										
05 CITY		06 STATE	07 ZIP CODE			12 CITY		13 STATE	14 ZIP CODE	
Belgrade		MN	56312							
01 NAME			02 D+B NUMBER			08 NAME			09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE			10 STREET ADDRESS (P.O. Box, RFD #, etc.)			11 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE			12 CITY		13 STATE	14 ZIP CODE	
01 NAME			02 D+B NUMBER			08 NAME			09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE			10 STREET ADDRESS (P.O. Box, RFD #, etc.)			11 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE			12 CITY		13 STATE	14 ZIP CODE	
01 NAME			02 D+B NUMBER			08 NAME			09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE			10 STREET ADDRESS (P.O. Box, RFD #, etc.)			11 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE			12 CITY		13 STATE	14 ZIP CODE	

III. PREVIOUS OWNER(S) (List most recent first)				IV. REALTY OWNER(S) (If applicable; list most recent first)			
01 NAME			02 D+B NUMBER	01 NAME			02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE
05 CITY		06 STATE	07 ZIP CODE	05 CITY		06 STATE	07 ZIP CODE
01 NAME			02 D+B NUMBER	01 NAME			02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE
05 CITY		06 STATE	07 ZIP CODE	05 CITY		06 STATE	07 ZIP CODE
01 NAME			02 D+B NUMBER	01 NAME			02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE
05 CITY		06 STATE	07 ZIP CODE	05 CITY		06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

MPCA Files

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MN	D981785322

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME	02 D+B NUMBER
City of Belgrade	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
330 Wells Street East	

05 CITY	06 STATE	07 ZIP CODE
Belgrade	MN	55312

08 YEARS OF OPERATION	09 NAME OF OWNER
1950-Present	City of Belgrade

OPERATOR'S PARENT COMPANY (If applicable)

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE	08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

10 NAME	11 D+B NUMBER	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE	14 CITY	15 STATE	16 ZIP CODE

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE	08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

10 NAME	11 D+B NUMBER	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE	14 CITY	15 STATE	16 ZIP CODE

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE	08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

10 NAME	11 D+B NUMBER	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE	14 CITY	15 STATE	16 ZIP CODE

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

MPCA Files

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MN	D981785322

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	05 CITY / 06 STATE	07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	05 CITY / 06 STATE	07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	05 CITY / 06 STATE	07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	05 CITY / 06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MN	DA981785322

II. PAST RESPONSE ACTIVITIES

01 ☒ A. WATER SUPPLY CLOSED — 02 DATE 12/22/86 — 03 AGENCY MN Department of Health
04 DESCRIPTION
Use of municipal well No. 2 discontinued

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION
N/A

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION
N/A

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION
N/A

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION
N/A

01 ☐ F. WASTE REPACKAGED — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION
N/A

01 ☐ G. WASTE DISPOSED ELSEWHERE — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION
N/A

01 ☐ H. ON SITE BURIAL — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION
N/A

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION
N/A

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION
N/A

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION
N/A

01 ☐ L. ENCAPSULATION — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION
N/A

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION
N/A

01 ☐ N. CUTOFF WALLS — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION
N/A

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION
N/A

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION
N/A

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION
N/A

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MN	D981785322

II. PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ S. CAPPING/COVERING — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ V. BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ X. FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ 1. ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ 2. POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ 3. OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

MPCA Files

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MN	D991785322

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☐ YES ☒ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

MPCA Files

D

STATE OF MINNESOTA — DEPARTMENT OF HEALTH

WATER WELL RECORD

Minnesota Statutes 156A.01-.08

MINNESOTA UNIQUE WELL NO. *for Water Sample*: 178707

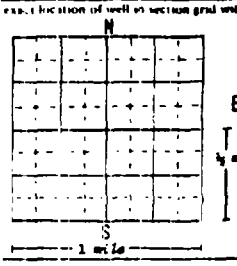
1. LOCATION OF WELL

County Name: STEARNS

Township Name: New Munich | Township Number: 122 N or S | Range Number: 34 E or W | Section No.: 15 | Fraction: ¼ ¼ ¼

Distance and Direction from Road Intersections or Street Address and City of Well Location:

Show exact location of well on section grid with "X." Sketch map of well location.



Addition Name:

Block Number:

Lot Number:

2. FORMATION LOG

FORMATION LOG	COLOR	HARDNESS OF FORMATION	FROM	TO
Top Soil	Black	Med	0	2
Sand	Brown	Loose	2	10
Clay	Grey	Hard	10	26
Sand	Grey	Loose	26	36
Clay	Grey	Hard	36	40
Harrol	Bluish Green	Hard	40	42

Use a second sheet, if needed.

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

3. PROPERTY OWNER'S NAME

Address: Not Responsive
RR
Belgrade, MN

4. WELL DEPTH (completed): 36' 12" ft. | Date of Completion: 11-24-80

5. 1☐ Cable tool 2☐ Hollow rod 3☒ Rotary 4☐ Reverse 5☐ Air 6☐ Jetted 7☐ Driven 8☐ Bored 9☐ Power Auger 10☐ Dug 11☐

6. USE

1☐ Domestic 2☒ Irrigation 3☐ Test Well 4☐ Public Supply 5☐ Municipal 6☐ Air Conditioning 7☐ Industry 8☐ Commercial 9☐

7. CASING — HEIGHT: Above/Below

1☒ Black 2☐ Galv. 3☐ Plastic 4☐ Threaded 5☐ Welded 6☐

Surface ____ ft. Drive Shoe? Yes ____ No ____

12 in. to 24 ft. Weight ____ lbs./ft.

____ in. to ____ ft. Weight ____ lbs./ft.

____ in. to ____ ft. Weight ____ lbs./ft.

HOLE DIAM: ____ in. to ____ ft.; ____ in. to ____ ft.; ____ in. to ____ ft.

8. SCREEN

Make: Johnson | Or open hole from ____ ft. to ____ ft.

Type: 304 Stainless Steel | Dia.: 12

Slot/Gauge: 80 | Length: 12'

Set between: 24 ft. and 36 ft.

____ ft. and ____ ft.

____ ft. and ____ ft.

FITTINGS:

9. STATIC WATER LEVEL: 6 ft. ☒ below ☐ above land surface | Date Measured: 11-24-80

10. PUMPING LEVEL (below land surface): 19 ft. after 4 hrs. pumping 350 g.p.m.

____ ft. after ____ hrs. pumping ____ g.p.m.

11. WELL HEAD COMPLETION

1☐ Pitless adapter 2☐ Basement offset ☒ At least 12" above grade

12. Well grouted? ☒ Yes ☐ No | Cu. Yds. ____

1☐ Neat Cement 2☐ Bentonite 3☐ Reg. Backfill

Depth: from 0 ft. to 24 ft.

from ____ ft. to ____ ft.

13. Nearest sources of possible contamination

____ feet NONE direction ____ type

Well disinfected upon completion? Yes ☒ No ☐

14. PUMP

Date Installed: 2-19-81

☐ Not Installed

Manufacturer's Name: Valley

Model Number: 6 SE4-5 | HP: 5 | Volts: 460

Length of drop pipe: 21 ft. | capacity: 350 g.p.m.

Material of drop pipe: Black Steel

Type: 1☒ Submersible 2☐ Jet 3☐ L.S. Turbine 4☐ Centrifugal 5☐ Reciprocating 6☐

16. WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Traut Well Drilling, Inc. — License Business Name | 73157 — License No.

Address: Rt. 4 St. Cloud, MN 56301

Signed: [signature] — Authorized Representative | Date: 3/

Table 1.--*Logs of test holes penetrating buried aquifers--Continued*

Project test hole 7--Continued

Depth (feet)	Lithologic description and geologic age	Thickness (feet)	Estimated hydraulic conductivity (ft day^{-1})
	PLEISTOCENE--Continued		
33-101	Till, gray, sandy, silty, containing white limestone and red pebbles	68	
101-103	Sand	2	70
103-112	Till, greenish gray at top, light gray below	9	
112-113	Sand, gray, medium to coarse	1	100
113-145	Till, gray, sandy, silty; with thin sand layers between 118-127 feet	32	
145-157	Till, gray	12	
157-206	Sand and gravel, gray; sand fine to coarse, coarser with depth; gravel fine to medium, cobbles or boulder at bottom foot	49	190
206-226	Till, gray, sandy, silty; with sandy layers	20	
226-228	Sand	2	70
228-255	Till, sandy, with layers of sand	27	
255-256	Till, gray	1	
256-259	Boulders and sand	3	200
259-260	Sand	1	70
260-272	Sand and gravel, multi-colored	12	230
	CRETACEOUS		
272-277	Clay, green	5	
277-282	Clay, gray	5	
282-292	Clay, reddish brown	10	
292-295	Clay, greenish-blue	3	

Project test hole 8
Location number 123.34.16dbb
Altitude 1251 feet

	PLEISTOCENE		
0- 1	Soil, brown	1	
1- 23	Sand and gravel, brown at top, gray with depth; sand medium to coarse; gravel fine to coarse	22	
23- 66	Till, gray, sandy, silty	43	
66- 87	Till, gray, with sandy layers	21	
87- 92	Clay, gray	5	
92- 93	Sand	1	70
93-103	Clay, light greenish-gray above, light gray below	10	
103-132	Till, dark reddish-gray	29	
132-144	Till, gray	12	
144-145	Sand	1	70

Table 1.--*Logs of test holes penetrating buried aquifers--Continued*

Project test hole 8--Continued

Depth (feet)	Lithologic description and geologic age	Thickness (feet)	Estimated hydraulic conductivity (ft day^{-1})
	PLEISTOCENE--Continued		
145-148	Clay	3	
148-149	Sand	1	70
149-150	Clay	1	
150-151	Sand	1	70
151-152	Clay	1	
152-153	Sand, coarse	1	120
153-156	Clay	3	
156-157	Sand	1	70
157-161	Till, gray, sandy	4	
161-170	Sand, gray, fine to medium	9	120
170-182	Till, dark greenish-gray above, gray below, sandy, silty	12	
182-183	Clay, dark brown	1	
183-197	Till, gray above, dark green to light green in middle, light greenish gray below; pieces of wood at 183 feet	14	
197-203	Sand, multi-colored, fine to medium	6	50
	CRETACEOUS		
203-212	Clay, greenish-olive above, to greenish gray in middle and gray below	9	
212-222	Clay, gray	10	
222-231	Clay, reddish brown	9	
231-235	Sand, multi-colored, medium to coarse	4	100
	PRECAMBRIAN		
235-252	Highly weathered crystalline rock; clay, whitish-gray	17	

Project test hole 9
Location number 123.35.23bcc
Altitude 1283 feet

	PLEISTOCENE		
0- 1	Soil, brown	1	
1- 42	Sand and gravel, brown; sand medium to coarse, gravel fine to coarse	41	
42- 72	Till, gray, with sandy layers	30	
72- 76	Sand, gray, fine to coarse, mostly medium	4	80
76- 91	Till, gray	15	
91- 92	Sand, medium	1	70
92-107	Till, gray, with sandy layers at 105	15	
107-117	Till, whitish-gray, weathered	10	
117-127	Till, light gray	10	

Table 1.--*Logs of test holes penetrating buried aquifers--Continued*

Project test hole 9--Continued

Depth (feet)	Lithologic description and geologic age	Thickness (feet)	Estimated hydraulic conductivity (ft day^{-1})
	PLEISTOCENE--Continued		
127-130	Sand, fine to medium, mostly fine.....	3	40
130-165	Till, gray, sandy, with thin sand lens at 132 and 142.....	35	
165-220	Till, gray, sandy, silty.....	55	
220-247	Sand and gravel, gray; sand medium to coarse, gravel fine to medium.....	27	150
247-249	Boulder.....	2	
249-271	Till, gray, silty, clayey.....	22	
271-312	Till, dark gray, sandy, silty.....	41	
312-314	Sand, gray, fine to medium.....	2	50
314-348	Till, gray, very sandy; with sand lens at 322.	34	
	PRECAMBRIAN		
348-352	Weathered crystalline rock; clay, white, overlying granite.....	4	

Project test hole 10
Location number 123.34.7daa
Altitude 1267 feet

	PLEISTOCENE		
0- 1	Soil.....	1	
1- 24	Sand and gravel, brown; sand fine to coarse, gravel fine to medium.....	23	
24- 63	Till, brown at top, gray below, sandy, silty..	39	
63- 86	Till, gray.....	23	
86- 87	Sand.....	1	70
87-111	Till, whitish-gray above, light gray below, sandy, silty; with sandy layers near bottom.....	24	
111-113	Sand, gray.....	2	70
113-115	Till, light gray.....	2	
115-117	Sand, gray.....	2	70
117-122	Till, light gray, sandy, silty.....	5	
122-135	Till, gray, sandy, silty.....	13	
135-137	Sand, gray.....	2	70
137-144	Clay.....	7	
144-153	Sand and gravel.....	9	200
153-160	Sand and gravel with clay layers.....	7	100
160-168	Sand and gravel.....	8	200
168-184	Sand and gravel and clay layers interbedded; less sand and more clay with depth.....	16	100
184-225	Clay, gray, with some sand layers.....	41	

STATE OF MINNESOTA — DEPARTMENT OF HEALTH

WATER WELL RECORD

Minnesota Statutes 156A.01-.08

134266

LOCATION OF WELL — County Name: STEARNS

County Map Name: CROW RIVER | Township Number: 123 N | Range Number: 34 W | Section No.: 17 | Fraction: S/E

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well in section grid with X. Sketch map of well location.

Addition Name / Block Number / Lot Number

1. PROPERTY OWNER'S NAME: BORGERDING INVESTMENT CO.
Address: BELGRADE, MINN. 78-3285

4. WELL DEPTH (completed): 178 ft. | Date of Completion: 5-27-77

5. [1] Cable tool [4] Reverse [7] Driven [10] Dug [2] Hollow rod [5] Air [8] Bored [11] [3] Rotary [6] Jetted [9] Power Auger

6. USE: [1] Domestic [4] Public Supply [7] Industry [2] Irrigation [5] Municipal [8] Commercial [3] Test Well [6] Air Conditioning [9]

7. CASING: [1] Black [4] Threaded [2] Galv. [5] Welded [3] [6]
HEIGHT: Above/Below Surface: ONE ft.
Drive Shoe? Yes X No
12 in. to 162 ft. Weight 49.56 lbs./ft.
in. to ft. Weight lbs./ft.
in. to ft. Weight lbs./ft.
HOLE DIAM: 17½ in. to 178 ft.

8. SCREEN: Make DOERR
Type STEEL
Slot/Gauge 10"
Set between 162 ft. and 178 ft.
Diameter 12 in.
Length 16 ft.

9. STATIC WATER LEVEL: 12 ft. below land surface [1] below [2] above | Date Measured 5-31-77

10. PUMPING LEVEL (below land surface): 73 ft. after 13 hrs. pumping 1050 g.p.m.

11. WELL HEAD COMPLETION: [1] Pitless adapter [2] Basement offset [3] At least 12" above grade

12. Well grouted? Yes [1] No
Cu. Yds.
[1] Neat Cement [2] Bentonite [3]
Depth: from ft. to ft.
from ft. to ft.

13. Nearest sources of possible contamination
feet direction type
Well disinfected upon completion? Yes No

14. PUMP
Date Installed
Not Installed
Manufacturer's Name
Model Number HP Volts
Length of drop pipe ft. capacity g.p.m.
Material of drop pipe
Type: [1] Submersible [3] L. S. Turbine [5] Reciprocating [2] Jet [4] Centrifugal [6]

16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
BLUE WATER WELL DRILLING — License Business Name — License No. 73413
Address: BROOTEN, MINN.
Signed: K. L. [illegible] — Authorized Representative — Date 6-2-77
T. A. WALLACE — Name of Driller — Date 6-2-77

2. FORMATION LOG	COLOR	HARDNESS OF FORMATION	FROM	TO
TOP SOIL	BLACK	SOFT	0	3
SAND + GRAVEL	BROWN	SOFT	3	17
CLAY + LIMESTONE	GREY WHITE	HARD	17	62
SAND + GRAVEL	GREY	SOFT	62	74
CLAY	GREY	MED-HARD	74	117
SAND + GRAVEL		SOFT	117	121
CLAY	GREY	HARD	121	124
GRAVEL + CLAY	GREY	MED	124	148
CLAY	GREEN	HARD	148	162
SAND + GRAVEL	GREY	SOFT	162	178

Use a second sheet, if needed.

11. REMARKS, ELEVATION, SOURCE OF DATA, etc.

5/74 30M

STATE OF MINNESOTA DEPARTMENT OF HEALTH

WATER WELL RECORD

Minnesota Statutes 156A.01-.08

MINNESOTA UNIQUE WELL NO. for Water Sample: 199594

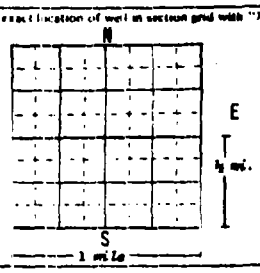
1. LOCATION OF WELL

County Name: Stearns

Township Name: Crow River | Township Number: 123 N/S | Range Number: 34 E/W | Section No.: 17 | Fraction: ¼ ¼ ¼

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well in section grid with "X." Sketch map of well location.



Addition Name

Block Number

Lot Number

2. FORMATION LOG

FORMATION LOG	COLOR	HARDNESS OF FORMATION	FROM	TO
Dirt	Black	soft	0	1
sand	yellow	med	1	28
clay	yellow	hard	28	36
clay	blue	hard	36	67
sand	grey	med	67	78

Use a second sheet, if needed

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

RECEIVED
FEB 25 1985
Minn. Dept. of Health
GWQC

MINN. DEPT. OF

3. PROPERTY OWNER'S NAME Not Responsive

Address: Belgrade

4. WELL DEPTH (completed) 78 ft. | Date of Completion 5-4-84

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☐ Air 8☐ Bored 11☐
3☑ Rotary 6☐ Jetted 9☐ Power Auger

6. USE 1☑ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING 1☐ Black 4☐ Threaded
2☐ Galv. 5☐ Welded
3☑ Plastic 6☐

HEIGHT: Above/Below Surface 1.5 ft.

Drive Shoe? Yes ___ No ✓

4" in. to 74 ft. Weight ___ lbs./ft.

HOLE DIAM 6¼ in. to 78 ft.

___ in. to ___ ft. Weight ___ lbs./ft.

___ in. to ___ ft. Weight ___ lbs./ft.

8. SCREEN Or open hole from ___ ft. to ___ ft.

Make Johnson

Type stainless Dia. 4"

Slot/Gauze slot Length 4'

Set between 74 ft. and 78 ft.

___ ft. and ___ ft.

FITTINGS: K-packer

9. STATIC WATER LEVEL 10 ft. ☑ below ☐ above land surface | Date Measured ___

10. PUMPING LEVEL (below land surface) 70 ft. after 1 hrs. pumping 25 g.p.m.

___ ft. after ___ hrs. pumping ___ g.p.m.

11. WELL HEAD COMPLETION ☑ Pitless adapter manufacturer: Merrill model ___
2☐ Basement offset 3☑ At least 18" above grade

12. WELL GROUTED? ☑ Yes ☐ No
1☐ Neat Cement 2☑ Bentonite 3☐

Grout material clay from 0 to 70 ft. Cu. Yds. ___

13. NEAREST SOURCES OF POSSIBLE CONTAMINATION 50 feet S.E. direction septic type

Well disinfected upon completion? Yes ☑ No ☐

14. PUMP Date installed 5-5-84 ☐ Not installed

Manufacturer's Name Aermotor

Model Number SD-12-50 HP 1/2 Volts 230

Length of drop pipe 40 ft. capacity 5 g.p.m.

Material of drop pipe rigid 80

Type: 1☑ Submersible 3☐ L. S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐

16. WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Steel Well Drillers 61335
Licensee Business Name — License No.

Address Glenwood

Signed Christie [illegible] Date 5-5-84
Authorized Representative

Chester Steel Date 5-5-84
Name of Driller

STATE OF MINNESOTA — DEPARTMENT OF HEALTH

WATER WELL RECORD

Minnesota Statutes 156A.01-.08

MINNESOTA UNIQUE WELL NO. for Water Sample: 181184

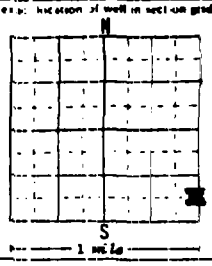
1. LOCATION OF WELL

County Name: Stearns

Township Name	Township Number	Range Number	Section No.	Fraction
Cove River	123 N or S	34 E or W	18	NE ¼ SE ¼ SE ¼

Distance and Direction from Road Intersections or Street Address and City of Well Location:

Show exact location of well in section grid with "X." Sketch map of well location.



Addition Name:

Block Number:

Lot Number:

2. FORMATION LOG

FORMATION LOG	COLOR	HARDNESS OF FORMATION	FROM	TO
Topsoil	Black	soft	0	1
Sand	Brown	soft	1	20
Clay	Gray	soft	20	164
Sand	Gray	hard	164	172

Use a second sheet if needed.

3. PROPERTY OWNER'S NAME

Not Responsive

Address: Belgrade, MN 56312

4. WELL DEPTH (completed) 172 ft. Date of Completion 7/14/83

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug 2☐ Hollow rod 5☐ Air 8☐ Bored 11☐ ____ 3☒ Rotary 6☐ Jetted 9☐ Power Auger

6. USE 1☒ Domestic 4☐ Public Supply 7☐ Industry 2☐ Irrigation 5☐ Municipal 8☐ Commercial 3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING 1☐ Black 4☐ Threaded 2☐ Galv. 5☐ Welded 3☐ Plastic 6☒ PVC

HEIGHT: Above/Below Surface 12 in. Drive Shoe? Yes ___ No X

5 in. to 166 ft. Weight ___ lbs./ft.

___ in. to ___ ft. Weight ___ lbs./ft.

___ in. to ___ ft. Weight ___ lbs./ft.

HOLE DIAM: 6 in. to ___ ft.; ___ in. to ___ ft.; ___ in. to ___ ft.

8. SCREEN Make Johnson

Type Stainless steel Dia. 5

Slot/Gauze 15 slot Length 60

Set between 166 ft. and 172 ft.; ___ ft. and ___ ft.; ___ ft. and ___ ft.

Or open hole from ___ ft. to ___ ft.

FITTINGS:

9. STATIC WATER LEVEL 17 ft. below land surface ☒ above ☐ Date Measured 7/14/83

10. PUMPING LEVEL (below land surface) 160 ft. after 2 hrs. pumping 150 g.p.m.; ___ ft. after ___ hrs. pumping ___ g.p.m.

11. WELL HEAD COMPLETION 1☐ Pitless adapter 2☐ Basement offset 3☒ At least 12" above grade

12. Well grouted? ☒ Yes ☐ No Cu. Yds. ___

1☒ Neat Cement 2☐ Bentonite 3☐ ___

Depth: from 9 ft. to 39 ft.; from ___ ft. to ___ ft.

13. Nearest sources of possible contamination 100 feet East direction Septic type

Well disinfected upon completion? Yes ☒ No ☐

14. PUMP Date installed ___ ☐ Not installed

Manufacturer's Name ___

Model Number ___ HP ___ Volts ___

Length of drop pipe ___ ft. capacity ___ g.p.m.

Material of drop pipe ___

Type: 1☐ Submersible 3☐ L.S. Turbine 5☐ Reciprocating 2☐ Jet 4☐ Centrifugal 6☐ ___

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

RECEIVED JUL 22 1983 Minn. Dept. of Health GWQC

16. WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Mark J. Trunk Wells, Inc. — Licensee Business Name — License No. 71536

Address: Rt 4 St. Cloud, MN 56301

Signed ___ Authorized Representative Date 7/14/83

Steve Trunk & Ron Miller — Name of Driller Date 7/14/83

MINN. DEPT. OF

101104

5/74 30M

W 97-41
(Rev. 1-66)

The driller must complete the well log statement (Genl. Prov.
The permit is not valid until this log has been submitted to the Director, Division of Waters Soils

MINNESOTA CONSERVATION DEPARTMENT
DIVISION OF WATERS

WELL LOG STATEMENT

Permit Approp. No. 74-3163

Well No. _____

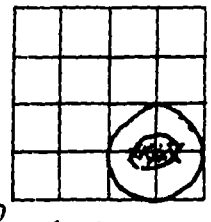
Mail Report Promptly To Director, Division Of Waters, Centennial Office Bldg., St. Paul 1, Minn.

Location of Well (address) _____

Stearns — County
Belgrade — City or Town

1/2 mile N.E. of village
Describe Further by Lot, Block, Nearest Highway.

Locate Well on Plat of Section



Se [redacted]
Twp. [redacted]
Range [redacted]

Drilled for: [redacted]

Address Belgrade, Minn.

Driller Sanford Irrigation Co

Address Elbow Lake Minn.
Richard W. Sanford

Date of Completion August 1973

Type of well Bailed (Dug, Driven, Bored, Drilled) Depth [redacted] 28'

Casing diameter 16 inch, from +1 to 15

_____ inch, from _____ to _____

_____ inch, from _____ to _____

Screen: Length +2' Diameter 16" Slot size 3/16"

Pump: Type Bek, Cent. Horsepower 60

REPORT OF FINAL PUMPING TEST

Duration of Test 4 Hrs. _____ Min. Date 8/31/73

Rate of Pumping 600 (Together) GPM

Static Water Level 11 Ft. Above / Below land surface

Water Level While Pumping 21 Ft.

Use: Domestic ☐ Industrial ☐ Irrigation ☒

Public supply ☐ Commercial ☐ Stock ☐

WELL LOG

Geologic Formations Kind, Color, Hard or Soft	Depth in Feet From	Depth in Feet To	Geologic Formations Kind, Color, Hard or Soft	Depth in Feet From	Depth in Feet To
5 wells, identical logs, 225 apart, on an East-West line					
Topsoil, sandy-loam?	0	1			
Gravel, very coarse, yellow	1	11			
Static Water Level	11				
Sand + gravel, med. coarse, yellow	11	22			
" " , coarse, gray	22	28			

Muni # 1

Route to:
(1) _____
(2) _____
(3) _____
(4) _____

OFFICE MEMORANDUM

File: _____

Location: Belgrade, Stearns Co
(City, Village, Township, Section, Range, County, etc.)

Subject: Municipal Well # 1

By Whom: Byron Adams Date: 1-13-87

Investigation X Conference Office Field ___ Hearing ___ Meeting ___ Phone X

Items to be Covered: (1) Those present and/or those interviewed
(2) Situation
(3) Further action, follow-up, recommendations

Spoke with Ernie (854-5333) at McCarthy Well Co., Bloomington about Muni Well # 1, they drilled in Belgrade.

He relayed the well log geology to me over the phone.

Thickness (ft.)	Material		Thickness	Material	
	0-2'	Top Soil	(19') 120'-139'	Sandy Shale	
(23')	2'-25'	Yellow Sand	(32') 139'-171'	Firm Sandy Shale	
(10')	25'-35'	Grey Sand	(5') 171'-176'	Shale + Gravel	
(8')	35'-43'	Firm Muddy Sand	(2') 176'-178'	Rock - Lime rock	
(17')	43'-60'	Hard Sandy Shale	(13') 178'-191'	Soft Sandy Shale + Gravel	
(2')	60-62'	Hard Pan	(21') 191'-209'	Hard Shale + Gravel	
(1')	62'-63'	Soft Sand			
(25')	63'-88'	Soft Sandy Shale	200'-209'	Backfilled Grout	
(1')	88'-89'	Hard Pan			
(1')	89'-90'	Shale	Screened	160'-200'	
(11')	90'-101'	Soft Sandy Shale + Gravel			
(3')	101'-104'	Hard Sandy Shale			
(16')	104'-120'	Soft Sandy Shale			

Q-00173-01 (8/79)

MINNESOTA CONSERVATION DEPARTMENT
DIVISION OF WATERS

215129 WELL LOG STATEMENT

File No. 224
Well No. 1957

MAIL REPORT PROMPTLY TO DIRECTOR, DIVISION OF WATERS, STATE OFFICE BLDG., ST. PAUL 1, MINN.

Location of Well

Stearns — County
Belgrade — City or Town

Describe Further by Lot, Block, Nearest Highway, Street and Number
S.W. part of town S.W. of school

Locate Well on Plat of Section

Sec. [redacted]
Twp. [redacted]
Range [redacted]

Owner [redacted]
Address

Driller Burgess-Carroll Co
Address 1310 Waypoto Blvd
Mpls 26 Minn No 2

Date of Completion Oct. 11, 1957

Site Upland
Upland, Valley, Hillside, Etc.

Type of Well Drilled
Dug, Driven, Bored, Drilled

Drill Rig Used Solid Tool
Solid Tool, Jet, Rotary

Diameter: Top 16" Bottom 12"

Depth of Well 48'-6"

Ground Elevation Above same as
Sea Level Datum or Give Distance Above
Hwy #55 town town.
or Below R. R., Highway, Lake, Etc.

Height of Casing Above Ground 1'-6"

Quality of Water
(Hard or Soft, Fresh or Salty, Etc.)

Temperature of Water

Was Laboratory Analysis Made? No

For What Purpose Will Water Be Used? Village

Is Well Pumped? Yes Pump Capacity 300 GPM

Was Well Sealed on Completion?

Does Well Overflow Without Pumping?
Yes or No

Natural Flow GPM

What Pressure, or Head, at Ground Level?

Principal Aquifer Penetrated

REPORT OF FINAL PUMPING TEST

Date of Test Oct 11, 1957

Duration of Test Hrs. Min. 1730004

Rate of Pumping 280 GPM

Static Water Level 14 Ft.

Water Level While Pumping 28' Ft.

Drawdown 14' Ft.

Time Required for Recovery
Expected Average Yield Gal. per day
If Other Tests were Made, Give Details on Another Sheet.

Were Measurements Made of Effect on Other Nearby Wells During Test? Give Details.

THIS BEST WELL TO SAMPLE!

RECEIVED AUG 15 1958 DIVISION OF WATERS

LOCATED BY
1 - ☐ Address Verification
2 - ☐ Name on Mailbox
3 - ☐ Lot-Block
4 - ☐ Plat Book
5 - ☐ Info. From Owner
6 - ☐ Info. From Neighbor
7 - ☐ Other
8 - ☒ Can't Locate State Why

THE DATA CONTAINED HEREIN IS CONFIDENTIAL AND IS TO BE USED FOR SCIENTIFIC STUDY ONLY BY DIVISION OF WATERS IN ACCORDANCE WITH MSA 105.51.

Steering to well head

ACKNOWLEDGED 8/15/58

(Fill Out Both Sides of Form)

WELL LOG

Geologic Formations Kind, Color, Hard or Soft	Thickness of Formation	Depth in Feet From	Depth in Feet To	Casing Diam.	Water Conditions Found
Black dirt	3'	0	3'	16"	
Sand & gravel	21'	3'	24'		
Grey sand	4'	24'	28'		
Coarse grey sand	2'	28'	30'		
Grey sand & gravel	5'	30'	35'		16" Johnson Everlastic screen
Grey sand	6'	35'	41'		gravel packed.
Grey sand - fine	1'	41'	42'	12"	
Sandy clay - blue	6'	42'	48'		
Muddy sand & gravel	0.6"	48'	48'6"		

Belgrade

Stearns

1730004

No 1 1963 200

No 2 1950 40 215129

Crew have this

Type, & Location of Any Screens, Grouting, or Other Development

County of _____) ss.

_____ being first duly sworn, deposes and says, that the above well was constructed by him or under his supervision, and that he is personally familiar with the data presented in this statement, and that he hereby verifies that it is true and correct.

Subscribed and Sworn To Before Me

This _____ Day of _____ 19___

(Firm Name) Ferguson Caswell Inc

By R. R. Hart

Title Sales Eng.

STATE OF MINNESOTA — DEPARTMENT OF HEALTH

WATER WELL RECORD

Minnesota Statutes 156A.01-.06

MINNESOTA UNIQUE WELL NO. 135401

For Well Owners

1. WELL OWNER'S NAME: ST. ANNS

Not Responsive

Not Responsive

Address: Cass Lake

3. PROPERTY OWNER'S NAME

Address: Belgrade, Mn 77-3819

This town and direction from Road Intersections or Street Address and City of Well Location: 1/4 mi. West of Hwy 71

Show exact location of well in section grid with "X". Sketch map of well location.

N, W, E, S, 1 mile, 1/4 mi.

Addition Name: Block Number: Lot Number:

4. WELL DEPTH (completed): 37 ft. Date of Completion: 4-12-77

5. 1☒ Cable tool 2☐ Hollow rod 3☐ Rotary 4☐ Reverse 5☐ Air 6☐ Jetted 7☐ Driven 8☐ Bored 9☐ Power Auger 10☐ Dug 11☐

6. USE: 1☐ Domestic 2☒ Irrigation 3☐ Test Well 4☐ Public Supply 5☐ Municipal 6☐ Air Conditioning 7☐ Industry 8☐ Commercial 9☐

2. FORMATION LOG

FORMATION	COLOR	HARDNESS OF FORMATION	FROM	TO
Soil	Black	—	0	4
Fine Sand	Brown		4	6
Coarse Sand & Gravel	Brown		6	14
Coarse Sand & Gravel	Grey		14	27
Fine Sand	"		27	31
Coarse Sand & Gravel	"		31	35

Use a second sheet, if needed.

7. CASING: 1☒ Steel 2☐ Galv. 3☐ 4☐ Threaded 5☒ Welded 6☐ HEIGHT: Above/Below Surface 2 ft. Drive Shoe: Yes ☐ No ☒

12 in. to 29 ft. Weight 35 lbs./ft. HOLE DIAM 12 in. to 35 ft.

8. SCREEN: Make Dacor Type Steel Slot/Gauge 1 1/2" Set between 29 ft. and 37 ft. Diameter 12" Length 8" FITTINGS:

9. STATIC WATER LEVEL: 6 ft. ☒ below ☐ above land surface. Date Measured 4-13-77

10. PUMPING LEVEL (below land surface): 19 ft. after 8 hrs. pumping 600 g.p.m.

11. WELL HEAD COMPLETION: 1☐ Pitless adapter 2☐ Basement offset 3☒ At least 12" above grade

12. Well grouted? ☐ Yes ☒ No Cu. Yds.

1☐ Neat Cement 2☐ Bentonite 3☐

Depth: from ft. to ft.

from ft. to ft.

13. Nearest source of possible contamination: 1000 feet SE direction Sewer type

Well disinfected upon completion? Yes ☒ No ☐

14. PUMP: Date Installed

☒ Not Installed

Manufacturer's Name

Model Number HP Volts

Length of drop pipe ft. capacity g.p.m.

Material of drop pipe

Type: 1☐ Submersible 2☐ Jet 3☐ L. S. Turbine 4☐ Centrifugal 5☐ Reciprocating 6☐

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

16. WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

AAA Well Drilling 23107

License Business Name License No.

Address Brooten, Mn. 56316

Signed: Authorized Representative Date 4-23-77

Eldon Backes

Name of Driller Date 4-13-77

RECEIVED YAM

MINN. DEPT. OF NATURAL RESOURCES COPY

5/74 3084

STATE OF MINNESOTA DEPARTMENT OF HEALTH

WATER WELL RECORD

Minnesota Statutes 156A.01 et

MINNESOTA UNIQUE WELL NO. for Water Sample: I199563

1. LOCATION OF WELL

County Name: Itasca

Township Name: Grand Lake

Not Responsive

Quarter: ¼ ¼ ¼

Distance and Directions from Road Intersections or Street Address and City of Well Location

Show exact location of well in section grid with "X"

Sketch map of well location

W E S ½ mi. 1 mile

Addition Name

Block Number

Lot Number

2. FORMATION LOG

FORMATION LOG	COLOR	HARDNESS OF FORMATION	FROM	TO
gravel	yellow	coarse	0	32
clay	blue	med	32	100
clay	blue	hard	100	137
gravel	black white	med	137	139

Use a second sheet, if needed

3. PROPERTY OWNER'S NAME

Not Responsive [redacted]

Belgrade

4. WELL DEPTH (completed): 139 ft. Date of Completion: 8-10-83

5. ☐1 Cable tool ☐4 Reverse ☐7 Driven ☐10 Dug ☐2 Hollow rod ☐5 Air ☐8 Bored ☐11 ☐3 Rotary ☐6 Jetted ☐9 Power Auger

6. USE ☐1 Domestic ☐4 Public Supply ☐7 Industry ☐2 Irrigation ☐5 Municipal ☐8 Commercial ☐3 Test Well ☐6 Air Conditioning ☐9

7. CASING ☐1 Black ☐4 Threaded ☐2 Galv. ☐5 Welded ☐3 Plastic ☐6 glued

HEIGHT Above/Below: Surface ____ ft. Drive Shoe? Yes ____ No ____

5" in. to 134 ft. Weight ____ lbs./ft.

____ in. to ____ ft. Weight ____ lbs./ft.

____ in. to ____ ft. Weight ____ lbs./ft.

HOLE DIAM: 8" in. to 139 ft.

8. SCREEN Make Johnson Type stainless Dia. 5" Slot/Gauze 18 Length 5 Set between 134 ft. and 139 ft. ____ ft. and ____ ft.

Or open hole from ____ ft. to ____ ft.

FITTINGS

9. STATIC WATER LEVEL 60 ft. below land surface ☐ above Date Measured 8-10-83

10. PUMPING LEVEL (below land surface) 130 ft. after 1 hrs. pumping 10 g.p.m.

____ ft. after ____ hrs. pumping ____ g.p.m.

11. WELL HEAD COMPLETION ☐1 Pitless adapter manufacturer ____ model ____ ☐2 Basement offset ☐3 At least 12" above grade

12. WELL GROUTED? ☐ Yes ☐ No

☐1 Neat Cement ☐2 Bentonite ☐3

Grout material cuttings from 0 to 133 ft. Cu. Yds. ____

13. NEAREST SOURCES OF POSSIBLE CONTAMINATION

none feet ____ direction ____ type

Well disinfected upon completion? Yes ☐ No ☐

14. PUMP

Date Installed ____ ☐ Not Installed

Manufacturer's Name ____

Model Number ____ HP ____ Volts ____

Length of drop pipe ____ ft. capacity ____ g.p.m.

Material of drop pipe ____

Type: ☐1 Submersible ☐3 L.S. Turbine ☐5 Reciprocating ☐2 Jet ☐4 Centrifugal ☐6

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

RECEIVED SEP 6 1983 Minn. Dept. of Health GWQC

16. WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Staff Well Drilling Inc 61335

Licensee Business Name — License No.

Address Glenwood MN.

Signed Lee A. Staff — Authorized Representative — Date 8/10/83

Sylvester Staff — Name of Driller — Date 8-10-83

6/74 30M 7/78 30M 7/78 30M 2/82 10M

MINN. GEOLOGICAL SURVEY COPY 199563

STATE OF MINNESOTA — DEPARTMENT OF HEALTH

WATER WELL RECORD

Minnesota Statutes 156A.01-.08

MINNESOTA UNIQUE WELL NO. for Water Supply: 135434

1. LOCATION OF WELL: County: STEARNS

Township Name: CROW LAKE [redacted]

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well in section grid with "X"

W E S

Addition Name [redacted]

Block Number [redacted]

Lot Number [redacted]

3. PROPERTY OWNER'S NAME [redacted]

Address: Belgrade, MN.

4. WELL DEPTH (completed): 33 1/2 ft. Date of Completion: 5-10-78

5. 1☒ Cable tool 2☐ Hollow rod 3☐ Rotary 4☐ Reverse 5☐ Air 6☐ Jetted 7☐ Driven 8☐ Bored 9☐ Power Auger 10☐ Dug 11☐

6. USE: 1☐ Domestic 2☒ Irrigation 3☐ Test Well 4☐ Public Supply 5☐ Municipal 6☐ Air Conditioning 7☐ Industry 8☐ Commercial 9☐

7. CASING: 1☒ Black 2☐ Galv. 3☐ 4☐ Threaded 5☒ Welded 6☐ Drive Shoe? Yes ___ No ✓

HEIGHT: Above/Below Surface 2 ft.

12 in. to 25 1/2 ft. Weight 25 lbs./ft.

HOLE DIAM: 16 in. to 33 1/2 ft.

8. SCREEN: Make DOERR

Type Steel Diam. 12"

Slot/Gauge 1/8"

Set between 25 1/2 ft. and 33 1/2 ft.

OR GRAVEL PACK: Size ___ to ___

FITTINGS:

9. STATIC WATER LEVEL: 6 ft. ☒ below land surface ☐ above. Date Measured 5-11-78

10. PUMPING LEVEL (below land surface): 24 ft. after 8 hrs. pumping 600 g.p.m.

11. WELL HEAD COMPLETION: 1☐ Pitless adapter 2☐ Basement offset 3☒ At least 12" above grade

12. Well grouted? ☐ Yes ☒ No Cu. Yds. ___

1☐ Neat Cement 2☐ Bentonite 3☐

Depth: from ___ ft. to ___ ft.

from ___ ft. to ___ ft.

13. Nearest sources of possible contamination: 1000 feet EAST direction SEWER type

Well disinfected upon completion? Yes☐ No☐

14. PUMP: Date installed ___ ☒ Not installed

Manufacturer's Name ___

Model Number ___ HP ___ Volts ___

Length of drop pipe ___ ft. capacity ___ g.p.m.

Material of drop pipe ___

Type: 1☐ Submersible 2☐ Jet 3☐ L. S. Turbine 4☐ Centrifugal 5☐ Reciprocating 6☐

2. FORMATION LOG	COLOR	HARDNESS OF FORMATION	FROM	TO
Top Soil	Black		0	2
Sand & Gravel	Brown	Soft	2	6
Fine Sand	"	"	6	15
Coarse Sand	Gray	"	15	25
Mixed Sand	"	"	25	30
Coarse Gravel	"	"	30	33
Clay	"	"	33	

Use a second sheet, if needed.

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

16. WATER-WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

AAA Well Drilling — License Business Name — 23107 License No.

Address: Barsten, MN

Signed: Lindsay Lindenwood — Authorized Representative — Date 6-22-78

Auheen Underwood — Name of Driller — 5-22-78

RECEIVED JUN 23 1978

STATE OF MINNESOTA — DEPARTMENT OF HEALTH

WATER WELL RECORD

Minnesota Statutes 156A.01-.06

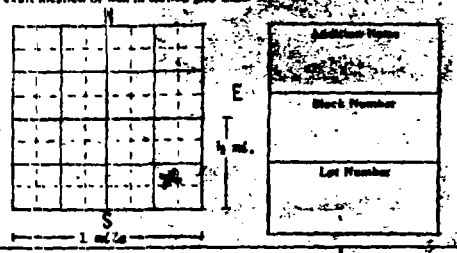
MINNESOTA UNIQUE WELL NO. for Water Boards: 134257

1. LOCATION OF WELL — County (Gmy): STEARNS

Township Name: CROW LAKE [redacted] ¼ ¼

Description and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well in section grid with "X". Sketch map of well location.



3. PROPERTY OWNER'S NAME: [redacted]

Address: BELGRADE, MINN.

4. WELL DEPTH (completed): 124 ft. Date of Completion: 4-22-77

5. ☐1 Cable tool ☐4 Reverse ☐7 Driven ☐10 Dug ☐2 Hollow rod ☐5 Air ☐8 Bored ☐11 ☐3 ☒ Rotary ☐6 Jetted ☐9 Power Auger

6. USE: ☐1 Domestic ☐4 Public Supply ☐7 Industry ☒2 Irrigation ☐5 Municipal ☐8 Commercial ☐3 Test Well ☐6 Air Conditioning ☐9

7. CASING: ☒1 Black ☐4 Threaded ☐2 Galv. ☒5 Welded ☐3 ☐6 — Drive Shoe? Yes ☒ No ☐

HEIGHT: Above/Below — Surface: DOWN ft.

				HOLE DIAM
12 in.	to 92 ft.	Weight 49.56 lbs./ft.		12 in. to 124 ft.
in.	to ft.	Weight lbs./ft.		in. to ft.
in.	to ft.	Weight lbs./ft.		in. to ft.

8. SCREEN: Make: DOERR — Type: STEEL — Diam: 12" — Slot/Gauze: 1/8" — Length: 32' — Set between: 92 ft. and 124 ft.

Or Open Hole: From ft. to ft.

9. STATIC WATER LEVEL: 35 ft. ☒ below land surface ☐ above — Date Measured: 4-25-77

10. PUMPING LEVEL (below land surface): 100 ft. after 72 hrs. pumping 600 g.p.m.

11. WELL HEAD COMPLETION: ☐1 Pitless adapter ☐2 Basement offset ☒3 At least 12" above grade

12. Well grouted? ☒ Yes ☐ No — Cu. Yds.

☐1 Neat Cement ☒2 Bentonite ☐3

Depth: from ft. to ft.; from ft. to ft.

13. Nearest sources of possible contamination: feet, direction, type

Well disinfected upon completion? Yes ☐ No ☐

14. PUMP: Date Installed ☒ Not Installed

Manufacturer's Name

Model Number — HP — Volts

Length of drop pipe — ft. capacity — g.p.m.

Material of drop pipe

Type: ☐1 Submersible ☐3 L. S. Turbine ☐5 Reciprocating ☐2 Jet ☐4 Centrifugal ☐6

FORMATION LOG	COLOR	HARDNESS OF FORMATION	FROM	TO
TOP SOIL	BLACK	SOFT	0	2
CLAY	YELLOW	HARD	2	6
CLAY	GREY	HARD	6	83
CLAY MIXED w/GRAVEL	GREY	SOFT	83	111
GRAVEL w/				
CLAY STRINGERS	BROWN	SOFT	111	125

Use a second sheet, if needed.

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

16. WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

BLUE WATER WELL DRILLING — License Business Name — License No. 23413

Address: BROOTEN, MINN. 56316

Signed: K. L. Bailey — Authorized Representative — Date: 5-5-77

T. A. WALLACE — Name of Driller — Date

Not Responsive

Not Responsive

DP 1983

MINNESOTA CONSERVATION DEPARTMENT
DIVISION OF WATERS

WELL LOG STATEMENT

Approp. No. _____

Well No. _____

Mail Report Promptly To Director, Division Of Waters, Centennial Office Bldg., St. Paul 1, Minn.

Location of Well (address) _____

Stevens County — Belgrade City or Town

N 1/2 of 1/4 SE 1/4
Describe Further by Lot, Block, Nearest Highway.

Locate Well on Plat of Section

74-5653

Sec. [redacted]
Twp. [redacted]
Range [redacted]

Not Responsive

Drilled for: Not Responsive

Address Belgrade, Mn.

Driller Bonanza Valley Well Drilling Inc.

Address PO Box 245
Brooten, Mn. 56316

Date of Completion 5-23-78

Type of well Dug (Dug, Driven, Bored, Drilled) Depth 37 ft.

Casing diameter 16 inch, from 0 to 25

_____ inch, from _____ to _____

_____ inch, from _____ to _____

Screen: Length 10' Diameter 16" Slot size 1/8

Pump Type Turbine Horsepower 41

REPORT OF FINAL PUMPING TEST

Duration of Test 2 Hrs. _____ Min. Date 6-1[illegible]-78

Rate of Pumping 550 GPM

Static Water Level 4 Ft. Above / Below Land surface

Water Level While Pumping 14 Ft.

Use: Domestic ☐ Industrial ☐ Irrigation ☒

Public supply ☐ Commercial ☐ Stock ☐

WELL LOG

Geologic Formations Kind, Color, Hard or Soft	Depth in Feet From	Depth in Feet To	Geologic Formations Kind, Color, Hard or Soft	Depth in Feet From	Depth in Feet To
Top Soil	0	2			
Coarse Dry Brown Sand/Grav.	2	4			
Coarse Brown Sand & Gravel	4	15			
Coarse Grey Sand	15	20			
Coarse Grey Gravel	20	25			
Fine Grey Sand	25	30			
Coarse Grey Sand & Gravel	30	37			
Blue Clay	37				

W 97-41
(Rev. 1-66)

MINNESOTA CONSERVATION DEPARTMENT
DIVISION OF WATERS

WELL LOG STATEMENT

Approp. No. 74-3053

Well No. _____

Mail Report Promptly To Director, Division Of Waters, Centennial Office Bldg., St. Paul 1, Minn.

Location of Well (address) _____

Stearns (County) Belgrade (City or Town)

NE 1/4 of NW 1/4
Describe Further by Lot, Block, Nearest Highway.

Locate Well on Plat of Section

Sec. [redacted]
Twp. [redacted]
Range [redacted]

Drilled for: [redacted]

Address Belgrade, Minn.

Driller Underwood Well Drilling

Address P. O. Box 245
Brooten, Minn. 56316

Date of Completion 7-27-71

Type of well Dug (Dug, Driven, Bored, Drilled) Depth 36 1/2 ft.

Casing diameter 16 inch, from 0 to 28 1/2

_____ inch, from _____ to _____

_____ inch, from _____ to _____

Screen: Length 8' Diameter 16" Slot size 1/8

Pump: Type Cent. Horsepower 60

Tied in with another well.

REPORT OF FINAL PUMPING TEST

Duration of Test 4 Hrs. ____ Min. Date 7/28

Rate of Pumping 400 GPM

Static Water Level 10 Ft. Above / Below land surface

Water Level While Pumping 14 1/2 Ft.

Use: Domestic ☐ Industrial ☐ Irrigation ☒

Public supply ☐ Commercial ☐ Stock ☐

WELL LOG

Geologic Formations Kind, Color, Hard or Soft	Depth in Feet From	Depth in Feet To	Geologic Formations Kind, Color, Hard or Soft	Depth in Feet From	Depth in Feet To
Top Soil	0	2			
Brown Dry Sand	2	10			
Coarse Brown Sand & Gravel	10	19			
Coarse Grey Gravel w/Sand	19	30			
Fine Grey Sand	30	35			
Coarse Gravel	35	36 1/2			
Blue Clay	36 1/2				

STATE OF MINNESOTA
DEPARTMENT OF HEALTH

WATER WELL RECORD

Minnesota Statutes 156A.01-.08

MINNESOTA UNIQUE WELL NO. for Water Sample: 116400

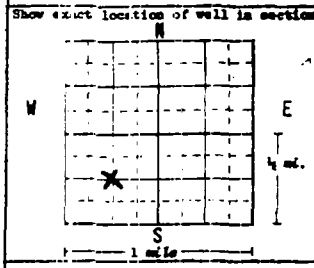
1. LOCATION OF WELL

County Name: STEARNS

Fraction: ¼ ¼ S/W [redacted]

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well in section grid with "X." Sketch map of well location.



2. FORMATION LOG

FORMATION LOG	COLOR	HARDNESS OF FORMATION	FROM	TO
TOP SOIL			0	1
GRAVEL			1	10
COARSE SAND & GRAVEL			10	25
FINE SAND			25	30
FINE SAND W/GRAVEL			30	39½

Use a second sheet, if needed.

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

3. PROPERTY OWNER'S NAME [redacted] 76-3230

Address: PENNOCK, MINN.

4. WELL DEPTH (completed) 39½ ft. Date of Completion: 5-16-76

5. 1 [x] Cable tool 2 [ ] Hollow rod 3 [ ] Rotary 4 [ ] Reverse 5 [ ] Air 6 [ ] Jetted 7 [ ] Driven 8 [ ] Bored 9 [ ] Power Auger 10 [ ] Dug 11 [ ] _____

6. USE 1 [ ] Domestic 2 [x] Irrigation 3 [ ] Test Well 4 [ ] Public Supply 5 [ ] Air Conditioning 6 [ ] _____ 7 [ ] Industry 8 [ ] Commercial

7. CASING DIAM. Threaded [ ] 1 Black [ ] 2 Welded [x] 3 Galv. [ ] 4

12 in. to 23½ ft. depth

_____ in. to _____ ft. depth

_____ in. to _____ ft. depth

HEIGHT: Above/Below Surface _____ ft.

Weight _____ lbs./ft.

Drive Shoe? Yes ___ No ___

8. SCREEN Or open hole from _____ ft. to _____ ft.

Make: DOERR Dia. 12"

Type: _____ Length 16'

Slot/Gauge: 1/8" FITTINGS:

Set between 23½ ft. and 39½ ft.

_____ ft. and _____ ft.

_____ ft. and _____ ft.

9. STATIC WATER LEVEL 18'4" ft. [x] below [ ] above land surface Date Measured 5-31-76

10. PUMPING LEVEL (below land surface) 34 ft. after 6 hrs. pumping 400 g.p.m.

_____ ft. after _____ hrs. pumping _____ g.p.m.

11. WELL HEAD COMPLETION 1 [ ] Pitless adapter 2 [ ] Basement offset 3 [x] At least 12" above grade

12. Well grouted? [ ] Yes [ ] No Cu. Yds. _____

1 [ ] Neat cement 2 [ ] Bentonite 3 [ ] _____

Depth: from _____ ft. to _____ ft.

from _____ ft. to _____ ft.

13. Nearest source of possible contamination 1300 feet S direction SEWER type

Well disinfected upon completion? Yes [ ] No [ ]

14. PUMP Date installed _____

[ ] Not installed

Manufacturer's Name _____

Model Number _____ HP _____ Volts _____

Length of drop pipe _____ ft. capacity _____ g.p.m.

Material of drop pipe _____

Type: 1 [ ] Submersible 2 [ ] Jet 3 [ ] L.S. Turbine 4 [ ] Centrifugal 5 [ ] Reciprocating 6 [ ] _____

16. WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

BONANZA VALLEY WELL DRILLING — License Business Name

73107 — License No.

Address: BROOTEN, MINN.

Signed: K [illegible] Date: 6-29-76

Authorized Representative

W 41-97
(Rev. 2-59)

59-278

MINNESOTA CONSERVATION DEPARTMENT
DIVISION OF WATERS

WELL LOG STATEMENT

File No. _____

Well No. 123-35-23bcb

MAIL REPORT PROMPTLY TO DIRECTOR, DIVISION OF WATERS, STATE OFFICE BLDG., ST. PAUL 1, MINN.

Location of Well _____

Stearns — Belgrade
County — City or Town

PA 59-278
Describe Further by Lot, Block, Nearest Highway, Street and Number

Locate Well on Plat of Section

Sec. [redacted]
Twp. [redacted]
Range [redacted]

Not Responsive

Drilled for: Not Responsive

Address Belgrade Minn.

Date of Completion April 8, 1959

Site Valley
Upland, Valley, Hillside, Etc.

Type of Well Bored
Dug, Driven, Bored, Drilled

Drill Rig Used Solid tool
Solid Tool, Jet, Rotary

Diameter: Top 18" Bottom 18"

Depth of Well 38'

Ground Elevation _____
Sea Level Datum or Give Distance Above

10' Below Soo R.R.
or Below R. R., Highway, Lake, Etc.

Height of Casing Above Ground none

Quality of Water Hard - Fresh
(Hard or Soft, Fresh or Salty, Etc.)

Temperature of Water about 45

Was Laboratory Analysis Made? no

For What Purpose Will Water Be Used? Irrigation

Is Well Pumped? yes Pump Capacity 600 GPM

Was Well Sealed on Completion? no

Does Well Overflow Without Pumping? no
Yes or No

Natural Flow ——— GPM

What Pressure, or Head, at Ground Level? ——

Principal Aquifer Penetrated Gravel

Driller R. P. Sanford

Address Elbow Lake, Minn.

REPORT OF FINAL PUMPING TEST

Date of Test April 11, 1959

Duration of Test 15 Hrs. ____ Min.

Rate of Pumping 600 GPM

Static Water Level 6 Ft.

Water Level While Pumping 18 Ft.

Drawdown 12 Ft.

Time Required for Recovery 15 Seconds

Expected Average Yield 540,000 Gal. per day

If Other Tests were Made, Give Details on Another Sheet.

Were Measurements Made of Effect on Other Nearby Wells During Test? Give Details.

none near

ACKNOWLEDGED 6/4/59 M.S.

RECEIVED
JUN 4 1959
DIVISION OF WATERS

Stearns Co Well Logs

THE DATA CONTAINED HEREIN IS CONFIDENTIAL AND IS TO BE USED FOR SCIENTIFIC STUDY ONLY BY DIV. OF WATERS IN ACCORDANCE WITH MSA 103.51.

(Fill Out Both Sides of Form)

138 U
45
35

WELL LOG

Geologic Formations Kind, Color, Hard or Soft	Thickness of Formation	Depth in Feet From	Depth in Feet To	Casing Diam.	Water Conditions Found
Black Top Soil - Soft	2'	0	2'	18"	none
Gravel, yellow, "	4'	2'	6'	18"	water
" " "	10'	6'	16'	18"	"
Clay, " "	1'	16'	17'	18"	none
Gravel, " "	10'	17'	27'	18"	"
Clay, " "	1'	27'	28'	18"	none
Gravel, Gray "	17'	28'	45'	18"	water
Clay, Blue, Hard		45			—
18' of Dempster screen		—			Gravel packed

Indicate Size, Type, & Location of Any Screens, Gravel Packs, Grouting, or Other Development

I hereby certify that, to the best of my knowledge, the data presented in this statement is a true and correct representation of conditions encountered in the construction of this well.

Dated at May 27, 1959 this 27 day of May, 1959

Elbow Lake, Minn

(Firm Name) R. P. Sanford

By "

Title Owner

W 97-41
(Rev. 1-66)

MINNESOTA CONSERVATION DEPARTMENT
DIVISION OF WATERS

WELL LOG STATEMENT

76-321

Approp. No. _____

Well No. _____

Mail Report Promptly To Director, Division Of Waters, Centennial Office Bldg., St. Paul 1, Minn.

Location of Well (address) _____

Stearns — County
Belgrade — City or Town

SW of Belgrade on County Rd. 19
Describe Further by Lot, Block, Nearest Highway.

Locate Well on Plat of Section

Sec. [redacted]
Twp. [redacted]
Range [redacted]

Drilled for: [redacted]

Driller Bonanza Valley Well Drilling

Address Belgrade, Mn. 56312

Address PO Box 245
Brooten, Mn. 56316

Date of Completion 10-9-74

Type of well Dug (Dug, Driven, Bored, Drilled) Depth 47 ft/

Casing diameter 16 inch, from 0 to 31

_____ inch, from _____ to _____

_____ inch, from _____ to _____

Screen: Length 16' Diameter 16" Slot size 1/8

Pump: Type Turbine Horsepower 41

REPORT OF FINAL PUMPING TEST

Duration of Test 6 Hrs. _____ Min. Date 10-11-74

Rate of Pumping 800 GPM

Static Water Level 22 Ft. Above / Below land surface

Water Level While Pumping 36 Ft.

Use: Domestic ☐ Industrial ☐ Irrigation ☒

Public supply ☐ Commercial ☐ Stock ☐

WELL LOG

Geologic Formations Kind, Color, Hard or Soft	Depth in Feet From	Depth in Feet To	Geologic Formations Kind, Color, Hard or Soft	Depth in Feet From	Depth in Feet To
Top Soil	0	2			
Brown Sand & Rock	2	10			
Fine Sand & Gravel	10	22			
Coarse Grey Sand & Gravel	22	36			
Coarse Grey Gravel	36	44			
Fine Grey Sand	44	47			
Blue Clay	47				

P.A. No. 67-821

approp. No. 73-0039

ADP
Rev. 1967

MINNESOTA CONSERVATION DEPARTMENT
DIVISION OF WATERS

WELL LOG STATEMENT

3975

	Director	
	Publ.	
	Ground W.	

Well No. 123/35-22 water

Mail Report Promptly To Director, Division Of Waters, Centennial Office Bldg., St. Paul 1, Minn.

Location of Well (address) Richard Johnson (Farm)

Stearns — County; Belgrade Minn — City or Town

Describe Further by Lot, Block, Nearest Highway.

Locate Well on Plat of Section

Sec. [redacted]

Twp. [redacted]

Range [redacted]

Not Responsive

Dr[redacted]ller McAlpine Bros Well Co

Address Belgrade, Minn

Address Rogers, Minn

Date of Completion May 6 1967

Type of well Drilled (Dug, Driven, Bored, Drilled) Depth 41

Casing diameter 16 inch, from 0 to 26

____ inch, from ____ to ____

____ inch, from ____ to ____

Screen: Length 15 Diameter 16 Slot size 100

Pump: Type Impeller Horsepower 70

REPORT OF FINAL PUMPING TEST

Duration of Test 2 Hrs. ____ Min. Date May 6 1967

Rate of Pumping 290 GPM

Static Water Level 18 Ft. Above / Below land surface

Water Level While Pumping 35 Ft.

Use: Domestic ☐ Industrial ☐ Irrigation ☑

Public supply ☐ Commercial ☐ Stock ☐

WELL LOG

Geologic Formations Kind, Color, Hard or Soft	Depth in Feet From	Depth in Feet To	Geologic Formations Kind, Color, Hard or Soft	Depth in Feet From	Depth in Feet To
Top Soil	0	1			
Sand & Gravel	1	25			
Water Sand & Gravel	26	41			

Geologic log	Depth (feet)	Thickness (feet)

Test hole number: BB20 Location: 123.35.36ABCDA County: Stearns

Township: Crow Lake Land surface altitude: 1267 feet

Sand, medium to very coarse, and gravel, fine to coarse, brown, some cobbles	0-43	43
Till, sandy, clayey, grey, soft	43-62	19
Till, sandy, grey	62-101	39
Till, sandy, silty, light grey	101-106	5
Sand, medium to very coarse, and gravel, fine, brown	106-113	7
Till, sandy, grey	113-117	4

Geologic log	Depth (feet)	Thickness (feet)

Test hole number: BB15 Location: 123.34.22DADAAA County: Stearns

Township: Crow River Land surface altitude: 1240 feet

Topsoil, black	0-1	1
Sand, coarse to very coarse, and gravel, fine to coarse, brown	1-23	22
Till, sandy, grey	23-25	2
Sand, medium to very coarse, and gravel, brown	25-28	3
Till, sandy, grey, some sand interbedded	28-31	3
Till, sandy, grey, sparse sand and gravel lenses, hard	31-116	85
Sand, medium to very coarse, and gravel, fine, brown	116-129	13
Till, sandy, grey	129-135	6

Observation Well Information

Two-inch diameter black steel: 0-123 feet
Galvanized steel 10-slot screen: 123-125 feet

Casing stickup: 3.4 feet above land surface

Static water level: 2.64 feet below top of casing (7/23/86)

Geologic log	Depth (feet)	Thickness (feet)

Test hole number: BB20 Location: 123.35.36ABCDA County: Stearns

Township: Crow Lake Land surface altitude: 1267 feet

Sand, medium to very coarse, and gravel, fine to coarse, brown, some cobbles	0-43	43
Till, sandy, clayey, grey, soft	43-62	19
Till, sandy, grey	62-101	39
Till, sandy, silty, light grey	101-106	5
Sand, medium to very coarse, and gravel, fine, brown	106-113	7
Till, sandy, grey	113-117	4
Sand, medium to very coarse, and gravel, fine, brown	117-119	2

Geologic log	Depth (feet)	Thickness (feet)

Test hole number: BB15 Location: 123.34.22DADAAA County: Stearns

Township: Crow River Land surface altitude: 1240 feet

Topsoil, black	0-1	1
Sand, coarse to very coarse, and gravel, fine to coarse, brown	1-23	22
Till, sandy, grey	23-25	2
Sand, medium to very coarse, and gravel, brown	25-28	3
Till, sandy, grey, some sand interbedded	28-31	3
Till, sandy, grey, sparse sand and gravel lenses, hard	31-116	85
Sand, medium to very coarse, and gravel, fine, brown	116-129	13
Till, sandy, grey	129-135	6

Observation Well Information

Two-inch diameter black steel: 0-123 feet
Galvanized steel 10-slot screen: 123-125 feet

Casing stickup: 3.4 feet above land surface

Static water level: 2.64 feet below top of casing (7/23/86)

Geologic log	Depth (feet)	Thickness (feet)

Test hole number: BB18 Location: 123.34.04ABDCCB County: Stearns

Township: Crow River Land surface altitude: 1253 feet

Topsoil, black	0-2	2
Sand, coarse to very coarse, and gravel, fine to medium, brown, with cobbles and boulders	2-8	6
Till, sandy, brown	8-10	2
Till, sandy, grey, hard, cobbles at 31 feet	10-65	55
Till, sandy, clayey, grey	65-86	21
Sand, medium, brown	86-87	1
Till, sandy, dark grey	87-90	3
Sand, medium to very coarse, and gravel, fine to medium, silty, brown, with some clay lenses from 91 to 94 feet	90-106	16
Till, sandy, clayey, grey	106-110	4
Till, sandy, grey to brownish-grey, hard	110-138	28
Sand, medium to very coarse, and gravel, fine to medium, brown	138-148	10
Till, clayey, sandy, grey, soft, some sand lenses last five feet	148-163	15
Sand, medium to coarse, and gravel, fine to medium, brown	163-174	11
Till, sandy, clayey, brown	174-183	9
Sand, medium to coarse, brown	183-184	1
Till, sandy, clayey, brown	184-196	12
Sand, medium to very coarse, and gravel, fine, brown	196-197	1
Till, sandy, brown	197-219	22
Sand, medium to coarse, brown	219-221	3
Till, sandy, brown	221-222	1
Sand, medium to very coarse, and gravel, fine to medium, brown	222-230	8
Till, clayey, sandy, dark grey to greyish brown	230-241	11
Shale, Cretaceous Age, green, fairly hard	241-243	2
Schist, black, very hard	243-245	2

Observation Well Information

Three-inch diameter black steel: 0-165 feet PVC Pipe
Galvanized steel 10-slot screen: 165-167 feet

Casing stickup: 7.1 feet above land surface

Static water level: 1.18 feet below top of casing (7/23/86)

Geologic log	Depth (feet)	Thickness (feet)

Test hole number: BB19 Location: 123.34.07BBBDBB County: Kandiyohi

Township: Burbank Land surface altitude: 1275 feet

Topsoil, black	0-1	1
Sand, medium to very coarse, and gravel, fine to coarse, brown, some cobbles	1-28	27
Till, clayey, sandy, grey, soft	28-60	32
Till, sandy, clayey, grey	60-75	15
Till, sandy, grey, hard	75-81	6
Till, silty, sandy, light grey, hard	81-84	3
Sand, medium to very coarse, brown	84-86	2
Till, silty, light grey	86-90	4
Till, silty, sandy, clayey, brownish grey	90-136	46
Boulder, black, hard	136-137	1
Till, clayey, grey, hard	137-148	11
Till, sandy, clayey, soft	148-157	9
Till, clayey, sandy, hard	157-167	10
Clay, dark grey, hard, sand lense at 174 feet	167-176	9
Sand, medium to very coarse, and gravel, fine to medium, silty, brown, some clay lenses near top	176-198	22
Till, clayey, grey, hard	198-208	10
Boulder, black, hard	208-209	1
Till, clayey, grey, hard	209-245	36
Sand, fine to medium, brown	245-247	2
Sand, medium to very coarse, and gravel, fine to medium, brown	247-252	5
Till, clayey, greyish green	252-260	8
Till, clayey, grey, sticky, hard	260-302	42
Sand, medium to very coarse, brown	302-303	1
Till, clayey, grey, sticky	303-320	17
Sand, fine to very coarse, and gravel, fine to medium, brown, finer sand near top	320-377	57
Till, clayey, olive-brown to brownish-grey	377-421	44
Till, clayey, brownish-grey, soft	421-479	58
Sand, medium to very coarse, brown	479-480	1
Till, clayey	480-481	1
Weathered granite, white to green, hard	481-487	6

Description	Depth (feet)	Thickness (feet)
Test hole number: ED20 Location: 123.35.36ABCDA County: Stearns		
Township: Crow Lake Land surface altitude: 1267 feet		
1267 Sand, medium to very coarse, and gravel, fine to coarse, brown, some cobbles	0-43	43
1224 Till, sandy, clayey, grey, soft	43-62	19
Till, sandy, grey	62-101	39
Till, sandy, silty, light grey	101-106	5
ED 1161 1154 Sand, medium to very coarse, and gravel, fine, brown	106-113	7
Till, sandy, grey	113-117	4
Sand, medium to very coarse, and gravel, fine, brown	117-119	2
Till, sandy, grey	119-123	4
Sand, medium to very coarse, and gravel, fine, brown	123-125	2
Till, sandy, silty, grey	125-132	7
Till, sandy, clayey, grey, soft	132-137	5
Gravel, fine to coarse, and cobbles, brown	137-141	4
Till, sandy, clayey, grey	141-183	42
Sand, medium to very coarse, and gravel, fine, brown	183-186	3
Till, sandy, clayey, grey	186-193	7
Till, sandy, grey	193-295	102
Sand, medium to very coarse, brown	295-297	2
Till, sandy, grey	297-298	1
Sand, medium to very coarse, brown	298-299	1
Till, sandy, grey	299-308	9
Sand and till interbedded	308-311	3
Till, sandy, grey, sand lense at 312 feet	311-317	6
Sand, medium to very coarse, brown	317-318	1
Till, sandy, grey, hard	318-344	26
Sand, medium to very coarse, brown, with till, sandy, grey, interbedded	344-356	12
Gravel, fine to very coarse, and cobbles, brown	356-357	1
Boulder, granite, pink and black, hard	357-361	4
Till, sandy, dark grey, hard	361-377	16
Sand, coarse to very coarse, and gravel, fine to medium, brown	377-393	16
Till, sandy, clayey, brown, hard	393-399	6
Sand, coarse to very coarse, and gravel, fine to coarse, brown, clay lense at 407 feet	399-412	13
Sand, fine to medium, brown	412-419	7
Till, sandy, clayey, greyish brown, hard	419-455	36
Till, sandy, clayey, grey, hard	455-486	31
Unpolished granite, white and black, hard	[illegible]	[illegible]

FORM 9-1642 (1-68) 142B 215.131 I Well No. 123.34.22 d

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR — GEOLOGICAL SURVEY — WATER RESOURCES DIVISION

~~PCA GW0239~~

142-B

1971

MASTER CARD

Record by Bryan Source of data Driller Date [illegible] Map [illegible]

State Minn. County (or town) Stearns

Latitude: [redacted] Longitude: [redacted] Sequential number: 1

Lat-long accuracy: [redacted] SE 1/4 5TH

Local well number: 123N34W22D Other number: [redacted]

Local use: MUELLER BROS Owner or name: [redacted] Domestic well 123.34.22DBC

Owner or name: [redacted] Address: Gayle PCA GW0239 Unique # 227107

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, (P) Private, (S) State Agency, (W) Water Dist

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Irr, (I) Mnd, (N) Ind, (P) P S, (R) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other

123/34/22 DBBC01 e/r U 1240 t5

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (O) Oil-gas, (R) Recharge, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (Z) Destroyed. W

ONLY WELL WITHIN CIRCLE

DATA AVAILABLE: Well data 1 Freq. W/L meas.: Field aquifer char.

Hyd. lab. data:

Qual. water data; type:

Freq. sampling: Pumpage inventory: yes no period:

Aperture cards: yes

Log data: Driller

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 136 ft 136 Meas. rept 3

Depth cased (first perf.) 104 ft 104 Casing type: accuracy Diam. 12 in 12

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, (X) open hole, (Z) other 5

Method Drilled: (A) air rot., (B) bored, (C) cable, (D) dug, (H) hyd rot., (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) other

Date Drilled: 9/21 1971 Pump intake setting: ft

Driller: Mueller Bros. Gayland

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple, (cent.), (M) multiple, (turb.), (N) none, (P) piston, (R) rot, (S) submrg, (T) turb, (Z) other Deep Shallow

Power (type): diesel, elec, gas, gasoline, hand, gas, wind; H.P. 75 Trans. or meter no.

Descrip. MP ft above below LSD, Alt. MP

Alt. LSD: 1243 1243 Accuracy (source): 7½ 4

Water Level 9 ft above below MP; ft above below LSD 9 Accuracy: 0

Date meas: Yield: 700 gpm 700 Method determined

Drawdown: 41 ft 41 Accuracy: Pumping period 4½ hrs 5

QUALITY OF WATER DATA: Iron ppm Sulfate ppm Chloride ppm Hard. ppm

Sp. Conduct K x 10⁶ Temp. °F Date sampled

Taste, color, etc.

243
1234
139
1107
107

7 — RBAA

Well No. 215131

Latitude-longitude N S d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD

Physiographic Province: 12 Section:

B Drainage Basin: 281 Subbasin:

Topo of well site: (D) depression, (C) stream channel, (E) dunes, (F) flat, (H) hilltop, (K) sink, (L) swamp, (O) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat

MAJOR AQUIFER: Quaternary system, Pleistocene series, QP aquifer, formation, group 16

Lithology: Sand Gravel 3 Origin: O Aquifer Thickness: 41 ft

54 Length of well open to: ft 32 Depth to top of: ft 95

MINOR AQUIFER: system, series aquifer, formation, group

Lithology: Origin: Aquifer Thickness: ft

Length of well open to: ft Depth to top of: ft

Intervals Screened:

Depth to consolidated rock: ft Source of data:

Depth to basement: ft Source of data:

Surficial material: Sand 5 Infiltration characteristics: 2

Coefficient Trans: gpd/ft Coefficient Storage:

Coefficient Perm: gpd/ft^2; Spec cap: 17.1 gpm/ft; Number of geologic cards:

Log

0-17 Sand
17-28 CLAY
28-50
50-95 Gray CLAY
95-136 Coarse Sand & Gravel
136

GPO 937-142

STATE OF MINNESOTA — DEPARTMENT OF HEALTH

WATER WELL RECORD

Minnesota Statutes 156A.01 et seq.

MINNESOTA UNIQUE WELL NO. for Water Sample: S 199594

1. LOCATION OF WELL

County: Stearns

Township Name: Crow River

Not Responsive

Location: ¼ ¼ ¼

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well on section grid with "X"

Sketch map of well location

N, W, E, S, ½ mi., 1 mi.

Addition Name

Block Number

Lot Number

≃ 1260 ± 10 elevation

Not Responsive

2. PROPERTY OWNER'S NAME: Belgrade

3. WELL DEPTH (completed): 78 ft.

Date of Completion: 5-4-84

4. 1☐ Cable tool 2☐ Hollow rod 3☑ Rotary 4☐ Reverse 5☐ Air 6☐ Jetted 7☐ Driven 8☐ Bored 9☐ Power Auger 10☐ Dug 11☐

5. USE: 1☑ Domestic 2☐ Irrigation 3☐ Test Well 4☐ Public Supply 5☐ Municipal 6☐ Air Conditioning 7☐ Industry 8☐ Commercial 9☐

7. CASING: 1☐ Black 2☐ Galv. 3☑ Plastic 4☐ Threaded 5☐ Welded 6☐

HEIGHT Above/Below Surface 1.5 ft.

Drive Shoe? Yes ___ No ✓

4" in. to 74 ft. Weight ___ lbs./ft.

HOLE DIAM. 6¼ in. to 78 ft.

8. SCREEN: Make Johnson; Type stainless steel; Dia. 4"; Slot/Gauze Slot; Length 4'; Set between 74 ft. and 78 ft.

Or open hole from ___ ft. to ___ ft.

FITTINGS: K-packer

9. STATIC WATER LEVEL: 10 ft. below land surface

Date Measured ___

10. PUMPING LEVEL (below land surface): 70 ft. after 1 hrs. pumping 25 g.p.m.

11. WELL HEAD COMPLETION: 1☑ Pitless adapter manufacturer Mar-Nil; model ___ 2☐ Basement offset 3☑ At least 12" above grade

12. WELL GROUTED? ☑ Yes ☐ No

1☐ Neat Cement 2☑ Bentonite 3☐

Grout material: clay from 0 to 70 ft. Ok Yes

13. NEAREST SOURCES OF POSSIBLE CONTAMINATION: 80 feet S.E. direction septic

Well disinfected upon completion? Yes ☑ No ☐

14. PUMP

Date Installed: 5-5-84 ☐ Not Installed

Manufacturer's Name: Aermotor

Model Number: SD-12-50 HP ½ Volts 230

Length of drop pipe: 40 ft. capacity 15 g.p.m.

Material of drop pipe: rigid 80

Type: 1☑ Submersible 2☐ Jet 3☐ L.S. Turbine 4☐ Centrifugal 5☐ Reciprocating 6☐

16. WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Steff Well Drillers 61335 — License Business Name, License No.

Address: Glenwood

Signed: Sylvester Steff — Authorized Representative — Date 5-5-84

Sylvester Steff — Name of Driller — Date 5-5-84

1. FORMATION LOG	COLOR	HARDNESS OF FORMATION	FROM	TO
Dirt	Black	soft	0	1
sand	yellow	med	1	28
clay	yellow	hard	28	36
Clay	blue	hard	36	67
sand	grey	med	67	78

Use a second sheet, if needed

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

RECEIVED FEB 25 1985 Minn. Dept. of Health GWQG

MINN. GEOLOGICAL SURVEY COPY 199594

HS-01205-01

5/74 30M 7/76 30M 7/78 30M 5/82 10M

STATE OF MINNESOTA — DEPARTMENT OF HEALTH

WATER WELL RECORD

Minnesota Statutes 156A.03 (6)

MINNESOTA UNIQUE WELL NO. for Water Sample: I 181184

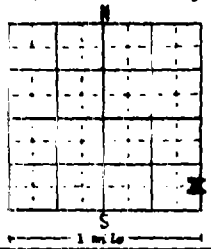
LOCATION OF WELL — County Name: Stearns

Township Name: Crow River | Township Number | Range Number | Section No. | Location: NE ¼ SE ¼ SE ¼

Not Responsive

Location and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well in section grid with "X"



Sketch map of well location: Addition Name / Block Number / Lot Number

1265 ± 5 elevation on Topo

3. PROPERTY OWNER'S NAME: Not Responsive

Address: Belgrade, MN 56312

4. WELL DEPTH (completed): 172 ft. — Date of Completion: 7/14/83

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☐ Air 8☐ Bored 11☐ _____
3☒ Rotary 6☐ Jetted 9☐ Power Auger

6. USE: 1☒ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING: 1☐ Black 4☐ Threaded — HEIGHT: Above/Below — HOLE DIAM
2☐ Galv. 5☐ Welded — Surface 18" ft.
3☐ Plastic 6☒ PVC — Drive Shoe? Yes ___ No X
5 in. to 166 ft. Weight ___ lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.

8. SCREEN: Make Johnson — Or open hole from ___ ft. to ___ ft.
Type Stainless steel — Dia. 3"
Slot/Gauze 15 slot — Length 6'6" — FITTINGS
Set between 166 ft. and 172 ft.
___ ft. and ___ ft.
___ ft. and ___ ft.

9. STATIC WATER LEVEL: 17 ft. ☒ below land surface ☐ above — Date Measured 7/14/83

10. PUMPING LEVEL (below land surface): 160 ft. after 2 hrs. pumping 150 g.p.m.
___ ft. after ___ hrs. pumping ___ g.p.m.

11. WELL HEAD COMPLETION: 1☐ Pitless adapter 2☐ Basement offset 3☒ At least 12" above grade

12. Well grouted? ☒ Yes ☐ No — Cu. Yds. ___
1☒ Neat Cement 2☐ Bentonite 3☐ ___
Depth: from 9 ft. to 39 ft.
from ___ ft. to ___ ft.

13. Nearest source of possible contamination: 100 feet East direction Septic
Well disinfected upon completion? Yes ☒ No ☐

14. PUMP: Date Installed ___ ☐ Not Installed
Manufacturer's Name ___
Model Number ___ HP ___ Volts ___
Length of drop pipe ___ ft. capacity ___ g.p.m.
Material of drop pipe ___
Type: 1☐ Submersible 3☐ L.S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐ ___

16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

License Number: Mark J. Brant Wells, Inc. 71536

Address: Rt 4 St. Cloud, MN 56301

Signed ___ Authorized Representative — Date 7/14/83

Name of Driller: Steve Brant & Ron Miller — Date 7/14/83

2. FORMATION LOG	COLOR	HARDNESS OF FORMATION	FROM	TO
Topsoil	Black	soft	0	1
Sand	Brown	soft	1	20
Clay	Gray	soft	20	164
Sand	Gray	hard	164	172

Use a second sheet, if needed

RECEIVED JUL 22 1983 Minn. Dept. of Health GWQB

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

MINN. GEOLOGICAL SURVEY COPY — 181184

well #3

WELL LOG STATEMENT

Appropriation Permit No. [illegible]

Well No. _____

Minnesota Department of Conservation, Division of Waters, Centennial Office Bldg., St. Paul 1, Minn.

Location of Well (address) [illegible]

Stearns — County

Belgrade — City or Town

SE 1/4

Describe Further by Lot, Block, Nearest Highway.

Locate Well on Plat of Section

Sec. [redacted]

Twp. [redacted]

Range [redacted]

PA 14-[illegible]

Drilled for: [redacted]

Driller Bonanza Valley Well Drilling

Address Belgrade, Mn.

Address PO Box 245

Brooten, Mn. 56316

Date of Completion 8-9-74

REPORT OF FINAL PUMPING TEST

Type of well Drilled (Dug, Driven, Bored, Drilled) Depth 128 ft.

Duration of Test 14 Hrs. ____ Min. Date 8-10-74 / 8-11-74

Casing diameter 12 inch, from 0 to 21

Rate of Pumping 1140 GPM

12 inch, from 37 to 112

Static Water Level 6 (1278) Ft. Above / Below land surface

____ inch, from ____ to ____

Water Level While Pumping 20 Ft.

Screen: Length 32' Diameter 12" Slot size 1/8

Use: Domestic ☐ Industrial ☐ Irrigation ☒

Pump: Type Turbine Horsepower 41

Public supply ☐ Commercial ☐ Stock ☐

WELL LOG

Geologic Formations Kind, Color, Hard or Soft	Depth in Feet From	Depth in Feet To	Geologic Formations Kind, Color, Hard or Soft	Depth in Feet From	Depth in Feet To
Top Soil	0	4	DCCBA		
Fine Brown Sand (1239)	4	10	123-35-2 ~~DACB~~		
Coarse Sand	10	15	LSD 1284		
Coarse Gravel (1261)	15	23			
Brown Clay	23	27			
Coarse Sand (1257 / 1247)	27	32			
Yellow Clay & Gravel	37	82			
Sand & Gravel RED (1202 / 1167)	82	124			
Yellow & Grey Clay	124	128			

LOCATED BY

- ☐ Address Verification
- ☐ Name on Mailbox
- ☐ Lot-Block
- ☐ Plat Book
- ☐ Info. from Owner
- ☐ Info. From Neighbor
- ☐ Other
- ☐ Can't Locate State Why

MYTRAD

123-35-2A

Charles Singsnuk

NE 1/4 ∠ 5/0 1275

test log
8:10
6-15-77
77-3623

0-3' topsoil

1272
1240 ∠ 3-35' sand & gravel

35-91' sandstone, limestone, clay

91-93' wood shavings

RED 1152
1150 < 93-125' sand & gravel

1143 125-127' clay

SWL - 16'

Well # 1

Township | Range | Section No. | Tax lot | Q Q Q

Distance and direction from nearest town or intersection

Show location of well relative to two section lines

Sketch map of well location.

W E S

Addition Name

Block Number

Lot Number

1X1P
CONVERTED
STATIC

2. FORMATION LOG	COLOR	HARDNESS OF FORMATION	FROM	TO
Top soil			0	1
Clay	Brown	1262	1	3
Sand & Gravel	Brown		3	11
Green Clay	Green	1246	11	72
Sand & Gravel	Brown		72	75
Clay	Yellow		75	81
Sand & Gravel	Brown		81	89
Clay	Yellow		89	89
Clay	Green		89	107
Sand & Gravel	Brown		107	110
Clay	Green		110	114
Sand & Gravel			114	120
Clay	Green		120	127
Fine Sand & Gravel	Brown		127	140
Clay	Green		140	145
Clay	Yellow		145	151
Sand & Gravel		1099 1100	151	165
[illegible]	Black	1265		

LOCATED BY

1 ☐ Address Verification
2 ☐ Assessor Maps
3 ☐ Lot-Block
Use a second sheet, if needed

[illegible]
5 ☐ Info. From Owner
6 ☐ Info. From Neighbor
7 ☐ Other _____
8 ☐ Well Log on State Map

MINN. GEOLOGICAL SURVEY COPY

1. PROPERTY OWNER'S NAME [illegible]

Address [illegible]

4. WELL DEPTH (completed) [illegible] ft. Date of Completion [illegible]

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☐ Air 8☐ Bored 11☐ 301
3☒ Rotary 6☐ Jetted 9☐ Power Auger

6. USE
1☐ Domestic 4☐ Public Supply 7☐ Industry
2☒ Irrigation 5☐ Municipal 8☐ Comm.
3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING HEIGHT: Above/Below
1☒ Black 4☐ Threaded
2☐ Galv. 5☒ Welded Surface [illegible] ft.
3☐ 6☐ Drive Shoe? Yes ☒ No ☐
[illegible] in. to [illegible] ft. Weight [illegible] lbs./ft.
in. to ft. Weight lbs./ft.
in. to ft. Weight lbs./ft.

HOLE DI[illegible]
[illegible] in. to [illegible] ft.
in. to ft.
in. to ft.

8. SCREEN Or open hole from ft. to ft.
Make [illegible]
Type [illegible] Dia. [illegible]
Slot/Gauge [illegible] Length [illegible]
Set between [illegible] ft. and [illegible] ft.
ft. and ft.
ft. and ft.
FITTINGS:

9. STATIC WATER LEVEL 1253
[illegible] ft. below land surface ☐ above Date Measured [illegible]

10. PUMPING LEVEL (below land surface)
[illegible] ft. after [illegible] hrs. pumping [illegible] g.p.m.
ft. after hrs. pumping g.p.m.

11. WELL HEAD COMPLETION
1☐ Pitless adapter 2☐ Basement offset 3☒ At least 12" above grade

12. Well grouted?
☒ Yes ☐ No Cu. Yds.
1☐ Neat Cement 2☒ Bentonite 3☐
Depth: from ft. to ft.
from ft. to ft.

13. Nearest sources of possible contamination
feet direction type
Well disinfected upon completion? Yes☐ No☐

14. PUMP
35 = 2.90 .95 x 150
Date Installed
1000/152 = 6.5 ☒ Not Installed
Manufacturer's Name
Model Number HP Volts
Length of drop pipe ft. capacity g.p.
Material of drop pipe
Type: 1☐ Submersible 3☐ L.S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐

16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

[illegible]
Licensee Business Name License No.

Address

Signed Date
Authorized Representative

Name of Driller Date

5-74 30M

PUMPING WELL:

WATER WELL RECORD

Minnesota Statutes 156A.01-.08

for Water Supply

1: 6388

Direction from nearest intersection or Street Address and City of Well Location

Address

4. WELL DEPTH (completed) 124 ft. | Date of Completion

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☐ Air 8☐ Bored 11☐
3☒ Rotary 6☐ Jetted 9☐ Power Auger

6. USE
1☐ Domestic 4☐ Public Supply 7☐ Industry
2☒ Irrigation 5☐ Air Conditioning 8☐ Commercial
3☐ Test Well 6☐

7. CASING DIAM.
Threaded ☐1 Welded ☒3
Black ☐2 Galv. ☐4
12 in. to 104 ft. depth
in. to ft. depth
in. to ft. depth
HEIGHT: Above/Below
Surface ft.
Weight lbs./ft.
Drive Shoe? Yes No

8. SCREEN
Make Decorah
Type Dia. 12"
Slot/Gauge Length 24'
Set between 104 ft. and 124 ft.
ft. and ft.
ft. and ft.
Or open hole from ft. to ft.
FITTINGS:

9. STATIC WATER LEVEL
N/A ft. below land surface ☐ above Date Measured

10. PUMPING LEVEL (below land surface)
70 ft. after 12 hrs. pumping 850 g.p.m.
ft. after hrs. pumping g.p.m.

11. WELL HEAD COMPLETION
1☐ Pitless adapter 2☐ Basement offset 3☐ At least 12" above grade

12. Well grouted?
☐ Yes ☐ No Cu. Yds.
1☐ Neat cement 2☐ Bentonite 3☐
Depth: from ft. to ft.
from ft. to ft.

13. Nearest source of possible contamination
feet direction type
Well disinfected upon completion? Yes ☐ No ☐

14. PUMP
Date installed
☒ Not installed
Manufacturer's Name
Model Number HP Volts
Length of drop pipe ft. capacity g.p.m.
Material of drop pipe
Type: 1☐ Submersible 3☐ L.S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐

16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Licensed Business Name License No.

Address

Signed Date

Sketch map of well location.

INPLAT

PA 77-3622

FORMATION LOG	COLOR	HARDNESS OF FORMATION	FROM	TO
Top Soil			0	4
Sand & Gravel	Brown		4	11
Clay	Gray	Hard	11	15
Clay	"	Soft	15	20
Clay	"	Hard	20	29
Sand & Gravel	"		29	76
Fine Sand	"		76	90
Sand & Gravel	"		90	100
Clay	"		100	110
Sand & Gravel	"		110	119
Clay	"		119	120
Sand & Gravel	"		120	121
Clay & Gravel		Hard	121	150
123-35-4 BEDS	RDNC			
LSD 1280				

LOCATED BY

☐ Address verification

☐ Location on map

☐ Other

☐ Other

☐ Other

☐ Other

☐ Other

STATE OF MINNESOTA — DEPARTMENT OF HEALTH

WATER WELL RECORD

Minnesota Statutes 156A.01-.06

MINNESOTA UNIQUE WELL NO. 131052

#40947 Sample

142B

1. LOCATION OF WELL — County Name: Stearns

Township Name: Crow River — Township Number: Not Responsive — Range Number: Not Responsive — Section No. of Section: Not Responsive

Distance and Direction from Road Intersections or Street Address and City of Well Location

[redacted], Belgrade 1 [redacted] Not Responsive

[redacted] Not Responsive

Sketch Map — Show section and with "X" location

W — E — S — 2 in. to 1 mile

Additions Name

Block Number

Lot Number

602399

3. PROPERTY OWNER'S NAME: Not Responsive

Belgrade, Mn.

Not Responsive

4. WELL DEPTH (completed): 127 ft. — Date of Completion: 10-23-1976

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug 2☐ Hollow rod 5☐ Air 8☐ Bored 11☐ 3☒ Rotary 6☐ Jetted 9☐ Power Auger

6. USE: 1☒ Domestic 4☐ Public Supply 7☐ Industry 2☐ Irrigation 5☐ Municipal 8☐ Commercial 3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING — HEIGHT: Above/Below — HOLE DIAM

1☒ Black 4☒ Threaded 2☐ Galv 5☐ Welded 3☐ 6☐

Surface 1 ft. Drive Shoe? Yes ☒ No ☐

6 in. to 118 ft. Weight 20 lbs./ft.

in. to ft. Weight lbs./ft.

in. to ft. Weight lbs./ft.

in. to ft.

8. SCREEN — Make: Johnson — Or open hole from ft. to ft.

Type: stainless steel Dia. 6" Slot/Gauze: stainless steel Length 9' 4" FITTINGS

Set between 118 ft. and 127 ft. slot 30 / 80

ft. and ft.

ft. and ft.

9. STATIC WATER LEVEL: 15 ft. below land surface ☐ above — Date Measured 10-23-76

10. PUMPING LEVEL (below land surface): blew ft. after 0 hrs. pumping 15 g.p.m.; 52 ft. after 2 hrs. pumping 15 g.p.m.

11. WELL HEAD COMPLETION: 1☒ Pitless adapter 2☐ Basement offset 3☐ At least 12" above grade

12. Well grouted? ☐ Yes ☒ No — Cu. Yds.

1☐ Neat Cement 2☐ Bentonite 3☐

Depth: from ft. to ft.

from ft. to ft.

13. Nearest sources of possible contamination

feet direction type

Well disinfected upon completion? Yes ☒ No ☐

14. PUMP: Don — Date Installed 10-28-76 ☐ Not installed

Manufacturer's Name: Aermotor

Model Number: SD 12x 50 HP 3/4 Volts 230

Length of drop pipe: 84 ft. capacity 15 g.p.m.

Material of drop pipe: 1" galvanized steel

Type: 1☒ Submersible 3☐ L.S. Turbine 6☐ Reciprocating 2☐ Jet 4☐ Centrifugal 5☐

16. WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Trout Well Drilling — Licensee Business Name — License No. 73157

Address: 18 Lincoln Ave. N.E. St Clou

Signature: Jerry Hagen — Date 12-8-76

John Claude (Fred) — Name of Driller — Date 12-10-76

2. FORMATION LOG

FORMATION LOG	COLOR	HARDNESS OF FORMATION	FROM	TO
Sand	Brown	med	0	13
Clay	Gray	med	13	19
Sand	Gray	med	19	23
Sandy Clay	Gray	med	23	30
Clay	Gray	med	30	90
Fine Sand	Gray	med	90	103
Sandy Clay	Gray	med	103	115
Fine Sand	Gray	med	115	120
Sandy Clay	Gray	med	120	133
Sand	Gray	med	133	147
Sandy Clay	Gray	med	147	150
Sandy	Gray	med	150	156
Clay	Gray	med	156	

123/34/3 BBCD DC

elev 1252 ± 5

ONLY WELL IN CIRCLE

A-QBAA

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

hrs. at gpm with

MINN. GEOLOGICAL SURVEY COPY

Water-Well Coding Form

Unique No. [illegible] (1–6)

Card 01 (7–8) County 75 (9–10)

Quadrangle [illegible] (11–14)

Date completed 76/10/23 (Y Y M M D D: 15–20)

(1)

Not Responsive Township (21–23)

Not Responsive Range (24–25)

Not Responsive Section (S 26, Q 33)

Elevation (ft.) 252 (34–37)

taken from (check)

X or V = 1 [✓] 7.5 minute (38)

[ ] 15 minute (39)

Depth (ft.) 127 (40–43)

Unique No. [illegible] (1–6) Card 03 (7–8)

Well Name [illegible] Not Responsive [redacted] er (9–36)

Address [illegible] (37–64)

City Beaver (65–80)

(3)

Unique No. [illegible] (1–6) Card 04 (7–8)

Data Source Tinant Well Co (9–28)

Aquifer(s) Used [illegible] – [illegible] (29–32, 33–36)

Well Use

37 [✓] Domestic — X or X = 1 [ ] Air Contitioning

38 [ ] Irrigation — 42 [ ] Industry

39 [ ] Test Well — 43 [ ] Commercial

40 [ ] Public Supply — 44 [ ] [illegible] (45–59)

(4)

Static Water Level 15 (44–46)

Date 76/10/23 (Y Y M M D D: 47–52)

66 [ ] X or V = 1 Chemical Data

Unique No. [illegible] (1–6) Card 02 (7–8)

Pumpage Test:

(2)

Date 76/10 (Y Y M M)

2 (13–15)	hrs. at	15 (46–49)	gpm with	37 (20–22)	ft. drawdown
[ ] (23–25)	hrs. at	[ ] (26–29)	gpm with	[ ] (30–32)	ft. drawdown
[ ] (33–35)	hrs. at	[ ] (36–39)	gpm with	[ ] (40–42)	ft. drawdown
[ ] (43–45)	hrs. at	[ ] (46–49)	gpm with	[ ] (50–52)	ft. drawdown
[ ] (53–55)	hrs. at	[ ] (56–59)	gpm with	[ ] (60–62)	ft. drawdown
[ ] (63–65)	hrs. at	[ ] (66–69)	gpm with	[ ] (70–72)	ft. drawdown

Water-Well Coding Form

(5)

Unique No. 131052 (1–6)

Card 05 (7–8)

Remarks: 02399 (9–19)

4-9-7 (20–34)

(35–49)

(50–64)

(65–79)

(6)

Unique No. (1–6)

Card 06 (7–8)

V or X = 1

Casing: ☐ Telescoping (9) ☑ Step-Down (10)

6 in. (41–43) to 118 ft. (44–47)

in. (48–20) to ft. (21–24)

in. (25–27) to ft. (28–31)

in. (32–34) to ft. (35–38)

in. (39–41) to ft. (42–45)

Source of Possible Contamination

feet (46–50) direction (51–55) type (56–80)

(7)

Unique No. (1–6) Card 07 (7–8)

Make Johnson (9–28)

Type Stainless (29–43) Dia. 6 (44–48)

Slot/Gauze 30 (49–51) Length 93 (52–56)

Set between 118 ft. (57–60) and 127 ft. (61–64)

ft. (65–68) and ft. (69–72)

ft. (73–76) and ft. (77–80)

(8)

Unique No. (1–6) Card 08 (7–8) Pump

Manufacturer's Name Fairmotor (9–32)

Model Number 5012X50 (33–45) H.P. 0.75 (46–50) Volts 230 (51–55)

Length of drop pipe 84 ft. (56–60) Capacity 15 (61–65)

Type: (65) ☑ Submersible (66) ☐ Jet V or X = 1 (68) ☐ L.S. Turbine V or X = 1 (69) ☐ Centrifugal (70) ☐ Reciprocating (71) ☐

(9)

Unique No. (1–6) Card 09 (7–8) Color (9–18)

Remarks: (19–49)

(50–80)

Unique No. (1 2 3 4 5 6)

Card (7 8)

10+

	Driller's Formation	Color	Hardness	Top of (feet)	Strat. Unit	Lithology 1	Lithology 2	Lithology 3
	Sand	[illegible]	med	0				
(44)	Clay	Gray		13				
	Sand			19				
3)	Sandy clay			23				
(44)	Clay			30				
5)	Fine sand			90				
6)	Sandy clay			103				
(47)	Fine sand			115				
8)	Sandy clay			120				
(49)	Sand			133				
(50)	Sandy clay			147				
1)	Sandy			150				
(22)	Clay			150				
(3)								
(4)								
(25)								
6)								
(27)								
8)								
9)								
(30)								
1)								
(32)								
(33)								
4)								
(35)								
6)								

GEOLOGICAL SURVEY

TR[illegible] ANA[illegible]

WELL NAME	T (FT²/D)	S	K (FT/D)	[illegible]		T (FT²/D)	S	K (FT/D)
A	3508	1.2×10^{-4}	117	4.71×10^{-1}		2952	6.95×10^{-5}	95
[illegible]	4457	[illegible]	149	1.91×10^{-2}		3004	[illegible]	100
#[illegible]	6128	1.8×10^{-4}	204	8.64×10^{-2}		4412	1.08×10^{-4}	147
#2	680	3.0×10^{-2}	23	[illegible] $\times 10^{-1}$		2911	1.1×10^{-4}	97
BB1-7	4377	3.9×10^{-4}	146	4.4×10^{-4}		4706	3.84×10^{-4}	157
#1	211	2.1×10^{-7}	—	—		3208	3.7×10^{-4}	107
#3						10,457	2.38×10^{-4}	348
[illegible]	3700	1.05×10^{-4}	123	2.14×10^{-1}		3300	8.71×10^{-4}	110
[illegible] 3 [illegible]	4700	1.4×10^{-4}	157	1.63×10^{-1}		3420	7.95×10^{-5}	114

[illegible]CE DRAWDOWN METHOD: T=15,800 FT²/DY, S=[illegible] $\times 10^{-4}$

K=193 FT/DY

DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SING
SLUGTEST DATA SUMMARY

WELLS COMPLETED IN TILL

WELL	DATE	FILE NAME		S		T (FT²/DY)		HORIZ. K (FT/DY)				
B	11-4-86	SLUGC.1		1.7×10^{-5}		1.09		2.42×10^{-1}		WELL LOCATED ABOVE	PUMPED	~10' AQ.
	11-11-86 11:59	SLUGC.2		1.7×10^{-6}		1.43		3.17×10^{-1}				
	11-11-86 5:00	SLUGC.3		1.7×10^{-5}		1.11		2.47×10^{-1}				
	WELL B	MEAN	=	1.19×10^{-5}		1.21		2.69×10^{-1}				
C	11-4-86	SLUGC.3		1.7×10^{-5}		3.34×10^{-1}		7.41×10^{-2}		WELL LOCATED ABOVE	PUMPED	~10' AQ.
	11-11-86 12:25	SLUGC.1		1.7×10^{-5}		2.94×10^{-1}		6.53×10^{-2}				
	11-11-86 5:00	SLUGC.2		1.7×10^{-9}		5.55×10^{-1}		1.23×10^{-1}				
	WELL C	MEAN	=	1.13×10^{-5}		3.94×10^{-1}		3.30×10^{-1}				
D	11-4-86	SLUGD.1		1.7×10^{-9}		1.52×10^{-1}		3.37×10^{-2}		WELL LOCATED ABOVE	PUMPED	~10' AQ.
	11-11-86 [illegible]	SLUGD.2		1.7×10^{-9}		[illegible]		[illegible]				
	WELL D	MEAN	=	1.7×10^{-9}		1.60×10^{-1}		3.54×10^{-2}				
	OVERALL	MEAN	=	1.41×10^{-5}		6.42×10^{-1}		1.42×10^{-1}				
				S		T (FT²/DY)		K (FT/DY)				

E

M ESOTA POLLUTION CONTROL . NCY

Route to:
(1) _____
(2) _____
(3) _____
(4) _____

OFFICE MEMORANDUM

File: Belgrade

Location: Belgrade, Stearns Co.
(City, Village, Township, Section, Range, County, etc.)

Subject: Development of Monitoring Wells 1-6

By Whom: Byron Adams Date: 5-19-88

Investigation ___ Conference ___ Office ___ Field ___ Hearing ___ Meeting ___ Phone ___

Items to be Covered: (1) Those present and/or those interviewed
(2) Situation
(3) Further action, follow-up, recommendations

1. Spoke to Steve Bennett about Development of Belgrade's monitoring wells he performed on 5-16 & 5-17-88 (Monday, Tuesday). He said he used a trash pump (centrifugal) to develop the wells as follows:

1. Pumped 2.5 gpm up + down screen, then
2. Pumped at 5.0 gpm up + down screen, then
3. Pumped at 12 gpm " "

He removed 500-800 gallons/well, most of what he encountered was a reddish silt.

2. Geotech's master key can open locks.

3. Muni-well's been running since last visit.

Figure 4

STABILIZATION TEST

Site Belgrade
Date 5-18-88
Well number MW-1

Pumping rate (gallons/minute) 8-10 gpm
Type of pump Trash Pump
Water level ~~before~~ pumping (nearest 0.01 ft. below top of casing) 11.91' After pumpin + recov
Approximate well location City Park, Hwy 55 + Martin
Calculated volume of water in casing 1.5 - 2.0 gallons
Weather conditions Sunny, 75°, windy

Time	pH (units)	Temperature-Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (nearest 0.01 ft.)	Cumulative Volume of Water Removed From Well (measured in gallons)
10:50	Cloudy,	silty	—		
11:00	Cleared-up, Attempted to Sample too				80-100 gallons
	cloudy				
11:30	Pumped	until 11:30,	dirty (didn't clear-up)		400-500 gals.
≈ 4:00	measured	static,	4 hrs. recovery		
	11.91'	from T.O.R.			
	Repumped	≈ 15 minutes	, cleared-up	some	
	Pumped	at top of screen (1/4-throttle)			and it
	cleared	up to partly clear			

Figure 4

STABILIZATION TEST

Site Belgrade
Date 5-18-88
Well number MW-2

Pumping rate (gallons/minute) 8-10 gpm
Type of pump Trash (Centrifugal) Pump
Water level before pumping (nearest 0.01 ft. below top of casing) 12.33'
Approximate well location ERA Backyard
Calculated volume of water in casing 1.5-2.0 gals.
Weather conditions Sunny Warm

Time	pH (units)	Temperature-Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (nearest 0.01 ft.)	Cumulative Volume of Water Removed From Well (measured in gallons)
12:00	Water	was clear	from the	start	
	of pump	ing. Pumped	for 15-20	minutes.	≈ 175 gals
	Pumped	at top of	screen, sti	ll clear.	removed
	Small b	lack particul	ate in bailer		
12:15				12.33'	

Figure 4

STABILIZATION TEST

Site	Belgrade
Date	5-18-88
Well number	MW-3

Pumping rate (gallons/minute) 8-10 gpm
Type of pump Trash Pump
Water level before pumping (nearest 0.01 ft. below top of casing) 12.95'
Approximate well location Belgrade Ford Garage
Calculated volume of water in casing 1.5 - 2 gals
Weather conditions Sunny, warm

Time	pH (units)	Temperature-Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (nearest 0.01 ft.)	Cumulative Volume of Water Removed From Well (measured in gallons)
1:30	Water	was almost	clear		
	from the	start of	pumping		
	Pumped	5 minutes			40-50 gals.
—	washed+	pumped-out	trash pump	between	wells at
	S.E. corner	of the	well House.		

Figure 4

STABILIZATION TEST

Site Belgrade
Date 5-18-88
Well number MW-4

Pumping rate (gallons/minute) 8-10 gpm
Type of pump Trash Pump
Water level before pumping (nearest 0.01 ft. below top of casing) 12.00'
Approximate well location Mathison Garage
Calculated volume of water in casing 1.5-2 gals
Weather conditions Sunny + WARM.

Time	pH (units)	Temperature-Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (nearest 0.01 ft.)	Cumulative Volume of Water Removed From Well (measured in gallons)
~12:30	Almost	clear from	initial pumping		
	Cleared	up after 5	minutes	12.00'	

Figure 4

STABILIZATION TEST

Site Belgrade
Date 5-18-88
Well number MW-5

Pumping rate (gallons/minute) 8-10 gpm
Type of pump TRASH PUMP
Water level before pumping (nearest 0.01 ft. below top of casing) 13.70'
Approximate well location Empty Lot
Calculated volume of water in casing 1.5-2 gals
Weather conditions Sunny + WARM

Time	pH (units)	Temperature-Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (nearest 0.01 ft.)	Cumulative Volume of Water Removed From Well (measured in gallons)
12:30	Murky, silty at first, pumped 10				
	minutes then pumped at top of screen				
	throttled down on pump (1-2 gpm) & it				
	cleared-up.				

Figure 4

STABILIZATION TEST

Site Belgrade
Date 5-18-88
Well number MW-6

Pumping rate (gallons/minute) 8-10 gpm
Type of pump Trash Pump
Water level before pumping (nearest 0.01 ft. below top of casing) 11.04'
Approximate well location City Hall Lot
Calculated volume of water in casing 1.5 - 2 gals
Weather conditions Sunny + Warm

Time	pH (units)	Temperature-Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (nearest 0.01 ft.)	Cumulative Volume of Water Removed From Well (measured in gallons)
3:15	Reddish, cloudy, silty water			1st	
	5 minutes				
–	throttled down to 2 to 3 gpm & set pump				
	in upper part of screen, water cleared				
	up with in a minute.				

Minnesota Pollution Control Agency

BOREHOLE AND SOIL SAMPLING FORM

Site Name: Belgrade

~~EPA ID Number~~: MW-1 (SO1)

Aid/Cost Code: 830356

Date of Boring: 5-2-88

Location: City Park, Basketball Court

Number of Samples Obtained: 1 (SO 1)

Owner: ~~MPCA~~ City of Belgrade

Sampler: Becky Lofgren

Boring Unique Number: B-1

Sheet: _____ of _____

Weather Conditions: Temp 65° Wind 10-15 mph Precipitation None

Clouds Hazy

Soil Boring Description

Drilling Equipment Used: CME 55

Drilling Method: Hollow Stem Auger 4¼" ID

Borehole Depth: 20' Diameter: 8" borehole

Sample Intervals: 5' split spoon samples

Sampling Methods: Split spoons composited over: 5-7', 10-12' and 15-17' sampling intervals SO 1.

Decontamination Procedures: TSP was empty, no cleaning of spoons between splits.

Site Name: Belgrade

Boring Number: MW-1 (B-1)
City Park

Sample Data

SAMPLE NUMBER	HNU	BLOW COUNTS	DEPTH RANGE	SOIL DESCRIPTION
	0		0-4'	Moist: black, sandy clay
	0		4-5'	Brown, silty sand, some gravel
S01	0	7-7-10-12	5-7'	Split Spoon: brown, gravelly sand orange + red mottling
	0		7-10'	Brown, gravelly sand
S01	0	1-2-3-5	10-12'	Split Spoon: Wet; brown, gravelly sand (12-14" recovery) 9.3' water
	0		12-15'	Brown, gravelly sand
S01	0	2-11-30	15-16.5'	Wet: brown, gravelly sand 10.4' water
	0		16.5-20'	Brown sand w/gravel 9.2' water

Boring Depth 20.0' Water Level While Drilling 9.1'

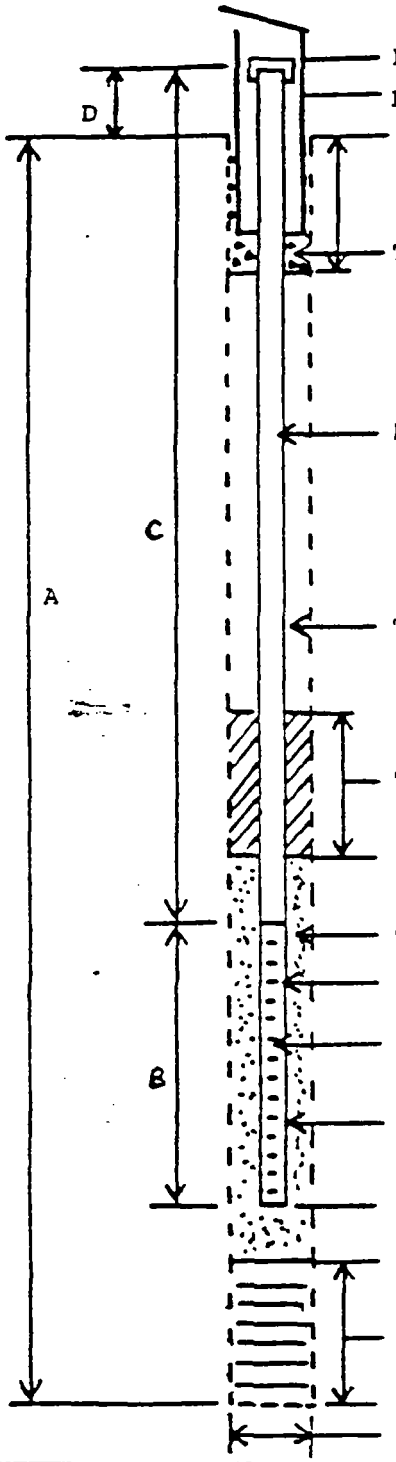
Water Level After Drilling _____ Cavein Depth _____

Comments: Started around 12:00 on MW-1/B-1

- Met utility men: Contel (John Hagstrom) & NSP (Wayne Jude) at 10:00 a.m. and toured well locations.
- HNU zeroed upwind of rig to the S.E., 0 reading, 12:30 p.m.
- No split spoon cleaning between samples, no TSP or tank water
- 2' of blow-up in HSA
- Tues.5-3-88, 10:30 a.m. to noon (well installation)

A = total depth of borehole 20'
B = length of well screen 10'
C = length of riser pipe 22.4'
D = stick-up at surface 2.4'

MONITORING WELL # MW-1
DATE INSTALLED 5-3-88
DRILLER/RIG Vince/CME 55
GROUND SURFACE ELEVATION
WATER LEVELS



ELEVATION OF TOP OF RISER PIPE	
PROTECTOR PIPE	8', 4" diameter steel capped pipe
THICKNESS AND TYPE OF SURFACE SEAL	2' concrete (0-2')
DIAMETER AND TYPE OF RISER PIPE	2" Galvanized
TYPE OF BACKFILL AROUND RISER PIPE	Neat cement grout (2' to 5')
THICKNESS AND TYPE OF SEAL	1' Bentonite Slurry (6' to 7')
TYPE OF FILTER AROUND SCREEN	#30 Red Flint (7' to 20')
TYPE OF WELL SCREEN	Johnson Stainless Steel
SCREEN GAUGE/SLOT SIZES	Sched 5/10 slot
DIAMETER AND LENGTH OF SCREEN	2"/10' long
DEPTH TO BOTTOM OF MONITORING WELL	19'
DEPTH TO BOTTOM OF FILTER SAND	20'
THICKNESS AND TYPE OF SEAL	----------
DIAMETER OF BOREHOLE	8" Nominal

LOG OF MONITORING WELL INSTALLATION

PROJECT Belgrade
LOCATION
CLIENT

Minnesota Pollution Control Agency

BOREHOLE AND SOIL SAMPLING FORM

Site Name: Belgrade

~~EPA ID Number~~: MW-2

Aid/Cost Code: 830356

Date of Boring: 5-3-88

Location: ERA Realty - backyard

Number of Samples Obtained: 1 (SO 3)

Owner: Not Responsive

Sampler: Byron Adams

Boring Unique Number: B-3

Sheet: _____ of _____

Weather Conditions: Temp 75° Wind 5-10 mph Precipitation None

Clouds None

Soil Boring Description

Drilling Equipment Used: CME 55

Drilling Method: HSA 4¼" ID

Borehole Depth: 20' Diameter: 8"

Sample Intervals: 5-7', 10-12', 15-17'

Sampling Methods: Split spoon samples were composited over the above intervals for sample 503.

Decontamination Procedures: TSP wash and clean wash.

Site Name: Belgrade Boring Number: B-3, (MW-2)

Sample Data

SAMPLE NUMBER	HNU	BLOW COUNTS	DEPTH RANGE	SOIL DESCRIPTION
	0		0-3.5'	Black, silty sandy topsoil
	0		3.5-4.5'	Brown, silty sand w/gravel
S03	0	4-6-8-9	5-7'	Brown, silty sandy gravel
	0		7-10'	Brown, silty sandy gravel/coarser drilling
S03	0	4-6-10-9	10-12'	Wet: sandy gravel/sandy clay (top 3")
	0		12-15'	Brown, gravelly sand
S03	0	1-4-6-7	15-17'	Wet: brown, gravelly sand
	0		17-20'	Brown, silty sandy gravel

Boring Depth 20' Water Level While Drilling 9.5'

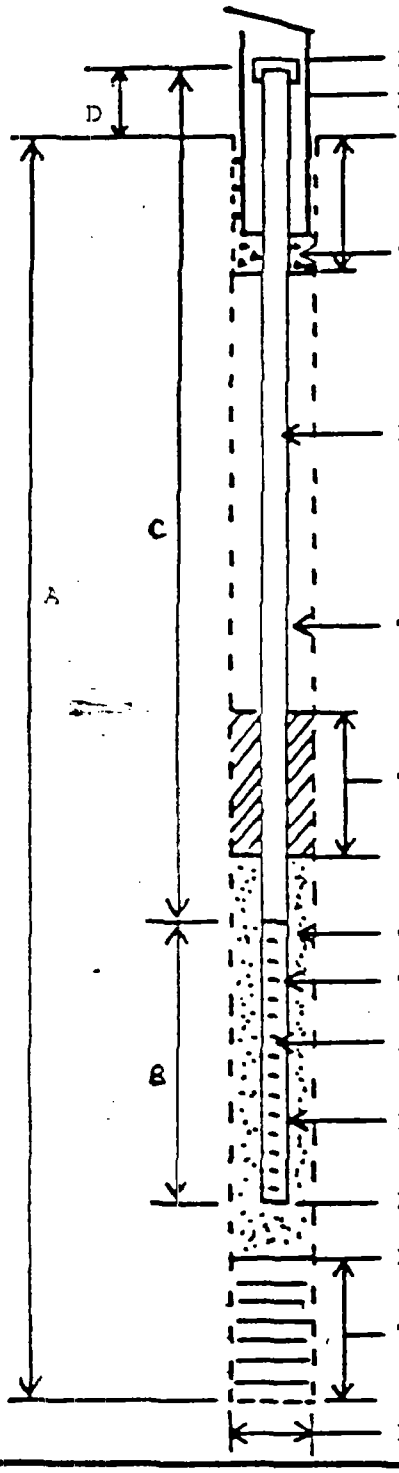
Water Level After Drilling _____ Cavein Depth _____

Comments: Received a message from Tony Olson via Editha (town clerk) from Dave Koubsky that the building can be used as a protective agent - keep it 3' from building and a variance in writing is needed.

6 ppm HNU at exhaust of drill rig port. 0 reading down HSA at 10'.

A = total depth of borehole 20'
B = length of well screen 10'
C = length of riser pipe 11.5'
D = stick-up at surface 2.5'

MONITORING WELL # MW-2
DATE INSTALLED 5-3-88
DRILLER/RIG Vince/CME 55
GROUND SURFACE ELEVATION
WATER LEVELS



ELEVATION OF TOP OF RISER PIPE	
PROTECTOR PIPE	8', 4" diameter steel pipe, capped
THICKNESS AND TYPE OF SURFACE SEAL	2" Concrete Grout
DIAMETER AND TYPE OF RISER PIPE	2", Galvanized
TYPE OF BACKFILL AROUND RISER PIPE	Neat Cement Grout
THICKNESS AND TYPE OF SEAL	1' Bentonite Slurry (6' to 7')
TYPE OF FILTER AROUND SCREEN	#30 Flint Sand (7' to 20')
TYPE OF WELL SCREEN	Johnson Stainless Steel
SCREEN GAUGE/SLOT SIZES	Sched 5/10 Slot
DIAMETER AND LENGTH OF SCREEN	2", 10' long
DEPTH TO BOTTOM OF MONITORING WELL	19'
DEPTH TO BOTTOM OF FILTER SAND	20'
THICKNESS AND TYPE OF SEAL	None
DIAMETER OF BOREHOLE	8" Nominal

LOG OF MONITORING WELL INSTALLATION

PROJECT
LOCATION
CLIENT

Minnesota Pollution Control Agency

BOREHOLE AND SOIL SAMPLING FORM

Site Name: Belgrade

~~EPA ID Number~~: MW-3

Aid/Cost Code: 830356

Date of Boring: 5-4-88

Location: Belgrade Ford

Number of Samples Obtained: 1 (SO 5)

Owner: Not Responsive

Sampler: Byron Adams

Boring Unique Number: B-5

Sheet: _____ of _____

Weather Conditions: Temp 75 Wind 0-3 mph Precipitation None

Clouds clear

Soil Boring Description

Drilling Equipment Used: CME 55

Drilling Method: HSA 4¼' I.D.

Borehole Depth: 19.5' Diameter: 8" nominal

Sample Intervals: 5-7', 10-12', 15-17'

Sampling Methods: Split spoons composited over above intervals sampled.

Decontamination Procedures: TSP wash bucket, then rinse.

Site Name: Belgrade

Boring Number: B-5 (MW-3)
Belgrade Ford

Sample Data

SAMPLE NUMBER	HNU	BLOW COUNTS	DEPTH RANGE	SOIL DESCRIPTION
	0		0-4"	0-4" Concrete sidewalk
	0		4"-4.5'	Black, sandy clay to clayey sand
S05	0	10-13-12-14	5-7'	Dry: brown, sandy gravel (1½') brown, silty sandy gravel (½')
	0		7-10'	Brown, med.-co. sand some gravel
S05	1	8-7-3-7	10-12'	Wet: brown, sandy gravel (bottom 1½') brown, silty sand (top ½')
	0		12-15'	Brown, silty sand w/gravel
S05	0	1-2-3-5	15-17'	Wet: brown, silty sandy gravel
	0		17-19.5'	Brown, silty sandy gravel

Boring Depth 19.5'

Water Level While Drilling

Water Level After Drilling

Cavein Depth

Comments: Composite taken over: 5-7', 10-12', and 15-17' split spoons.

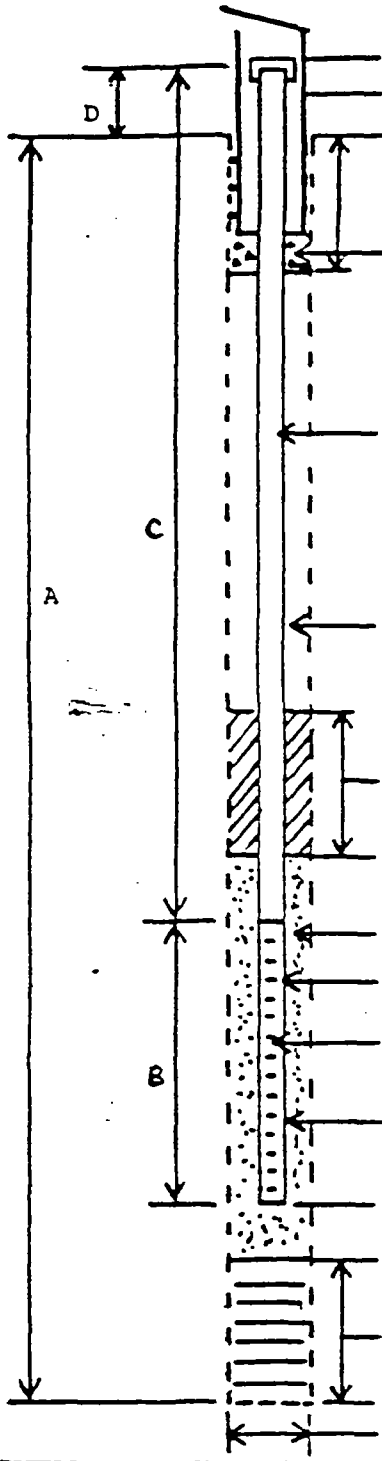
Quit 5-4-88 at 5:15, arrived 5:45 Willmar

- Mayor bordering and son pulled up as we were setting up and stated he could not have wells on the sidewalk because of the city's liability related to the wells and people falling because of their presence. Winter was the most serious time.

- He wanted a letter from the MPCA that the wells would be abandoned by September 30, 1988.

A = total depth of borehole 19.5'
B = length of well screen 10'
C = length of riser pipe 10.5'
D = stick-up at surface 1.8'

MONITORING WELL # MW-3
DATE INSTALLED 5-4-88
DRILLER/RIG Vince/CME 55
GROUND SURFACE ELEVATION
WATER LEVELS
10'



ELEVATION OF TOP OF RISER PIPE	
PROTECTOR PIPE	8', 4" diameter Steel pipe capped
THICKNESS AND TYPE OF SURFACE SEAL	2' Concrete Grout
DIAMETER AND TYPE OF RISER PIPE	2", Galvanized
TYPE OF BACKFILL AROUND RISER PIPE	Neat Cement Grout
THICKNESS AND TYPE OF SEAL	1' Bentonite Slurry (5.7' to 6.7')
TYPE OF FILTER AROUND SCREEN	#30 Flint Sands (6.7' to 19.5')
TYPE OF WELL SCREEN	Johnson Stainless Steel
SCREEN GAUGE/SLOT SIZES	Sched. 5/10 Slot
DIAMETER AND LENGTH OF SCREEN	2", 10'
DEPTH TO BOTTOM OF MONITORING WELL	18.7'
DEPTH TO BOTTOM OF FILTER SAND	19.5'
THICKNESS AND TYPE OF SEAL	None
DIAMETER OF BOREHOLE	Nominal 8"

LOG OF MONITORING WELL INSTALLATION

PROJECT
LOCATION
CLIENT

Minnesota Pollution Control Agency

BOREHOLE AND SOIL SAMPLING FORM

Site Name: Belgrade ~~EPA ID Number:~~ MW-4

Aid/Cost Code: 830356 Date of Boring: 5-5-88

Location: Mathison Ford Number of Samples Obtained: 1 (S06)

Owner: Bob Mathison Sampler: Byron Adams

Boring Unique Number: B-6 Sheet: _____ of _____

Weather Conditions: Temp 65 Wind 0 Precipitation 0

Clouds clear

Soil Boring Description

Drilling Equipment Used: CME 55, 25,000 lbs. Gross Wt.

Drilling Method: HSA, 4¼" I.D.

Borehole Depth: 18.5' Diameter: 8" Nominal

Sample Intervals: 5-7', 10-12', 15-17'

Sampling Methods: Split spoon samples composited over above intervals for

Decontamination Procedures: TSP wash and clean water rinse.

Site Name: Belgrade Boring Number: B-6 (MW-4)

Sample Data

SAMPLE NUMBER	HNU	BLOW COUNTS	DEPTH RANGE	SOIL DESCRIPTION
	0		0-3"	0-3" Concrete Sidewalk
	0		3"-3'	Dark brown to black sandy clay (fill)
	0		3-5'	Brown med. to co. sandy gravel
506	0	8-13-18-18	5-7'	Brown, silty sandy gravel
	0		7-10'	Brown, silty sandy gravel
506	0	4-3-4-3	10-12'	Wet: med-co. sand (1.5') silty sandy clay (0.5') water 10.2'
	0		12-15'	Brown, silty sandy gravel
506	0	3-4-10-9	15-17'	Wet: brown, silty sandy gravel
	0		17-18.5'	Wet: brown, silty sandy gravel

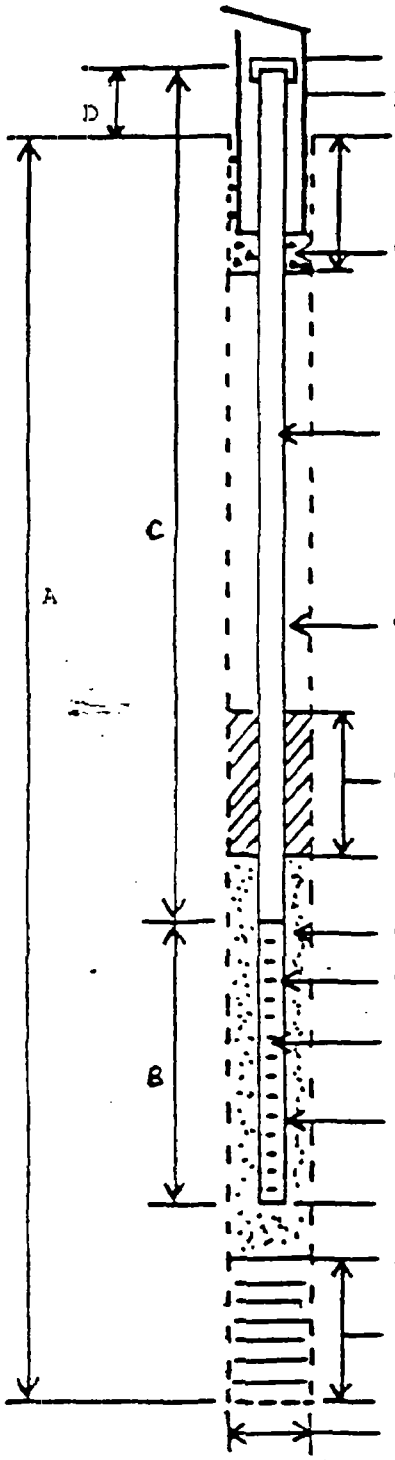
Boring Depth 18.5' Water Level While Drilling 10.2'

Water Level After Drilling _____ Cavein Depth _____

Comments: Bob Mathison's comments: 1) Its Belgrade's centennial year so he thought the ugly, rusty protective posts should be painted. I spray painted the Hwy 55 sidewalk wells with orange fluorescent paint. 2) Bob & 12 locals got together Wednesday evening 5-4-88 and tasted the outflow discharge from municipal well #2 and they thought the water tasted fine, just like farm fresh well water.

A = total depth of borehole 18.5'
B = length of well screen 10.0'
C = length of riser pipe 10.0'
D = stick-up at surface 1.5'

MONITORING WELL # MW-4
DATE INSTALLED 5-5-88
DRILLER/RIG Vince/CME 55
GROUND SURFACE ELEVATION
WATER LEVELS



ELEVATION OF TOP OF RISER PIPE	
PROTECTOR PIPE	8', 4" diameter Steel pipe, capped
THICKNESS AND TYPE OF SURFACE SEAL	2' Concrete
DIAMETER AND TYPE OF RISER PIPE	2" Galvanized
TYPE OF BACKFILL AROUND RISER PIPE	Neat Cement Grout
THICKNESS AND TYPE OF SEAL	1' Bentonite Slurry (5.5' to 6.5')
TYPE OF FILTER AROUND SCREEN	#30 Flint Sand (6.5' - 18.5')
TYPE OF WELL SCREEN	Johnson Stainless Steel
SCREEN GAUGE/SLOT SIZES	Sched. 5/ 10 Slot
DIAMETER AND LENGTH OF SCREEN	2", 10' Long
DEPTH TO BOTTOM OF MONITORING WELL	18.5'
DEPTH TO BOTTOM OF FILTER SAND	19.0'
THICKNESS AND TYPE OF SEAL	None
DIAMETER OF BOREHOLE	8" Nominal

LOG OF MONITORING WELL INSTALLATION

PROJECT
LOCATION
CLIENT

Minnesota Pollution Control Agency

BOREHOLE AND SOIL SAMPLING FORM

Site Name: Belgrade

~~EPA ID Number:~~ MW-5

Aid/Cost Code: 830356

Date of Boring: 5-4-88

Location: Empty lot, Walker & Martin

Number of Samples Obtained: 1 (SO4)

Owner: Commercial Club

Sampler: Byron Adams

Boring Unique Number: B-4, MW-5

Sheet: _____ of _____

Weather Conditions: Temp 65 Wind 0-5 mph Precipitation None

Clouds clear

Soil Boring Description

Drilling Equipment Used: CME 55

Drilling Method: HSA 4¼" I.D.

Borehole Depth: 20'

Diameter: 8" borehole

Sample Intervals: 5-7', 10-12', 15-17'

Sampling Methods: HSA, composited split spoons for SO4

Decontamination Procedures: TSP wash and clean rinse for split spoon

Site Name: Belgrade Boring Number: B-4, MW-5

Sample Data

SAMPLE NUMBER	HNU	BLOW COUNTS	DEPTH RANGE	SOIL DESCRIPTION
	1		0-3.5'	Dark brown, silty sandy gravel
	1		3.5-5'	Brown, silty sandy gravel
S04	0	3-7-9-6	5-7'	Brown, silty sandy gravel (SS)
	0		7-10'	Brown, silty sandy gravel with 1-2" wide rocks.
S04	0	8-8-6-5	10-12'	Moist: brown, sandy gravel (wet at 11')
	0		12-15'	Brown, sandy gravel
S04	0	2-4-8-7	15-17'	Wet: brown, sandy gravel
	0		17-20'	Wet: brown, sandy gravel

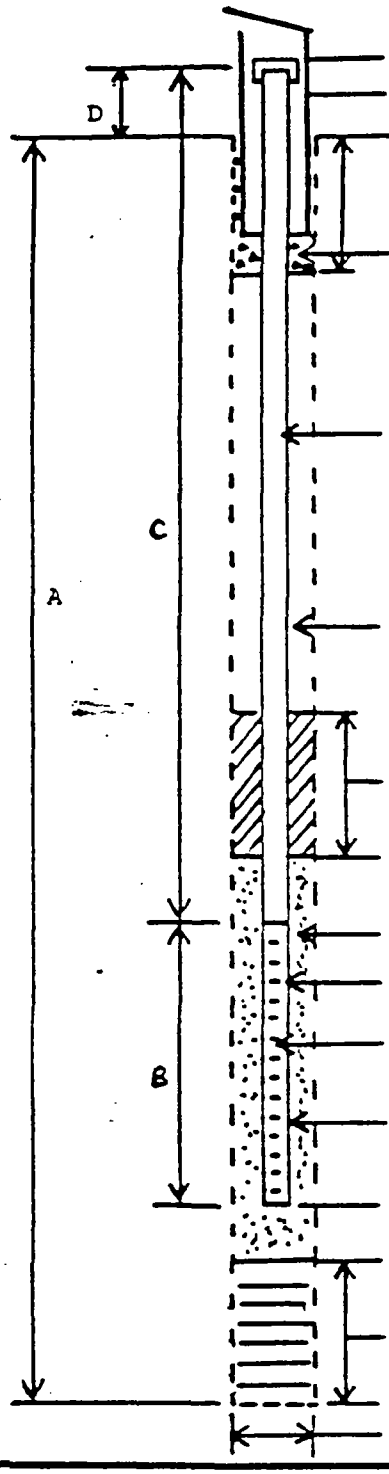
Boring Depth 20' Water Level While Drilling

Water Level After Drilling Cavein Depth

Comments: Steam cleaned at noon on 5-4-88 at shop.

A = total depth of borehole 20'
B = length of well screen 10'
C = length of riser pipe 10.6'
D = stick-up at surface 1.6'

MONITORING WELL # MW-5
DATE INSTALLED 5-4-88
DRILLER/RIG Vince/CME 55
GROUND SURFACE ELEVATION
WATER LEVELS



ELEVATION OF TOP OF RISER PIPE	
PROTECTOR PIPE	8', 4" diameter Steel capped pipe
THICKNESS AND TYPE OF SURFACE SEAL	2' Concrete Grout
DIAMETER AND TYPE OF RISER PIPE	2" Galvanized
TYPE OF BACKFILL AROUND RISER PIPE	Neat Cement Grout
THICKNESS AND TYPE OF SEAL	1' Bentonite Slurry (6' to 7')
TYPE OF FILTER AROUND SCREEN	# 30 Red Flint Sands (7' to 19.6')
TYPE OF WELL SCREEN	Johnson Stainless Steel
SCREEN GAUGE/SLOT SIZES	Shed.5/10 Slot
DIAMETER AND LENGTH OF SCREEN	2", 10' long
DEPTH TO BOTTOM OF MONITORING WELL	19.0'
DEPTH TO BOTTOM OF FILTER SAND	20.0'
THICKNESS AND TYPE OF SEAL	None
DIAMETER OF BOREHOLE	8" Nominal

LOG OF MONITORING WELL INSTALLATION

PROJECT Belgrade
LOCATION
CLIENT

Minnesota Pollution Control Agency

BOREHOLE AND SOIL SAMPLING FORM

Site Name: Belgrade

~~EPA ID Number~~: MW-6

Aid/Cost Code: 830356

Date of Boring: 5-2-88, Monday

Location: City Hall lot

Number of Samples Obtained: 1 (S02)

Owner: City of Belgrade

Sampler: Rebecca Lofgren

Boring Unique Number: B-2

Sheet: _____ of _____

Weather Conditions: Temp 70° Wind 10-15mph Precipitation None

Clouds Hazy overcast

Soil Boring Description

Drilling Equipment Used: CME 55

Drilling Method: Hollow Stem Auger (HSA) 4¼" I.D.

Borehole Depth: 20'

Diameter: 8" Nominal borehole

Sample Intervals: 5' Split Spoons

Sampling Methods: Split - Spoons

Split spoons from: 5-7', 10-12' and 15-17' were composited for sample S02.

Decontamination Procedures: No TSP, water tank not available so the spoon was not cleaned between splits. However, splits were composited thus negating effects from not cleaning split spoons between samples.

Site Name: Belgrade

Boring Number: B-2 (MW-6)
City Hall Parking Lot

Sample Data

SAMPLE NUMBER	HNU	BLOW COUNTS	DEPTH RANGE	SOIL DESCRIPTION
	0		0-5'	Dry: brown, silty sand
S02	0	8-13-15-15	5-7'	Split Spoon: Dry: brown, gravelly sand clayey sand (½') (1½')
	0		7-10'	Clayey sand, with some gravel
S02	0	2-3-4-6	10-12'	Wet: med. to co. sand, with some gravel water at 8.g
			12-15'	Wet: med. to co. sand, w/s gravel
S02	0	11-20-45	15-17'	Split Spoon: Wet: M-co. sand, w/s gravel (high blow count due to blow-up in HSA)
			17-20'	M-co. sand, w/gravel

Boring Depth 19.3' Water Level While Drilling 8.9'

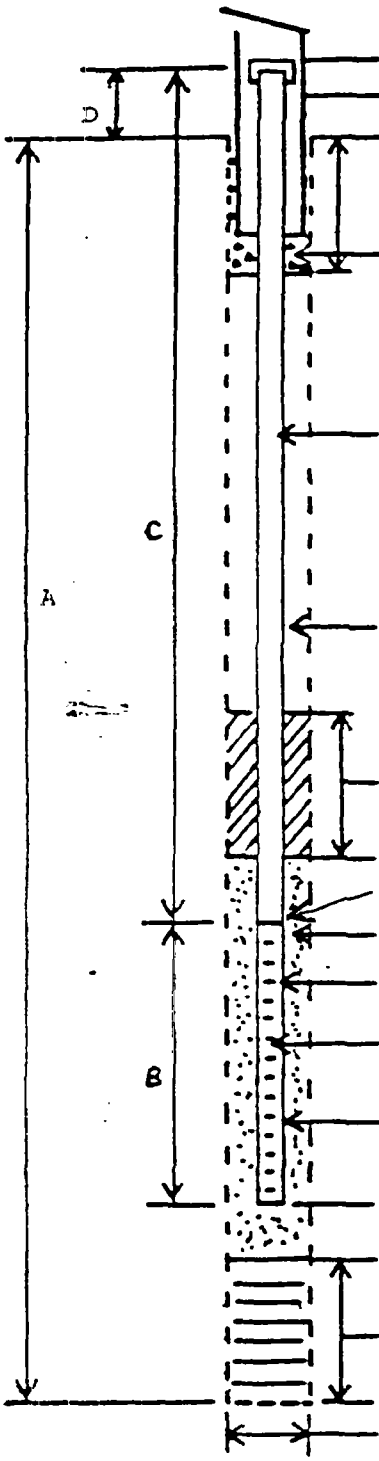
Water Level After Drilling _____ Cavein Depth _____

Comments: HNU zeroed upwind, set on 8.9 for TCE

- About 9' a measuring tape w/weight is caught in sand pack
- Started grouting 8:00 a.m. 5-3-88 cement mixer's was in Willmar
- Stick-up 3.3' cut to 2.5'
- Quit 4:55 p.m. 5-2-88, for the day
- Teflon tape used on joints of pipe

A = total depth of borehole 20.0'
B = length of well screen 10'
C = length of riser pipe 11.3'
D = stick-up at surface 2.5'

MONITORING WELL # MW-6
DATE INSTALLED 5-2 to 5-3-88
DRILLER/RIG Vince/CME 55
GROUND SURFACE ELEVATION
WATER LEVELS
9.5'
8.9' during drilling
10.6'



ELEVATION OF TOP OF RISER PIPE	
PROTECTOR PIPE	8', 4" diameter Steel capped pipe
THICKNESS AND TYPE OF SURFACE SEAL	2.0' concrete grout
DIAMETER AND TYPE OF RISER PIPE	2" diameter, galvanized
TYPE OF BACKFILL AROUND RISER PIPE	3.5' Neat cement grout
THICKNESS AND TYPE OF SEAL	1.3' Bentonite Slurry (5.5' to 6.8')
{Pipe thread to Johnson thread coupler Adapter}	
TYPE OF FILTER AROUND SCREEN	#30 Red Flint Sands (6.8' to 20')
TYPE OF WELL SCREEN	Johnson, Stainless Steel
SCREEN GAUGE/SLOT SIZES	Sched.5/10 Slot
DIAMETER AND LENGTH OF SCREEN	2", 10' long
DEPTH TO BOTTOM OF MONITORING WELL	18.8'
DEPTH TO BOTTOM OF FILTER SAND	20'
THICKNESS AND TYPE OF SEAL	None
DIAMETER OF BOREHOLE	8" Nominal

LOG OF MONITORING WELL INSTALLATION

PROJECT Belgrade
LOCATION City of Belgrade
CLIENT

F

GEOTECHNICAL ENGINEERING CORPORATION
Consulting Engineers • Soil Testing

JAN 25 89

MPCA, Ground Water & Solid Waste Div.

REPORT OF TEST BORINGS

PROJECT:

AIRWAY PRODUCTS PROPERTY
803 OLD HIGHWAY 18 SOUTH
PRINCETON, MINNESOTA

REPORTED TO:

MINNESOTA POLLUTION CONTROL AGENCY
520 LAFAYETTE ROAD NORTH
ST. PAUL, MINNESOTA 55155

ATTN: MR. BRAD NORDBERG

GEC JOB NO: 5549

DATE: JANUARY 24, 1989

INTRODUCTION

On January 3 and 4, 1989, we drilled five test borings at the referenced project.

The scope of investigation (boring method, location, depth, etc.) was as requested by the MPCA's field representative, Mr. Brad Nordberg.

TEST BORINGS

Procedures

The borings were made at locations selected by the client. General locations are shown on the attached sketch.

The elevations of the ground surface at the borings were determined in reference to an iron survey monument located 3.6' east of power pole #39. The survey monument and power pole are located south of the project site. The bench mark elevation there, according to the MPCA, is 978.8.

The borings were made using the standard penetration, split spoon methods. Soil samples were obtained from the hollow stem auger similar to the auger spin method and from the split spoon. Refer to the attached sheets (Field Sampling and Testing Methods) for additional information.

1925 Oakcrest Avenue • Roseville, Minnesota 55113 • (612) 636-7744
Apple Valley, Minnesota • (612) 431-5266

All bore holes were filled. Borings #1, 3, 4, and 5 were filled with a mixture of bentonite and soil cuttings. Boring #2 was filled with neat-cement grout.

A field log was maintained for each soil boring. Information on field logs includes: contacts between soil layers; geologic identification (driller's opinion) of materials; notes; and other information.

Soil samples were then examined in the laboratory, and soil classification information was added to the field logs. Soil identifications and descriptions are in accordance (generally) with the ASTM Visual-Manual (D2488) system as shown on the attached sheet. (We save samples for 45 days and then discard them--unless we are requested to do otherwise.)

Typewritten logs were then prepared from field logs. Typewritten logs may not contain all information shown on field logs. (Field logs are available for inspection by our client.)

Results

Typewritten copies of the field logs are enclosed. Refer to the attached logs for a description of the subsurface conditions encountered in the borings. The logs show: the depths to the contacts between the soil layers; the identification and geology of the soils; the surface elevations at the borings; water level measurements; standard penetration resistance (N column); and other information. Refer to the attached sheets (Abbreviations, Notations, and Symbols; General Terminology; Ground Water Information; Geologic Terminology) for descriptions of terminology used on the logs.

DECONTAMINATION

The drill rig and tools were steam cleaned before being brought to the site.

Drilling tools and down-hole equipment and materials were steam-cleaned before drilling each boring. The soil sampler was cleaned with a sequence of: trisodiumphosphate solution and clean water before each sample was taken.

REMARKS

Subsurface soil and ground water conditions can vary from that encountered in the borings at other locations, depths, and times. Refer to the attached sheet for more information regarding limitations of subsurface exploration.

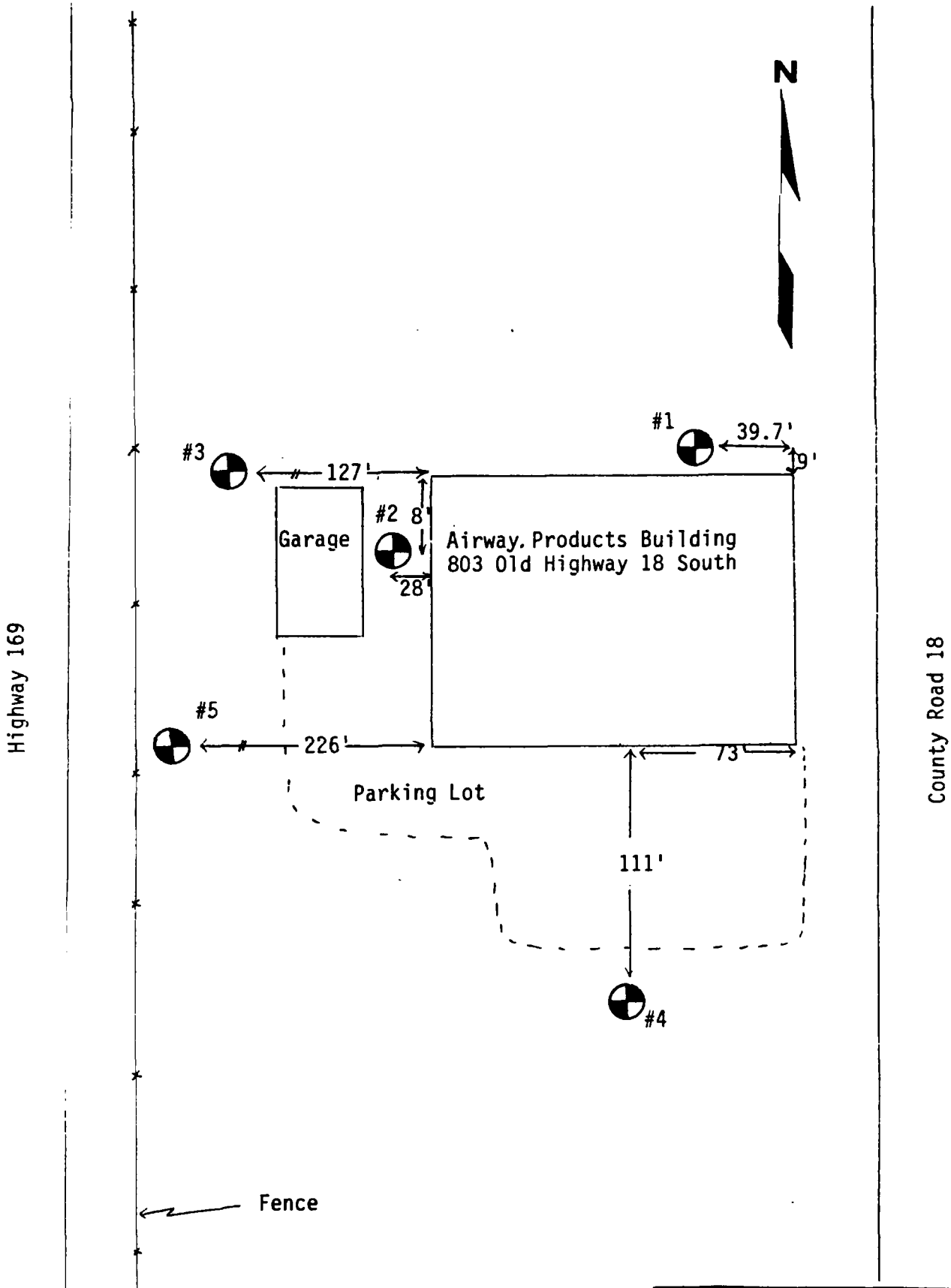
To protect the addressee, the public, and ourselves, this report (and all supporting information) is provided for the addressee's own use. No representations are made to parties other than the addressee.

Report Prepared By:

John M. Fox
Technician

Under the Supervision of:

Lawrence F. Feldsien, P.E.
MN Reg. No. 9103



GEOTECHNICAL ENGINEERING CORPORATION	
Project: Airway Products Property Princeton, MI	
Dwn. by: JF	**Date:** 1-10-89
Job No: 5549	**Scale:** None

GEOTECHNICAL ENGINEERING CORPORATION

GEC JOB NO: 5549 LOG OF BORING NO. 1

PROJECT: AIRWAY PRODUCTS PROPERTY, 803 OLD HIGHWAY 18 SOUTH, PRINCETON, MINNESOTA

DEPTH, IN FEET	SURFACE ELEVATION: 979.0 IDENTIFICATION	GEOLOGY	N BPF	MC	SAMPLE TYPE	REC.	FIELD & LABORATORY TESTS WC	DEN	L.L. / P.L.	q_c
1 – 2 – 3 –	Poorly graded sand, fine grained, dark brown, (SP)	FILL		M	HSA					
4 – 5 – 6 – 7 – 8 –		WEATHERED SOIL or FILL	4	M	SS	10				
9 – 10 – 11 –	Poorly graded sand, light brown, fine to medium grained, (SP)	COARSE ALLUVIUM	9	W	SS	24				
12 –	END OF BORING									
13 – 14 – 15 – 16 – 17 – 18 – 19 – 20 – 21 –										

DEPTH	DRILLING METHOD
0-10'	2¼ HSA
BORING COMPLETED:	1/4/89 10:00
CC: PS	CA: KS Rig: 57

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
1/4	9:40	12	10	12.5		dry
1/4	9:47	12	-	8.5		dry

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

GEOTECHNICAL ENGINEERING CORPORATION

GEC JOB NO: 5549 LOG OF BORING NO. 2

PROJECT: AIRWAY PRODUCTS PROPERTY, 803 OLD HIGHWAY 18 SOUTH, PRINCETON, MINNESOTA

DEPTH, IN FEET	SURFACE ELEVATION: 976.3 IDENTIFICATION	GEOLOGY	N BPF	MC	SAMPLE TYPE	REC.	FIELD & LABORATORY TESTS WC	DEN	L.L. / P.L.	q_c
	Silty sand, fine grained, with a trace of roots, dark brown, (SM)	TOPSOIL								
1			36/6"	W/M	SS	20				
2	Silty sand, fine grained, dark brown, (SM)	WEATHERED SOIL								
3										
4										
5	Poorly graded sand, light brown, fine to medium grained, (SP)									
6			12	M	SS	15				
7										
8										
9		COARSE ALLUVIUM								
10										
11										
12										
13										
14			5	W	SS	19				
15	END OF BORING									
16										
17										
18										
19										
20										
21										

DEPTH	DRILLING METHOD
0-13'	2¼ HSA

WATER LEVEL MEASUREMENTS							
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
1/3	3:15	15	13	12.2		12.1

BORING COMPLETED: 1/3/89 5:00

CC: PS CA: KS Rig: 57

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

GEOTECHNICAL ENGINEERING CORPORATION

GEC JOB NO: 5549 LOG OF BORING NO. 3

PROJECT: AIRWAY PRODUCTS PROPERTY, 803 OLD HIGHWAY 18 SOUTH, PRINCETON, MINNESOTA

SURFACE ELEVATION: 974.8

DEPTH, IN FEET	IDENTIFICATION	GEOLOGY	N BPF	MC	SAMPLE TYPE	REC.	FIELD & LABORATORY TESTS WC	DEN	L.L. / P.L.	q_c
1 – 2 – 3 –	Sandy organic soil, dark brownish black, (OL/OH)	TOPSOIL		M	HSA					
4 – 5 – 6 – 7 – 8 – 9 –	Poorly graded sand, light brown, fine to medium grained, (SP)	COARSE ALLUVIUM	11	M	SS	19				
10 –			9	M	SS	19				
11 –	END OF BORING									
12 – 13 – 14 – 15 – 16 – 17 – 18 – 19 – 20 – 21 –										

DEPTH	DRILLING METHOD
0-11'	2¼ HSA

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
1/4	11:25	11	9	9.8		M
1/4	11:28	11	-	8.3		D

BORING COMPLETED: 1/4/89 11:30

CC: PS CA: KS Rig: 57

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

GEOTECHNICAL ENGINEERING CORPORATION

GEC JOB NO: 5549 LOG OF BORING NO. 4

PROJECT: AIRWAY PRODUCTS PROPERTY, 803 OLD HIGHWAY 18 SOUTH, PRINCETON, MINNESOTA

DEPTH, IN FEET	SURFACE ELEVATION: 977.1 IDENTIFICATION	GEOLOGY	N BPF	MC	SAMPLE TYPE	REC.	FIELD & LABORATORY TESTS WC	DEN	L.L. / P.L.	q_c
	Silty sand, very dark brown, (SM)	FILL								
1				M	HSA					
2										
3	Not sampled to 10'.									
4										
5										
6										
7										
8										
9										
10										
11	Poorly graded sand, light brown, with a trace of gravel, fine to medium grained, (SP)	COARSE ALLUVIUM	7	M	SS	18				
12	END OF BORING									
13										
14										
15										
16										
17										
18										
19										
20										
21										

DEPTH : DRILLING METHOD	WATER LEVEL MEASUREMENTS						
	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
0-10' 2¼ HSA							
	1/4	3:04	12	10	12.0		dry
	1/4	3:07	12	-	8.4		dry
BORING COMPLETED: 1/4/89 3:10							
CC: PS CA: KS Rig: 57							

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

GEOTECHNICAL ENGINEERING CORPORATION

GEC JOB NO: 5549 LOG OF BORING NO. 5

PROJECT: AIRWAY PRODUCTS PROPERTY, 803 OLD HIGHWAY 18 SOUTH, PRINCETON, MINNESOTA

DEPTH, IN FEET	SURFACE ELEVATION: 975.0 IDENTIFICATION	GEOLOGY	N BPF	MC	SAMPLE TYPE	REC.	FIELD & LABORATORY TESTS WC	DEN	L.L. / P.L.	q_c
1	Organic soil, black, (OL/OH)			M	HSA					
2	Silty sand, fine grained, light brown, (SM)									
3			7	M	SS	12				
4		FILL								
			7	M	SS	15				
5	Poorly graded sand with silt, fine grained, with a trace of gravel, brown, (SP-SM)									
6			18	M	SS	15				
7										
8	Poorly graded sand, brown, fine to meidum grained, (SP)		15	M	SS	16				
9		COARSE ALLUVIUM								
			7	W	SS	12				
10	END OF BORING									
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										

DEPTH	DRILLING METHOD
0-8½'	2¼ HSA
BORING COMPLETED	1/4/89 2:10
CC: PS	CA: KS Rig: 57

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
1/4	1:55	10	8.5	9.6		wet
1/4	2:05	10		7.4		dry

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

FIELD SAMPLING AND TESTING METHODS

Standard Penetration/Split-Spoon Sampling Method. In this method, a steel split-barrel sampling tube is driven into the soil with a 140-pound hammer dropped from a height of 30 inches (the hammer is dropped onto a rod attached to the sampler). The number of hammer blows required to drive the sampler tube 1 foot into the ground (after an initial set of 1/2 foot) is recorded as the standard penetration resistance (N-value) of the soil for the sampling interval. When driving is complete, the sampler is retracted and opened, and soil samples are taken from the tube. The bore hole is advanced between sampling intervals with an auger, casing, or rotary drill bit (with drilling fluid). When the ground surface is frozen, soil samples from the frozen zone are taken off the flights of the hollow-stem auger.

Static Cone Test. This field test determines the static cone bearing pressure of the soil--that is, how much resistance the soil has to penetration by a cone-shaped point. The cone bearing pressure (q_c value) is equal to the total load applied divided by the area of the base of the cone. Two types of penetrometers are used, mechanical and manual. Mechanical cones are pushed hydraulically with the drill rig. Manual cones are pushed by hand.

Thin-Walled Tube Sampling Method. In this method, thin-walled tubes (2 or 3 inches in diameter and about 2 feet long) are pushed into the soil, then retracted. Relatively undisturbed soil samples are recovered from inside the tubes.

Coring. In this boring method, a diamond or carbide bit on a double-tubed barrel is rotated into rock to the desired depth, then retracted. Rock samples are taken from the inner tube.

Auger Borings. Auger borings are drilled by hand or with a power-driven auger.

The hand auger method consists of drilling the auger into the soil in increments of approximately 4", then retracting the auger and observing the material recovered. This allows almost continuous observation of the soil profile.

Two procedures are available in drilling power auger borings: "spinning" and "pulling."

- In the spinning procedure, the auger is drilled into the ground in increments of 5' or less. The auger is then spun rapidly. Soil "rides up" the flights of the auger to the ground surface, where samples are taken. In general, this method results in reasonably accurate identification of the soil profile above the ground water table, but it can be very misleading - particularly in sandy and gravelly soils - below the water table.

- In the pulling procedure, the auger is drilled into the ground and then withdrawn to above the ground surface. The general soil profile can be observed, and samples of materials adhering to the auger are taken. In general, this method is considered to be a little more accurate than the spinning method in soil above the ground water table, and more accurate than the spinning method in soil below the ground water table.

BORING LOGS: ABBREVIATIONS, NOTATIONS, AND SYMBOLS

This list defines some of the abbreviations, notations, and symbols used on the boring logs.

A,B,H,N:	Size of casing or core
AC:	At completion of boring
CA:	Crew assistant
CAS:	Casing
CC:	Crew chief
CONS:	One-dimensional consolidation test
COT:	Clean-out tube
D:	Sampled soil appears dry
DEN:	Dry density, pounds per cubic foot
DM:	Drilling mud or bentonite slurry
FA:	Power-driven flight auger; P-pulling procedures; S-spinning procedure
HA:	Hand auger
HSA:	Hollow-stem auger
HYD:	Hydrometer analysis
LL:	Liquid limit
M:	Sampled soil appears moist
MC:	Column used to describe moisture condition of samples and for the ground water level symbol.
N (BPF):	Standard penetration resistance (N-value) in blows per foot (see note #2 below)
PAP:	Paper plug
PL:	Plastic limit
q_p:	Pocket penetrometer strength, tons per square foot
q_c:	Static cone bearing pressure, tons per square foot
q_u:	Unconfined compressive strength, pounds per square foot
RD:	Rotary drilling with fluid and cone-type roller bit
REC:	In split-spoon and thin-walled-tube sampling, the length (in inches) of sample recovered (see note #2 below). In rock coring, the length of core recovered (expressed as per cent of the total core run).
REV:	Revert drilling fluid
SA:	Sieve analysis
SR:	Skid rig; non-rotary drill (skid-mounted)

BORING LOGS: ABBREVIATIONS, NOTATIONS, AND SYMBOLS

SS:	Standard split-spoon sampler (steel; 1-3/8-inch inside diameter; 2-inch outside diameter)
TW:	Thin-walled tube (2" and 3" diameter)
VANE:	Vane shear strength, pounds per square foot; L-laboratory; F-field
wc:	Water content, as percent of dry weight
W:	Sampled soil appears wet
WASH:	Sample of material obtained by screening returning rotary drilling fluid or by taking a split-spoon sample of material which has collected inside the bore hole after "falling" through drilling fluid
WAT:	Water
WH:	Sampler advanced by static weight of drill rod and 140-pound hammer
WR:	Sampler advanced by static weight of drill rod
-200:	Percent of material finer than #200 sieve
▼ :	Water level symbol
25:	Diedrich Model 25 rotary drill (skid or truck-mounted)
55:	Central Mine Equipment Model 55 rotary drill (truck-mounted)
57:	Mobile Drill Company Model 57 rotary drill (truck-mounted)
550:	Central Mine Equipment Model 550 rotary drill (rubber tire-mounted)

NOTES:

1. The size of drilling tools and related equipment is indicated by a number or letter. Examples: 1) a hollow-stem auger with an inside diameter of 3-3/4 inches is shown as 3-3/4 HSA; 2) a B size core barrel is shown as B core.

2. In highly resistant material, the N-value (in the "N" column) may be shown as a "fraction," with an upper and a lower number separated by a slash (/) or a bar (—). The lower number is the distance the sampler is driven, in inches (below the initial 1/2 foot set) and the upper figure is the number of hammer blows to drive the sampler that distance (after the initial 1/2 foot set). Also, the length of sample recovered, as shown on the "REC" column, may be greater than the distance indicated in the N column. The disparity is because the N value is recorded below the initial 1/2 foot set, whereas length of sample recovered is for the entire sampler drive.

GENERAL TERMINOLOGY NOTES
FOR
SOIL IDENTIFICATION AND DESCRIPTION

Grain Size

Term	Size
Boulders	>12"
Cobbles	3"-12"
Gravel	#4 sieve - 3"
Sand	#200 - #4 sieve
Fines (silt & clay)	<#200 sieve

Stratification

Term	Thickness
Layer	>1/2'
Lense	1/2" - 1/2'
Lamination	<1/2"

Fiber Content of Peat (ASTM D2607)

Term	Fiber Content (Visual Estimate)
Fibric	>67%
Hemic	33 - 67%
Sapric	<33%

Consistency and Strength of Fine Grained Soils

Term	Unconfined Compressive Strength, psf (Normal Range)	N-value, BPF
Very soft	<500	<2
Soft	500-1000	2-4
Medium stiff	1000-2000	4-8
Stiff	2000-4000	8-15
Very stiff	4000-8000	15-30
Hard	>8000	>30

Relative Density of Coarse Grained Soils

Term	N-value, BPF
Very loose	<5
Loose	5-10
Medium dense	10-30
Dense	30-50
Very dense	>50

GEOLOGIC TERMINOLOGY

The geologic description indicates the apparent depositional origin or stratigraphic name. Geologic identification is interpretive and subject to error.

General categories of geologic deposits, and descriptive information is as follows:

ALLUVIUM	COARSE ALLUVIUM:	Sandy (and gravelly). Stratified. Deposited from fast moving waters in streams and rivers. (Includes glacial outwash.)
	FINE ALLUVIUM:	Clayey and/or silty. Stratified. Deposited from slow moving waters in streams, rivers, lakes, and ponds.
BEDROCK	Wide range of characteristics: from hard, dense, consolidated rock; to soft, compressible, and unconsolidated soil-like material.	
FILL	CONTROLLED:	Compact, uniform material; inorganic; no debris.
	UNCONTROLLED:	Loose or variable density. Mixture of soil types. Often contains debris and organic material.
TILL	Normally contains a wide range of grain sizes, from boulders through clay. Usually non-stratified. Deposited directly from glaciers.	
LOESS	Silty. Non-stratified. Upper layer. Deposited from wind.	
SLOPE WASH	Organic and/or inorganic material washed from slopes and redeposited.	
SWAMP DEPOSITS	Peat, muck, and marl, and organic soil. Formed through accumulation of organic material under water.	
TOPSOIL	Contains both inorganic and organic material. Upper, black layer of soil. Formed by weathering of inorganic soil and accumulation of organic material.	
TUMBLEROCK	Dominantly gravel, boulders and rock slabs. Deposited from gravity flow down hills or cliffs.	
WEATHERED BEDROCK	Bedrock which has been substantially weathered through disintegration or decomposition. Texture and composition grades into bedrock.	
WEATHERED SOIL	Texture, composition, and position is intermediate between topsoil and non-weathered soil.	

BORING LOGS: GROUND WATER INFORMATION

Ground water information is shown under "Water Level Measurements" at the bottom of the log and in the "MC" (moisture condition) column on the right side. Because the presence of water in the soil and the level of the ground water table can change over time, the information presented is accurate only for the date and time the observations and measurements were made.

The following information (in addition to the sampling date and time) appears under "Water Level Measurements":

- The sampled depth, which is the lowest depth of soil sampling at the time of the measurement.
- The casing depth, which is the depth to the bottom of the casing or hollow-stem auger at the time of the measurement.
- The cave-in depth, which is the depth at which the measuring tape stops in the bore hole.
- The water level, which is the point in the bore hole at which free-standing water is encountered with the measuring tape. If free-standing water was not present above the cave-in depth, the word "wet" or "dry" in this column indicates whether soil adhering to the end of the measuring tape appeared to be wet or dry at the cave-in depth.
- The drilling fluid level is similar to the water level, except that the liquid in the bore hole is drilling fluid.

The water level, drilling fluid level, and cave-in depths are measured with a weighted measuring tape.

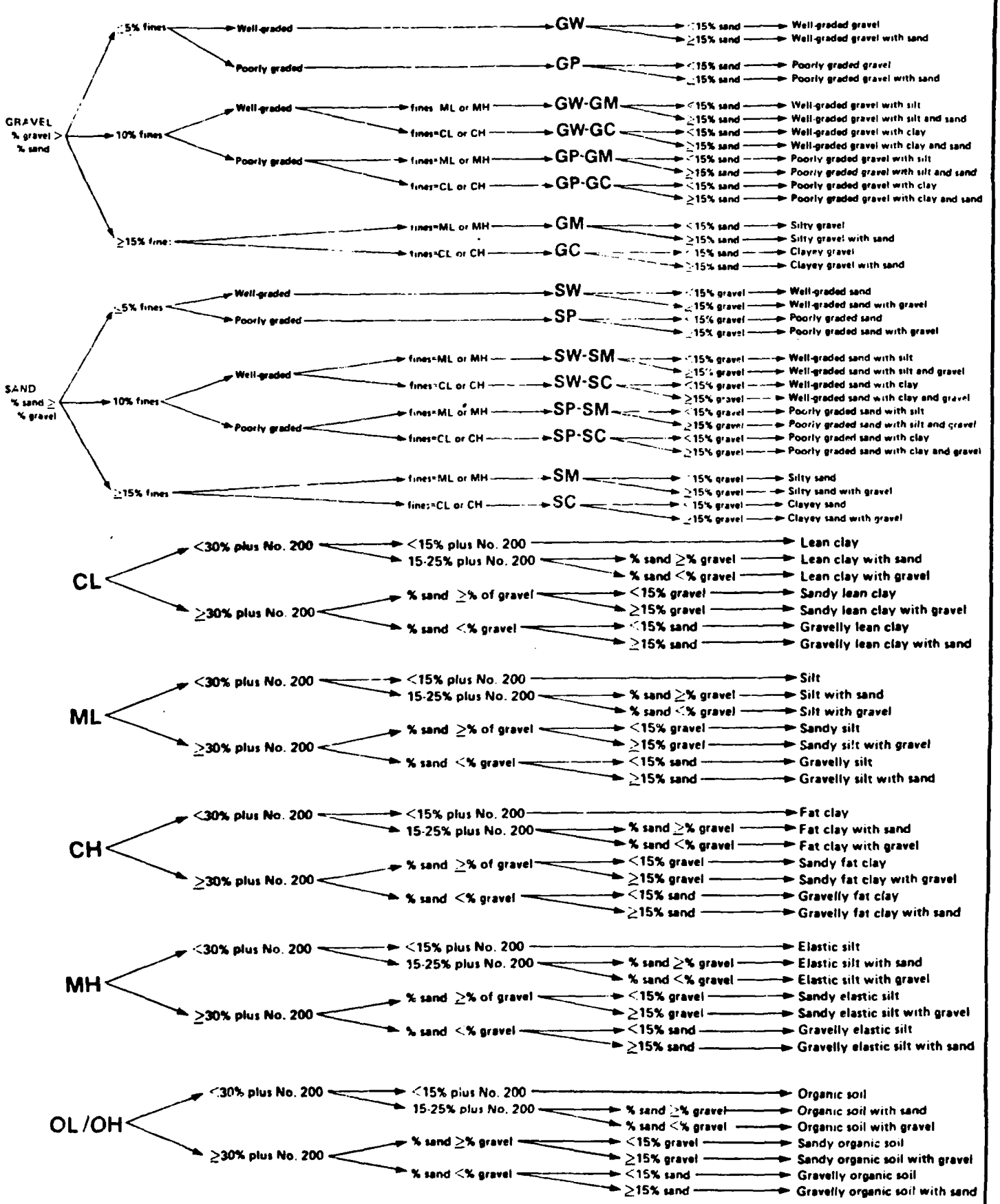
BORING LOGS: GROUND WATER INFORMATION
(Page 2 of 2)

The "MC" column indicates the moisture condition of soil samples. A "D" in the column means that a soil sample appears dry (absence of moisture, dusty, dry to touch); "M" means moist (damp but no visible water), and "W" means wet (visible free water). (NOTE: An isolated "W" at the top of the boring, over a column of "D's" or "M's" may be an indicator of recent thawing of frozen soil in the top layer.)

The water level symbol ▼ in the "MC" column indicates the estimated position of the ground water table in the boring. A water level symbol with a downward-pointing arrow means that the water table is interpreted to be at or below the level indicated. A water level symbol with an upward-pointing arrow means that the water level is interpreted to be at or above the depth indicated. The absence of the water level symbol on a log does not necessarily mean that ground water was not encountered or that the water table or piezometric surface was not penetrated.

Overall, determining the position of the ground water table is an interpretive process that depends on such factors as water level measurements, the presence and type of drilling fluid, the condition of samples, subsurface conditions, site conditions, whether the bore hole is covered or open, and weather conditions. Because of these factors and those noted previously, the actual ground water level in the field may vary from that shown on the boring logs.

IDENTIFICATION OF SOILS
(VISUAL-MANUAL PROCEDURE)



NOTE—Percentages are based on estimating amounts of fines, sand, and gravel to the nearest 5 %.

LIMITATIONS OF SUBSURFACE EXPLORATION

Subsurface exploration programs can not reveal totally what is in the subsurface. Conditions between borings and between samples and at other times may differ from those described on boring logs. Depending on the sampling method and frequency, every soil layer may not be observed, and some materials or layers which are present in the ground may not be noted on boring logs.

The intent of the "Identification" and "Geology" columns is to portray the soil profile or stratigraphy. It is based on our interpretation and opinion of available data.

Unless actually observed in a sample, contacts between soil layers are estimated based on the spacing of samples and the action of drill tools. Thus, most contacts shown on logs are approximate, with the possible upper and lower limits defined by the position of the overlying and underlying soil samples.

The extent and detail of information about subsurface conditions is directly related to the scope of exploration. It should be understood, therefore, that additional information can be obtained by means of additional exploration.

Cobbles, boulders, and other large objects generally cannot be recovered from test borings, and they may be present in the ground even if they are not noted on the boring logs. Other than as indicated by standard penetration resistance values, static cone bearing pressure values, or by borings being obstructed, drilling and sampling methods do not permit us to form specific opinions about the presence of cobbles, boulders and other large objects, and none are stated on boring logs. In general, cobbles, boulders, and large objects commonly are in deposits such as coarse alluvium, fill, till, tumblerock, and weathered bedrock.

Typewritten logs are prepared based on field logs. A field log may contain information which is not indicated on the typewritten log. (Field logs are available to our client for inspection.)

G

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 7/19/88

SUBJECT: Review of Region V CLP Data
Received for Review on 6-27-88

FROM: Curtis Ross, Director (5SCRL)
Central Regional Laboratory
Patrick J. Churilla for

TO: Data User: MPCA
Dave Koubsky

We have reviewed the data for the following case(s).

SITE NAME: Belgrade Mun. Well, MN SMO Case No. 9519

EPA Data Set No. SF 5152 No. of Samples: 6 D.U./Activity Numbers Y905/C72277

CRL No. 88YL08501 - SO6

SMO Traffic No. ET841, 842, 851 - 854

CLP Laboratory: IT CORP (TN) (Region 4) Hrs. Required for Review: 8

Following are our findings:

Six soil samples were received in good condition and they were analyzed at low concentration for semivolatiles and pesticides by ITAS-Knoxville only.
Field blank and duplicate were not included.
CCS summaries were not included.

Jerry N. Gamanchi
7/14/88 Weston/ESAT

( ) Data are acceptable for use.
(✓) Data are acceptable for use with qualifications referenced above. See Data Qualifier sheets and Calibration Outlier forms for flags and additional comments.
( ) Data are preliminary - pending verification by Contractor Laboratory. See Case Summary above.
( ) Data are unacceptable.

cc: Carla Dempsey, CLP Quality Assurance Officer, Analytical Operations Branch
James Petty, Chief Quality Assurance Research, EMSL, Las Vegas

DATA QUALIFIERS

Contractor: IT-STV

Case 9519

Below is a summary of the out-of-control audits and the possible effect on the data for this case:

1. Sample Holding Times:

Sample holding times of SVOA and Pesticide/PCB were exceeded by 26 days dissenting from the 7 day and 40 day rule of 40 CRF 136, Clean Water Act based on sampling to extraction day. Therefore, all pos results are estimated 'J' and neg sample quantitation limits estimated 'UJ'.

2. GC/MS Tuning and GC Performance:

GC/MS tuning for % Relative Abundances of DFTPP have correlated with the mass list and ion abundance criterias.

DDT/Endrin breakdowns of Eval Mix B were within 20% limit analyzed on single and mixed columns except on the 3rd run DDT was high (32.5), therefore all pos quantitative limits of DDT are estimated 'J'.

RT shifts of DBC in SDG ET 541 and associated samples were within the 2.0% level of %D. run on single and mixed columns.

RTs of DDT were > 12 min.

3. Calibration:

Initial and continuing calibrations of SVOA were evaluated for HSL compounds, SPCC and CCC outliers, any found were recorded in the Outlier Forms and flagged 'J' for pos results as estimated and 'R' for nondetects as estimated unusable.

Linearity check of pesticide based on CF of Eval Mix A, B & C were within the ≤ 10% level in %RSD for the single and mixed columns.

Quantitation and confirmation runs based on %D of IND A & B were within the limits of 15 & 20%, respectively, on single & mixed columns.

Reviewed by: Perry N. Gamaudi

Phone: (312) 353-2966

Date: 7/14/88

DATA QUALIFIERS

Contractor: IT-STU

Case 9519

Below is a summary of the out-of-control audits and the possible effect on the data for this case:

4. Blanks:

SBlk revealed N-nitroso-diphenylamine, di-n-butylphthalate and bis(2-ethylhexyl)phthalate as contaminants and 1-methylethyl acetate, 4-hydroxy-4-methyl-2-pentanone, 5-methyl-2-hexanone, 5-methyl-2-hexene-2-one, 1,1,1-trichloro-2-propanol and 2,4-dimethyl-3-heptanone as TICs. In the associated samples shown in Form IVVOA, N-nitroso-diphenylamine and bis(2-ethylhexyl)phthalate were encountered in all the fractions and TICs found in the blank more-or-less prevailed in all the fractions.

In PBlk1, aroclor-1221 went off-scale, so it was diluted in PBlk1DL which gave on-scale detection. In PBlk2, it was clean of contaminants. In the associated samples shown in Form IVPEST, all the fractions were diluted for detectability and aroclor-1221 was corrected with a 'X' mark, equivalent to 'U', indicating the result is less than CRQL. Therefore, the pesticide fractions are considered clean of contaminants.

5. Surrogate Recoveries:

Soil semivolatile and pesticide surrogates of SDG ET841 and associated samples were recovered as specified in QC limits respectively.

6. MS/MSD:

Soil semivolatile spike of ET841 were recovered as specified for MS/MSD %Recs and %RPDs.

In the soil pesticide spike of ET841, MS/MSD %Rec of γ-BHC were high (286/401) and MSD %Rec of DDT were high (146) and %RPD of heptachlor, dieldrin and endrin were slightly

Reviewed by: Gary N. Yamanaki

Phone: (312) 353-2960

Date: 7/14/88

DATA QUALIFIERS

Contractor: IT-STU

Case 9519

Below is a summary of the out-of-control audits and the possible effect on the data for this case:

low (34, 44 and 46 respectively). In the diluted run, DDT was still high (171) for MSD % Rec. and % RPD was high in heptachlor (41) and endrin (57). The unspiked ET 841 indicated non-detect for the above compounds, the diluted sample, also, showed non-detect, therefore the pos results are estimated J and the neg. results as estimated 'U.J.'

7. Field Blank and Duplicate: Not included.

8. Internal Standard Performance:
Soil semivolatile internal standard areas of SDG ET 841 and its associated samples were within the upper and lower limits of the 12 hr std's areas, and their RTs were also within the ± 30 sec of the 12 hr std's RTs.

9. Compound Quantitation and Reported Detection Limits:
Target compound quantitation reports were properly reported. Current lab-generated detection limits were not reported.

10. Compound ID:
TICs and target compounds were properly identified using the 'best-fit' library search method.
Pesticide ID was not reported.

11. System Performance:
RIC, total ion chromatographs and GC baselines were relatively stable and their performance acceptable.

Reviewed by: Gerry N. Yamauchi
Phone: (312) 353-2960
Date: 7/14/88

DATA QUALIFIERS

Contractor: IT-STU

Case 9519

Below is a summary of the out-of-control audits and the possible effect on the data for this case:

12. Case Assessment:
The data in this case are acceptable with the above qualifications considered.

Reviewed by: Gary N. Yamanaki
Phone: (312) 353-2960
Date: 7/14/88

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION V
CALIBRATION OUTLIERS
SEMIVOLATILE HSL COMPOUNDS
(Page 1)

CASE/SAS # 9519 CONTRACTOR IT-STU

Instrument # 46RD	Init. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.		
DATE/TIME:	6/13/88			6/14/88 1001			6/15/88 0916								
	RF	%RSD	*	RF	%D	*	RF	%D	*	RF	%D	*	RF	%D	*
Phenol															
bis(-2-Chloroethyl)Ether	1.48			1.27	14.0		1.09	29.3	J						
2-Chlorophenol															
1,3-Dichlorobenzene															
1,4-Dichlorobenzene															
Benzyl Alcohol															
1,2-Dichlorobenzene															
2-Methylphenol															
bis(2-Chloroisopropyl)Ether	1.80			1.45	19.4		1.17	34.9	J						
4-Methylphenol															
N-Nitroso-Di-n-Propylamine	.78			.68	12.3		.53	32.0	J						
Hexachloroethane															
Nitrobenzene															
Isophorone															
2-Nitrophenol															
2,4-Dimethylphenol															
Benzoic Acid															
bis(2-Chloroethoxy)Methane															
2,4-Dichlorophenol															
1,2,4-Trichlorobenzene															
Naphthalene															
4-Chloroaniline															
Hexachlorobutadiene															
4-Chloro-3-Methylphenol															
2-Methylnaphthalene															
Hexachlorocyclopentadiene	.19			.17	11.9		.12	34.7	J						
2,4,6-Trichlorophenol															
2,4,5-Trichlorophenol															
2-Chloronaphthalene															
2-Nitroaniline	.39			.38	12.3		.28	28.1	J						
Dimethyl Phthalate															
Acenaphthylene															
3-Nitroaniline	.10			.14	42.4	J	.23	99.9	J						
Acenaphthene															
2,4-Dinitrophenol	.13			.13	1.5		.07	47.8	J						
4-Nitrophenol															
Dibenzofuran															

AFFECTED SAMPLES:

Reviewer Initials/Date: TLG 7/13/88

* These flags should be applied to the analytes on the sample data sheets.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION V
CALIBRATION OUTLIERS
SEMIVOLATILE HSL COMPOUNDS
Page 2

CASE/SAS # 9519 CONTRACTOR IT-STL

Instrument # 4500	Init. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.		
DATE/TIME:	6/13/88			6/14/88 1001			6/15/88 0916								
	RF	%RSD	*	RF	%D	*	RF	%D	*	RF	%D	*	RF	%D	*
2,4-Dinitrotoluene															
2,6-Dinitrotoluene															
Diethylphthalate															
4-Chlorophenyl-phenylether															
Fluorene															
4-Nitroaniline															
4,6-Dinitro-2-Methylphenol	.18						.11	35.8	J						
N-Nitrosodiphenylamine															
4-Bromophenyl-phenylether															
Hexachlorobenzene															
Pentachlorophenol															
Phenanthrene															
Anthracene															
Di-n-Butylphthalate															
Fluoranthene															
Pyrene															
Butylbenzylphthalate															
Benzo(a)Anthracene															
Bis(2-Ethylhexyl)Phthalate															
Chrysene															
Di-n-Octyl Phthalate															
Benzo(b)Fluoranthene															
Benzo(k)Fluoranthene															
Benzo(a)Pyrene															
Indeno(1,2,3-cd)Pyrene															
Dibenz(a,h)Anthracene															
Benzo(g,h,i)Perylene															

SEE PAGE 1 FOR AFFECTED SAMPLES.

* These flags should be applied to the analytes on the sample data sheets.

Reviewer's Initials/Date: T.G. 7/13/88

8/87

Case: 9519

Contractor: IT-STU

TENTATIVELY IDENTIFIED COMPOUNDS
MATCH ASSESSMENT

NOTE: Reviewer should note directly on Organic Analysis Data Sheet (OADS) those matches that in his opinion (based on contract criteria) are unreasonable.

CRITERIA

(1) Relative intensities of major ions (>10%) reference spectrum should be present in the sample spectrum.

(2) Relative intensities of major ions in sample spectrum should agree to within ± 20% of reference spectrum intensities.

(3) Molecular ions present in reference spectrum should be present in sample spectrum.

(4) Ions present in sample spectrum, but not in reference spectrum should be reviewed for possible background contamination or presence of coeluting interferences.

(5) Ions present in reference spectrum, but not in the sample spectrum should be reviewed for possible subtraction from the sample spectrum because of background contamination or coeluting interferences.

(6) If, in the reviewer's opinion, no valid identification can be made the compound should be labelled as "unknown" and the initials and date of the reviewer placed on the OADS.

Gary N. Yamauchi

SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 ALEXANDRIA, VA 22313
703/557-2490 FTS-557-249

CASE NO. 9519 (IF APPLICABLE)

ORGANIC TRAFFIC REPORT
(FOR CLP USE ONLY)

TYPE OF ACTIVITY (CIRCLE ONE) ①
SUPERFUND—PA (SI) ESI RIFS RD RA ER
NPLD O&M OTHER _____
NON-SUPERFUND—_____ PROGRAM

SITE NAME: BELGRADE MUNICIPAL WELL FIELD

CITY, STATE: BELGRADE, MN SITE SPILL ID: 22

REGION NO: V SAMPLING COMPANY ② MPCA

SAMPLER: (NAME) REBECCA LOFGREN

SHIP TO: ③
Wilson Laboratories (WILSON)
525 North Eighth Street
P.O. Box 1884
Salina, Kansas 67402
ATTN: Joe Peterson

SAMPLING DATE: ④
BEGIN: 5/2/88 END: 5/5/88

DATE SHIPPED: 5/12/88 CARRIER: FED EX
AIRBILL NO: 6820695582

SAMPLE DESCRIPTION ⑥
(ENTER IN BOX A)
1. SURFACE WATER
2. GROUND WATER
3. LEACHATE
4. SOIL
5. SEDIMENT
6. OIL (SAS)
7. WASTE (SAS)

TRIPLE VOLUME REQUIRED FOR MATRIX SPIKE/DUPLICATE AQUEOUS SAMPLE

SHIP MEDIUM AND HIGH CONCENTRATION SAMPLES IN PAINT CANS

SEE REVERSE FOR ADDITIONAL INSTRUCTIONS

CLP SAMPLE NUMBER (FROM LABELS)	Ⓐ SAMPLE DESCRIPTION (FROM BOX 1) 1 2 3 4 5 6 7	Ⓑ CONCENTRATION L = LOW/MED. H = HIGH (SAS)	Ⓒ RAS ANALYSIS: VOLATILE	BASE/NEUT /ACID	PESTICIDE /PCB's		Ⓓ SPECIAL HANDLING	Ⓔ STATION LOCATION
ET 841	4	L		X	X			B-1
ET 842	4	L		X	X			B-2
ET 851	4	L		X	X			B-3
ET 852	4	L		X	X			B-4
ET 853	4	L		X	X			B-5
ET 854	4	L		X	X			B-6

SAMPLING COMPLETE

1 OF 1 COOLER SHIPPED

Reshipped to IT Labs in TENNESSEE
informed by Jeb Livingsood on 5-16-88

EPA Form 2075-7 (8-87)

WHITE — SMO COPY PINK — CLIENT COPY WHITE — LAB COPY FOR RETURN TO SMO YELLOW — LAB COPY

ORGANICS/INORGANICS

THIS FORM IS TO BE USED FOR SAMPLES SENT TO CONTRACT ONLY

CASE NUMBER/SAS No. 9519 SITE NAME BELGRADE MUNI. WELL FIELD (SI08) LABORATORY WILSON - ORGANIC VERSAR - INORGANIC DATE SHIPPED 5-12-88

SUPERFUND DU NUMBER 4905 EPA RPM or OSC (S.M.S.)/(CES) DAVE KOWBSKY, MPCA PAGE 1 OF 1

ACTIVITY NUMBER

CRL LOG NUMBER	ORGANIC TRAFFIC REPORT NUMBER or SAS Packing List No.	INORGANIC TRAFFIC REPORT NUMBER or SAS Packing List No.	WATER OR LIQUIDS: ACID-BASE NEUTRAL CPDS ORGANIC SCAN UG L TOX17574	VOLATILE ORGANIC ANALYSIS ORGANIC SCAN UG L TOX17584	WATER POLYCHLORINATED BIPHENYLS UG L PES 17144	WATER CHLORINATED PESTICIDES UG L PES17134	TOTAL METALS IN WATER UG L MET111	WATER CYANIDE UG L MIN74919	NITRATE NITRITE MG L MIN7284	AMMONIA MG L MIN7294	RESIDUE, FILTERABLE TDS MG L MIN7382	RESIDUE, NON-FILT TSS MG L MIN7372			SEDIMENTS or SOILS: ACID-BASE NEUTRAL CPDS ORGANIC SCAN MG KG TOX215722	VOLATILE ORGANIC ANALYSIS ORGANIC SCAN MG KG TOX215622	SEDIMENTS POLYCHLORINATED BIPHENYLS MG KG PES211422	SEDIMENT CHLORINATED PESTICIDES MG KG 211322	TOTAL METALS MG KG MET413	CYANIDE MG KG MIN44930	EP TOXICITY METALS MG KG	AMMONIA MG KG MIN42925				
88YL08S01	ET 841	MEW 614													X		X	X	X	X						
88YL08S02	ET 842	MEW 624													X		X	X	X	X						
88YL08S03	ET 851	MEW 625													X		X	X	X	X						
88YL08S04	ET 852	MEW 633													X		X	X	X	X						
88YL08S05	ET 853	MEW 634													X		X	X	X	X						
88YL08S06	ET 854	MEW 635													X		X	X	X	X						

INTERNATIONAL TECHNOLOGY CORPORATION

RECEIVED
JUN 27 1988
U.S. EPA CENTRAL REGIONAL LAB

June 24, 1988

USEPA Region V, ESD
536 S. Clark Street
Tenth Floor, CRL
Chicago, IL 60605

CASE NARRATIVE

Case Number:	9519
Sample Delivery Group Number (SDG#):	ET841
Laboratory Name:	ITAS-Knoxville (IT-STU)
Contract Number:	68-01-7468
ITAS Project Number:	EPAG 41298

Enclosures

Enclosed are the data for Case Number 9519. Table 1 lists EPA and ITAS sample numbers, SMO tag number, sample matrix, sample concentration, and analysis requested.

Sample Receipt

The samples were received in one (1) shipment on May 16, 1988. The shipment contained six (6) soil samples in good condition. The information on the sample container of ET854 indicated that the analyses to be performed were total metals and CN^-. The chain-of-custody, traffic report, and sample tag indicated semivolatiles, pesticides and PCBs as the required analyses. The sample was coded and analyzed according to the chain-of-custody, traffic report, and sample tag information. Jeb Livingood of SMO was contacted concerning this discrepancy. A copy of the phone log is enclosed.

GC/MS Analysis

The semivolatiles analyses were performed on 06/14 and 06/15/88 by direct injection of sample extract on a J&W DB-5 capillary column on a Finnigan 4500 GC/MS/DS.

The analysis followed EPA CLP SOW 10/86 protocol. The analyses proceeded smoothly, and no major problems were seen. It was noted that a large TIC peak was observed in all samples at around 23.8 minutes retention time. This peak, which keyed as hexanedioic acid,mono(2-ethylhexyl)ester, has occasionally been seen in some prep blanks but never at such levels. No lab source has been found for this compound, and it was not seen in the method blank for this project.

As in the past, matrix spike results were suppressed (treated as undetected) on Form 1 but retained on Form 3.

Also, as in the past, hydroxymethylpentanone was inserted as the name for a poorly spectrally matched TIC compound on the basis of our experience.

Data were reported with qualifiers as follows:

U - Compound analyzed for but not detected.
E - Compound exceeded calibration range of instrument.
D - Compound analyzed at a secondary dilution factor.
J - Compound detected but below the contract required detection limit. The value given was an estimate.
B - Compound was found in the method blank.
A - Suspected aldol condensation product.
I - Indistinguishable isomer in tentatively identified compounds.

GC Analysis

Samples were extracted on 05/25/88 with PBLK1 (No. 2918B1). All samples except ET853 and ET854 were treated for sulfur cleanup on 06/08/88 and PBLK2 (No. 2962B2) generated for the treatment process.

The pesticide/PCB analysis was performed on Varian 3700 Series instruments from 06/06/88 to 06/24/88. The 2250/2401 column was the primary column. The 3% OV-1 column was used as the secondary column.

The hard copies and diskette were generated through Finnigan supplied software (Formaster).

The program, Formaster, does not number blanks as is required in the latest contract revision. Therefore, all pesticide blanks have a number added by hand to the hard copies of the package. However, it is not possible to change the identification of the blank(s) on diskette.

The program, Formaster, does not accept a slash in the space designated for column type. It also only accepts eight characters in that space. For the 2250/2401 column, the space was filled with 22502401 and the slash was later added by hand to all forms with that column designation. The designation on the chromatograms is 2250-2401.

The hexane injections listed on Form VIII Pest-2 are used only to prevent late eluting components from interfering with sample or standard injections. Therefore, no surrogate is added and %D for dibutylchlorendate retention time shift is not reported.

Formaster calculates and prints the individual and the combined degradation values for endrin and 4,4'-DDT for the 2250/2401 column. The combined value is X'ed out on the Form VIII Pest I for the 2250/2401 sequences.

Sequence Explanations

V3740A, 2250/2401, 06/06-09/88

Standard INDA analyzed at 11:42 on 06/07/88 did not meet QC criteria because of interference from late eluting peaks in the previous sample(s). INDA was rerun at 13:27 on 06/07/88 and did meet QC criteria. The analytical sequence was restarted at this point and all affected samples were reanalyzed.

EVALB at 16:52 on 06/07/88 failed QC criteria because of incorrect integration. It was rerun at 17:23 on 06/07/88. A late eluting peak from a previous sample(s) interfered with endrin ketone. EVALB was run again at 18:57 on 06/07/88 and passed QC criteria. The sequence was continued at this point.

EVALB at 01:06 on 06/08/88 failed QC criteria because of column overloading from the previous sample. It was reanalyzed at 08:59 on 06/08/88 and passed QC criteria. The sequence was continued at this point and all affected samples were reanalyzed.

INDB at 12:39 on 06/08/88 did not meet QC criteria due to interference from the previous sample. Column maintenance was performed. INDB was reanalyzed at 15:03 on 06/08/88. QC criteria were met and the sequence was resumed.

Integration of endrin aldehyde was incorrect for EVALB analyzed at 18:11 on 06/08/88. EVALB was reanalyzed at 22:20 on 06/08/88 and met criteria. The sequence was resumed and affected samples were reanalyzed.

EVALB at 01:54 on 06/09/88 failed QC criteria. It was reanalyzed at 08:54 on 06/09/88 and passed QC criteria. The sequence was continued at this point and all affected samples were reanalyzed.

V3700E OV-1 06/23-24/88

Injection of EVALB at 23:59 on 06/23/88 is incorrect. The correct time was 23:59.9 which rounded to 00:00 on 06/24/88 which Formaster would not accept.

Data Reporting

The following symbols were used in reporting the data:

(R) - This symbol is used in labeling chromatograms to signify an interfering peak which has a retention time close to that of a compound of interest but is not actually within the retention time window for that compound. The peak area or height information is then used to calculate a quantitation limit if the interfering peak would obscure the compound of interest.

X - Indicates that this area of the chromatogram was offscale but that the retention time of the peak does not match a TCL component.

U,J - Indicates a quantitation limit that is lower than the normal CRQL for a dilution. This flag is used when the undiluted sample has an offscale peak which interferes with the quantitation of a component but is not inside the retention time window of the component.

In reporting the data, all samples except ET851 had AR1221 offscale at the original dilution. This did not allow quantitation of this compound at that dilution, so the detection limit was deleted and an "X" qualifier used. The area for AR1221 was on scale at the 1:10 dilution, however, and the uncorrected CRQL could be achieved. For this reason, the 1:10 dilution of the samples shows the CRQL with the qualifiers "U,J" indicating the compound was not confirmed and the reported value is below the adjusted CRQL at this dilution.

Formaster will not print two Form IV sheets for one sample. All sulfur cleanup treated samples therefore require that one Form IV be generated showing the extraction blank and a second Form IV be handwritten to track the sample with the sulfur cleanup blank. This sulfur cleanup tracking Form IV will not appear on the diskette.

Approved by:

Tom Wilson

Tom Wilson
Group Supervisor, GC/MS

TW:mf

Enclosure

Release of the data contained in this hard copy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Tom Wilson for ALYCE MOORE

Alyce Moore
Laboratory Manager

TABLE 1
SAMPLE SUMMARY TABLE

Case Number: 9519
Sample Delivery Group Number (SDG#): ET841
Laboratory Name: ITAS-Knoxville (IT-STU)
Contract Number: 68-01-7468
ITAS Project Number: EPAG 41298

SMO #	SMO TAG #	ITAS #	Matrix	Conc.	Analysis
ET841	5-090252	EE8514	Soil	Low	BNA
	5-090252	EE8514	Soil	Low	Pest/PCB
ET841 MS	5-090252	EE8515 MS	Soil	Low	QC-MS-BNA
	5-090252	EE8515 MS	Soil	Low	QC-MS-Pest/PCB
ET841 MSD	5-090252	EE8516 MSD	Soil	Low	QC-MSD-BNA
	5-090252	EE8516 MSD	Soil	Low	QC-MSD-Pest/PCB
ET842	5-090254	EE8517	Soil	Low	BNA
	5-090254	EE8517	Soil	Low	Pest/PCB
ET851	5-090256	EE8518	Soil	Low	BNA
	5-090256	EE8518	Soil	Low	Pest/PCB
ET852	5-090258	EE8519	Soil	Low	BNA
	5-090258	EE8519	Soil	Low	Pest/PCB
ET853	5-090260	EE8520	Soil	Low	BNA
	5-090260	EE8520	Soil	Low	Pest/PCB
ET854	5-090262	EE8521	Soil	Low	BNA
	5-090262	EE8521	Soil	Low	Pest/PCB

ABBREVIATIONS:
BNA = Semivolatiles
Pest = Pesticides
PCB = Polychlorinated biphenyls
MS = Matrix spike
MSD = Matrix spike duplicate

SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 ALEXANDRIA, VA 22313
703/557-2490 FTS-557-2490

CASE NO. 1517 (IF APPLICABLE)

ORGANIC TRAFFIC REPORT

(FOR CLP USE ONLY)

TYPE OF ACTIVITY (CIRCLE ONE) ①
SUPERFUND—PA (SI) ESI RIFS RD RA ER
NPLD O&M OTHER _____
NON-SUPERFUND—_____PROGRAM

SAMPLE DESCRIPTION
(ENTER IN BOX A)
1. SURFACE WATER
2. GROUND WATER
3. LEACHATE
4. SOIL
5. SEDIMENT
6. OIL (SAS)
7. WASTE (SAS)

REGION NO: V
SAMPLING COMPANY ② MPCA
SAMPLER: (NAME) REBECCA LUFGREN

SHIP TO: ③
Wilson Laboratories (WILSON)
525 North Eighth Street
P.O. Box 1884
Salina, Kansas 67402
ATTN: Joe Peterson

SAMPLING DATE: ④
BEGIN: 5/2/88 END: 5/5/88
DATE SHIPPED: 5/12/88 CARRIER: FED EX
AIRBILL NO: 6820695582

DATE REC'D: 5/13/88 5/16/88
SDG NO: ⑥ ET841
REC'D BY: [illegible]
LABORATORY CONTRACT NO. Wilson Labs
UNIT PRICE 773

TRANSFER TO: ITAS
DATE REC'D: ⑦ 5-16-88
REC'D BY: Beth Monroe
CONTRACT NO./PRICE: 773 SMA-68-01-7458

CLP SAMPLE NUMBER (FROM LABELS)	SAMPLE DESCRIPTION (FROM BOX 1) 1 2 3 4 5 6 7	CONCENTRATION L = LOW/MED. H = HIGH (SAS)	RAS ANALYSIS: VOLATILE	BASE/NEUT /ACID	PESTICIDE /PCB's		SPECIAL HANDLING	STATION LOCATION	SAMPLE CONDITION ON RECEIPT	HIGH CONC. PHASES (CHECK): SOLID	WATER—MIS LIQUID	NON WATER—MIS LIQUID
ET 841	4	L		X	X			B-1				
ET 842	4	L		X	X			B-2				
ET 851	4	L		X	X			B-3				
ET 852	4	L		X	X			B-4				
ET 853	4	L		X	X			B-5				
ET 854	4	L		X	X			B-6				
SAMPLE NOT COMPLETE												
1 OF 1 COOLER SHIPPED												

EPA Form 2075-7 (8-87)

SDG - Final Sample - ET 5[illegible]

WHITE — SMO COPY PINK — CLIENT COPY WHITE — LAB COPY FOR RETURN TO SMO YELLOW — LAB COPY

EPAB 41298

ER Fund 515

MAY 1 9 1988

NTPS REGIONAL LABORATORY SAMPLE DATA REPORT
ORGANICS/INORGANICS

SAMPLE DATES: 5-12-5/88
LOG IN DATE: 5/20/88
DUE DATE: 6/17/88

THIS FORM IS TO BE USED FOR SAMPLES SENT TO CONTRACT ONLY

CASE NUMBER/SAS No. 9519 SITE NAME BELGRADE MUNI. WELL FIELD (SI08) LABORATORY H TOW WILSON - ORGANIC VERSAR - INORGANIC DATE SHIPPED 5-12-88

SUPERFUND DU NUMBER 4905 EPA RPM or OSC (S.M.S.)/(CES) DAVE KOUBSKY, MPCA PAGE 1 OF 1

ACTIVITY NUMBER C72200

CRL LOG NUMBER	ORGANIC TRAFFIC REPORT NUMBER or SAS Packing List No.	INORGANIC TRAFFIC REPORT NUMBER	WATER OR LIQUIDS: ACID-BASE NEUTRAL CPDS ORGANIC SCAN UG L TOX17574	VOLATILE ORGANIC ANALYSIS ORGANIC SCAN UG L TOX17564	WATER POLYCHLORINATED BIPHENYLS UG L PES 17144	WATER CHLORINATED PESTICIDES UG L PES17134	TOTAL METALS IN WATER UG L MET1111	WATER CYANIDE UG L MIN74919	NITRATE NITRITE MG L MIN7284	AMMONIA MG L MIN7294	RESIDUE, FILTERABLE TDS MG L MIN7362	RESIDUE, NON-FILT TSS MG L MIN7372			SEDIMENTS or SOILS: ACID-BASE NEUTRAL CPDS ORGANIC SCAN MG KG TOX215722	VOLATILE ORGANIC ANALYSIS ORGANIC SCAN MG KG TOX215622	SEDIMENTS POLYCHLORINATED BIPHENYLS MG KG PES211422	SEDIMENT CHLORINATED PESTICIDES MG KG 211322	TOTAL METALS MG KG MET413	CYANIDE MG KG MIN44930	EP TOXICITY METALS MG KG	AMMONIA MG KG MIN42925				
88YL08501	ET 841	MEW 614													X		X	X	X	X						
88YL08502	ET 842	MEW 624													X		X	X	X	X						
88YL08503	ET 851	MEW 625													X		X	X	X	X						
88YL08504	ET 852	MEW 633													X		X	X	X	X						
88YL08505	ET 853	MEW 634													X		X	X	X	X						
88YL08506	ET 854	MEW 635													X		X	X	X	X						

2D

SOIL SEMIVOLATILE SURROGATE RECOVERY

0001

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Level:(low/med) LOW

	EPA SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	S6 (TBP)#	OTHER	TOT OUT
01	ET841	71	71	81	62	67	79		0
02	ET841MS	59	64	75	56	59	77		0
03	ET841MSD	64	64	67	60	61	71		0
04	ET842	45	44	55	42	46	55		0
05	ET851	47	50	62	48	48	37		0
06	ET852	67	65	73	70	72	81		0
07	ET853	73	71	78	78	78	87		0
08	ET854	66	66	73	70	71	73		0
09	SBLK1	66	67	71	61	60	61		0

		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(23-120)
S2 (FBP)	= 2-Fluorobiphenyl	(30-115)
S3 (TPH)	= Terphenyl	(18-137)
S4 (PHL)	= Phenol-d5	(24-113)
S5 (2FP)	= 2-Fluorophenol	(25-121)
S6 (TBP)	= 2,4,6-Tribromophenol	(19-122)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

ALL PESTICIDE SURROGATE RECOVERY

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9712 SAS No.: _____ SDG No.: ET841

Level: (low/med) LOW

	EPA SAMPLE NO.	S1 (DBC) #	OTHER
01	ET841	87	0
02	ET841DL	88	0
03	ET842	73	0
04	ET842DL	117	0
05	ET851	62	0
06	ET852	79	0
07	ET852DL	94	0
08	ET853	70	0
09	ET853DL	83	0
10	ET854	80	0
11	ET854DL	98	0
12	PBLK1DL	101	0
13	ET841MS	73	0
14	ET841MSD	116	0
15	ET841MSDDL	100	0
16	ET841MSDL	69	0
17	PBLK1	96	0
18	PBLK2	83	0

ADVISORY QC LIMITS

S1 (DBC) = Dibutylchlorendate (10-150)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

FORM II PEST-2 1/87 Rev.

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix Spike - EPA Sample No.: ET841 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
Phenol	7000	0	3390	48	26- 90
2-Chlorophenol	7000	0	3640	52	25-102
1,4-Dichlorobenzene	3500	0	1930	55	28 104
N-Nitroso-di-n-prop.(1)	3500	0	1760	50	41 126
1,2,4-Trichlorobenzene	3500	0	2000	57	38 107
4-Chloro-3-methylphenol	7000	0	4170	60	26 103
Acenaphthene	3500	0	2260	65	31-137
4-Nitrophenol	7000	0	3920	56	11-114
2,4-Dinitrotoluene	3500	0	1950	56	28- 89
Pentachlorophenol	7000	0	4480	64	17-109
Pyrene	3500	0	2530	72	35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	7040	3520	50	-4	35	26- 90
2-Chlorophenol	7040	3940	56	-7	50	25-102
1,4-Dichlorobenzene	3520	2090	59	-7	27	28 104
N-Nitroso-di-n-prop.(1)	3520	1940	55	-10	38	41 126
1,2,4-Trichlorobenzene	3520	2130	61	-7	23	38 107
4-Chloro-3-methylphenol	7040	4300	61	-2	33	26 103
Acenaphthene	3520	2230	63	3	19	31-137
4-Nitrophenol	7040	4230	60	-7	50	11-114
2,4-Dinitrotoluene	3520	2010	57	-2	47	28- 89
Pentachlorophenol	7040	4510	64	0	47	17-109
Pyrene	3520	2350	67	7	36	35-142

(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: CLP,9519,,ET841,LOW,SOIL,EE8514,BNA,EPA
INSTR.4500 : J&WDBS(30M*.315MM/1UM) 45-325@10D/M: 1 UL INJ

GC/EC PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 8E18 SAS No.: _____ SDG No.: ET541

Matrix Spike - EPA Sample No.: ET541 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
gamma-BHC (Lindane)	28.0	0	30.5	108 *	46-127
Heptachlor	28.0	0	23.6	84	35-130
Aldrin	28.0	0	19.1	68	34-132
Dieldrin	70.0	0	40.4	58	31-134
Endrin	70.0	0	57.3	82	42-139
4,4'-DDT	70.0	0	63.2	90	23-134

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
gamma-BHC (Lindane)	28.2	113	401 *	-33	50	46-127
Heptachlor	28.2	33.4	118	-34 *	31	35-130
Aldrin	28.2	27.8	99	-37	43	34-132
Dieldrin	70.4	64.2	91	-44 *	38	31-134
Endrin	70.4	92.3	131	-46 *	45	42-139
4,4'-DDT	70.4	103	146 *	-47	50	23-134

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

* Values outside of QC limits

RPD: 3 out of 6 outside limits
Spike Recovery: 3 out of 12 outside limits

COMMENTS:

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ITAS-NORTHVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: [illegible]

Matrix Spike - EPA Sample No.: ET841DL Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
gamma-BHC (Lindane)	28.0	0	20.0	71	46-127
Heptachlor	28.0	0	17.5	63	30-130
Aldrin	28.0	0	15.3	56	34-132
Dieldrin	70.0	0	40.3	58	31-134
Endrin	70.0	0	49.7	71	42-139
4,4'-DDT	70.0	0	74.6	107	23-134

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
gamma-BHC (Lindane)	28.2	26.8	95	-29	50	46-127
Heptachlor	28.2	26.8	95	-41 *	31	30-130
Aldrin	28.2	23.2	82	-38	43	34-132
Dieldrin	70.4	57.4	82	-34	38	31-134
Endrin	70.4	89.5	127	-57 *	45	42-139
4,4'-DDT	70.4	120	171 *	-46	50	23-134

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

* Values outside of QC limits

RPD: 2 out of 5 outside limits
Spike Recovery: 1 out of 12 outside limits

COMMENTS:

4B

SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Lab File ID: BL2918 Lab Sample ID: BL2918

Date Extracted: 05/25/88 Extraction:(SepF/Cont/Sonc) SONC

Date Analyzed: 06/14/88 Time Analyzed: 1550

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

Instrument ID: 4500

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	ET841	EE8514	EE8514	06/14/88
02	ET841MS	EE8515MS	EE8515MS	06/14/88
03	ET841MSD	EE8516MSD	EE8516MSD	06/14/88
04	ET842	EE8517R	EE8517R	06/14/88
05	ET851	EE8518R	EE8518R	06/14/88
06	ET852	EE8519	EE8519	06/15/88
07	ET853	EE8520	EE8520	06/15/88
08	ET854	EE8521	EE8521	06/15/88

COMMENTS: CLP,9519,,SBLK1,LOW,SOIL,BL2918,BNA,CAL
INSTR.4500 : J&WDBS(30M*.315MM/1UM) 45-325@10D/M: 1 UL INJ

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK1

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: BL2918

Sample wt/vol: 30.0 (g/mL) G Lab File ID: BL2918

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. ____ dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/14/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
100-51-6	Benzyl Alcohol	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	bis(2-Chloroisopropyl)Ether	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
65-85-0	Benzoic Acid	1600	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	1600	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	1600	U
131-11-3	Dimethyl Phthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK1

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: BL2918

Sample wt/vol: 30.0 (g/mL) G Lab File ID: BL2918

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. ____ dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/14/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1600	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	1600	U
100-02-7	4-Nitrophenol	1600	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	1600	U
534-52-1	4,6-Dinitro-2-Methylphenol	1600	U
86-30-6	N-Nitrosodiphenylamine (1)	160	J
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	1600	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
84-74-2	Di-n-Butylphthalate	42	J
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	660	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	190	J
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLK1

ab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

atrix: (soil/water) SOIL Lab Sample ID: BL2918

Sample wt/vol: 30.0 (g/mL) G Lab File ID: BL2918

evel: (low/med) LOW Date Received: 05/16/88

Moisture: not dec. ____ dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/14/88

PC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.000

umber TICs found: 8

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	108-21-4	ACETIC ACID, 1-METHYLETHYL E	3.37	360	AJ
2.	123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.92	14000	AJ
3.	110-12-3	2-HEXANONE, 5-METHYL-	4.18	1800	AJ
4.		UNKNOWN (SAT'D HYDROCARBON)	4.33	220	J
5.		UNKNOWN	5.30	140	J
6.	3240-09-3	5-HEXEN-2-ONE, 5-METHYL-	5.83	260	J
7.	57-15-8	2-PROPANOL, 1,1,1-TRICHLORO-	6.50	510	J
8.	18641-71-9	3-HEPTANONE, 2,4-DIMETHYL-	6.62	230	J

PESTICIDE METHOD BLANK SUMMARY

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7363

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Lab Sample ID: 2918B1-1 Lab File ID: _____

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

Date Extracted: 05/29/88 Extraction:(SepF/Cont/Sonc) SONC

Date Analyzed (1): 06/03/88 Date Analyzed (2): 06/23/88

Time Analyzed (1): 0935 Time Analyzed (2): 1813

Instrument ID (1): V3740A Instrument ID (2): V3700E

GC Column ID (1): 22302491 GC Column ID (2): 3 OV1

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

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	ET841	EE8514088T-1	06/13/88	
02	ET841DL	EE8514088T-5	06/13/88	
03	ET842	EE8517ST-1	06/13/88	
04	ET842DL	EE8517ST-5	06/22/88	06/23/88
05	ET851	EE8518ST-1	06/13/88	
06	ET852	EE8519ST-1	06/13/88	
07	ET852DL	EE8519ST-5	06/22/88	06/23/88
08	ET853	EE8520-1	06/08/88	06/23/88
09	ET853DL	EE8520-5	06/22/88	06/23/88
10	ET854	EE8521-1	06/08/88	06/23/88
11	ET854DL	EE8521-5	06/22/88	06/23/88
12	PBLK1DL	2918B1-10	06/22/88	06/23/88
13	ET841MS	EE8515MSST-1	06/13/88	
14	ET841MSD	EE8516MSDST-1	06/13/88	
15	ET841MSDDL	EE8516MSDST-5	06/13/88	06/23/88
16	ET841MSDL	EE8515MSST-5	06/13/88	06/23/88

COMMENTS:

FORM IV PEST 1/87 Rev.

4C
PESTICIDE METHOD BLANK SUMMARY

Lab Name: ITAS-KNOXVILLE Contract: _____

Lab Code: IT-STL Case No.: 9519 SAS No.: _____ SDG No.: ET841

Lab Sample ID: #29628 1ST Lab File ID: _____

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

Date Extracted: 06/08/88 Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed (1): 06/08/88 Date Analyzed (2): 06/23/88

Time Analyzed (1): 23:23 Time Analyzed (2): 16:45

Instrument ID (1): V3740A Instrument ID (2): V3700E

GC Column ID (1): 2250/2401 GC Column ID (2): OV-1

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

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	ET841	EE8514OSST-1	06/13/88	
02	ET841DL	EE8514OSST-5	06/13/88	
03	ET842	EE8517ST-1	06/13/88	
04	ET842DL	EE8517ST-5	06/22/88	06/23/88
05	ET851	EE8518ST-1	06/13/88	
06	ET852	EE8519ST-1	06/13/88	
07	ET852DL	EE8519ST-5	06/22/88	06/23/88
08	ET841MS	EE8515MSST-1	06/13/88	
09	ET841MSD	EE8516MSDST-1	06/13/88	
10	ET841MSDDL	EE8516MSDST-5	06/13/88	06/23/88
11	ET841MSDL	EE8515MSST-5	06/13/88	06/23/88
12				
13				
14				
15				
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23				
24				
25				
26				

COMMENTS: _____

FORM IV PEST

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

0669

SS-1

SDG Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: 9519

Matrix (soil/water) SOIL Lab Sample ID: 191331-1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

Level (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 0 dec. ____ Date Extracted: 05/23/88

Extraction (SepF/Cont/Sonc) SONC Date Analyzed: 06/06/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	8.0	U
319-85-7	beta-BHC	8.0	U
319-86-8	delta-BHC	8.0	U
58-89-9	gamma-BHC (Lindane)	8.0	U
76-44-8	Heptachlor	8.0	U
309-00-2	Aldrin	8.0	U
1024-57-3	Heptachlor epoxide	8.0	U
959-98-8	Endosulfan I	8.0	U
60-57-1	Dieldrin	16	U
72-55-9	4,4'-DDE	16	U
72-20-8	Endrin	16	U
33213-65-9	Endosulfan II	16	U
72-54-8	4,4'-DDD	16	U
1031-07-8	Endosulfan sulfate	16	U
50-29-3	4,4'-DDT	16	U
72-43-5	Methoxychlor	80	U
53494-70-5	Endrin ketone	16	U
5103-71-9	alpha-Chlordane	80	U
5103-74-2	gamma-Chlordane	80	U
8001-35-2	Toxaphene	160	U
12674-11-2	Aroclor-1016	80	U
11104-28-2	Aroclor-1221	~~80~~	~~U~~
11141-16-5	Aroclor-1232	80	U
53469-21-9	Aroclor-1242	80	U
12672-29-6	Aroclor-1248	80	U
11097-69-1	Aroclor-1254	160	U
11096-82-5	Aroclor-1260	160	U

[illegible] ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLANDL

Lab Name: [illegible]-KNOXVILLE Contract: 68-01-7468

Lab Code: [illegible] Case No.: 9519 SAS No.: _____ SDG No.: [illegible]

Matrix: (soil/water) SOIL Lab Sample ID: [illegible]

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: [illegible]

% Moisture: not dec. 0 dec. ____ Date Extracted: [illegible]

Extraction: (Sep/Cont/Sonc) SONC Date Analyzed: [illegible]

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	80	U
319-85-7	beta-BHC	80	U
319-86-8	delta-BHC	80	U
58-89-9	gamma-BHC (Lindane)	80	U
76-44-8	Heptachlor	80	U
309-00-2	Aldrin	80	U
1024-57-3	Heptachlor epoxide	80	U
959-98-8	Endosulfan I	80	U
60-57-1	Dieldrin	160	U
72-55-9	4,4'-DDE	160	U
72-20-8	Endrin	160	U
33213-65-9	Endosulfan II	160	U
72-54-8	4,4'-DDD	160	U
1031-07-8	Endosulfan sulfate	160	U
50-29-3	4,4'-DDT	160	U
72-43-5	Methoxychlor	800	U
53494-70-5	Endrin ketone	160	U
5103-71-9	alpha-Chlordane	800	U
5103-74-2	gamma-Chlordane	800	U
8001-35-2	Toxaphene	1600	U
12674-11-2	Aroclor-1016	800	U
11104-28-2	Aroclor-1221	80	JU
11141-16-5	Aroclor-1232	800	U
53469-21-9	Aroclor-1242	800	U
12672-29-6	Aroclor-1248	800	U
11097-69-1	Aroclor-1254	1600	U
11096-82-5	Aroclor-1260	1600	U

PESTICIDE ORGANIC ANALYSIS DATA SHEET

EP- SAMPLE NO.

FBLA2

0681

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7469

Lab Code: IT-STU Case No.: 9215 SAS No.: _____ SDG No.: ET341

Matrix: (soil/water) SOIL Lab Sample ID: 2962B18T-1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 0 dec. ____ Date Extracted: 06/08/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/08/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	8.0	U
319-85-7	beta-BHC	8.0	U
319-86-8	delta-BHC	8.0	U
58-89-9	gamma-BHC (Lindane)	8.0	U
76-44-8	Heptachlor	8.0	U
309-00-2	Aldrin	8.0	U
1024-57-3	Heptachlor epoxide	8.0	U
959-98-8	Endosulfan I	8.0	U
60-57-1	Dieldrin	16	U
72-55-9	4,4'-DDE	16	U
72-20-8	Endrin	16	U
33213-65-9	Endosulfan II	16	U
72-54-8	4,4'-DDD	16	U
1031-07-8	Endosulfan sulfate	16	U
50-29-3	4,4'-DDT	16	U
72-43-5	Methoxychlor	80	U
53494-70-5	Endrin ketone	16	U
5103-71-9	alpha-Chlordane	80	U
5103-74-2	gamma-Chlordane	80	U
8001-35-2	Toxaphene	160	U
12674-11-2	Aroclor-1016	80	U
11104-28-2	Aroclor-1221	80	U
11141-16-5	Aroclor-1232	80	U
53469-21-9	Aroclor-1242	80	U
12672-29-6	Aroclor-1248	80	U
11097-69-1	Aroclor-1254	160	U
11096-82-5	Aroclor-1260	160	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ET841

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE8514

Sample wt/vol: 30.0 (g/mL) G Lab File ID: EE8514

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 6 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/14/88

GPC Cleanup: (Y/N) N pH: 8.8 Dilution Factor: 1.000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	350	U
111-44-4	bis(2-Chloroethyl)Ether	350	U
95-57-8	2-Chlorophenol	350	U
541-73-1	1,3-Dichlorobenzene	350	U
106-46-7	1,4-Dichlorobenzene	350	U
100-51-6	Benzyl Alcohol	350	U
95-50-1	1,2-Dichlorobenzene	350	U
95-48-7	2-Methylphenol	350	U
108-60-1	bis(2-Chloroisopropyl)Ether	350	U
106-44-5	4-Methylphenol	350	U
621-64-7	N-Nitroso-Di-n-Propylamine	350	U
67-72-1	Hexachloroethane	350	U
98-95-3	Nitrobenzene	350	U
78-59-1	Isophorone	350	U
88-75-5	2-Nitrophenol	350	U
105-67-9	2,4-Dimethylphenol	350	U
65-85-0	Benzoic Acid	1700	U
111-91-1	bis(2-Chloroethoxy)Methane	350	U
120-83-2	2,4-Dichlorophenol	350	U
120-82-1	1,2,4-Trichlorobenzene	350	U
91-20-3	Naphthalene	350	U
106-47-8	4-Chloroaniline	350	U
87-68-3	Hexachlorobutadiene	350	U
59-50-7	4-Chloro-3-Methylphenol	350	U
91-57-6	2-Methylnaphthalene	350	U
77-47-4	Hexachlorocyclopentadiene	350	U
88-06-2	2,4,6-Trichlorophenol	350	U
95-95-4	2,4,5-Trichlorophenol	1700	U
91-58-7	2-Chloronaphthalene	350	U
88-74-4	2-Nitroaniline	1700	U
131-11-3	Dimethyl Phthalate	350	U
208-96-8	Acenaphthylene	350	U
606-20-2	2,6-Dinitrotoluene	350	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ET841

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE8514

Sample wt/vol: 30.0 (g/mL) G Lab File ID: EE8514

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 6 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/14/88

GPC Cleanup: (Y/N) N pH: 8.8 Dilution Factor: 1.000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	350	U
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	350	U
121-14-2	2,4-Dinitrotoluene	350	U
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
86-73-7	Fluorene	350	U
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-Methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	270	~~BJ~~ 330 U
101-55-3	4-Bromophenyl-phenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	350	U
120-12-7	Anthracene	350	U
84-74-2	Di-n-Butylphthalate	350	U
206-44-0	Fluoranthene	350	U
129-00-0	Pyrene	350	U
85-68-7	Butylbenzylphthalate	350	U
91-94-1	3,3'-Dichlorobenzidine	700	U
56-55-3	Benzo(a)Anthracene	350	U
218-01-9	Chrysene	350	U
117-81-7	bis(2-Ethylhexyl)Phthalate	450	~~B~~ U
117-84-0	Di-n-Octyl Phthalate	350	U
205-99-2	Benzo(b)Fluoranthene	350	U
207-08-9	Benzo(k)Fluoranthene	350	U
50-32-8	Benzo(a)Pyrene	350	U
193-39-5	Indeno(1,2,3-cd)Pyrene	350	U
53-70-3	Dibenz(a,h)Anthracene	350	U
191-24-2	Benzo(g,h,i)Perylene	350	U

(1) - Cannot be separated from Diphenylamine

KH 7/14/88

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

ET841

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE8514

Sample wt/vol: 30.0 (g/mL) G Lab File ID: EE8514

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 6 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/14/88

GPC Cleanup: (Y/N) N pH: 8.8 Dilution Factor: 1.000

Number TICs found: 8

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 108-21-4	ACETIC ACID, 1-METHYLETHYL E	3.43	350	~~ABJ~~ U
2. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.95	13000	~~ABJ~~ U
3. 110-12-3	2-HEXANONE, 5-METHYL-	4.23	1600	~~ABJ~~ U
4.	UNKNOWN (SAT'D HYDROCARBON)	4.38	390	~~BJ~~ U
5. 3240-09-3	5-HEXEN-2-ONE, 5-METHYL-	5.87	290	~~BJ~~ U
6. 57-15-8	2-PROPANOL, 1,1,1-TRICHLORO-	6.53	200	~~BJ~~ U
7.	UNKNOWN	23.55	230	J
8. 4337-65-9	HEXANEDIOIC ACID, MONO(2-ETH	23.80	29000	J

7/14/88

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ET842

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE8517R

Sample wt/vol: 30.2 (g/mL) G Lab File ID: EE8517R

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 9 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/14/88

GPC Cleanup: (Y/N) N pH: 9.0 Dilution Factor: 1.000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	360	U
111-44-4	bis(2-Chloroethyl)Ether	360	U
95-57-8	2-Chlorophenol	360	U
541-73-1	1,3-Dichlorobenzene	360	U
106-46-7	1,4-Dichlorobenzene	360	U
100-51-6	Benzyl Alcohol	360	U
95-50-1	1,2-Dichlorobenzene	360	U
95-48-7	2-Methylphenol	360	U
108-60-1	bis(2-Chloroisopropyl)Ether	360	U
106-44-5	4-Methylphenol	360	U
621-64-7	N-Nitroso-Di-n-Propylamine	360	U
67-72-1	Hexachloroethane	360	U
98-95-3	Nitrobenzene	360	U
78-59-1	Isophorone	360	U
88-75-5	2-Nitrophenol	360	U
105-67-9	2,4-Dimethylphenol	360	U
65-85-0	Benzoic Acid	1700	U
111-91-1	bis(2-Chloroethoxy)Methane	360	U
120-83-2	2,4-Dichlorophenol	360	U
120-82-1	1,2,4-Trichlorobenzene	360	U
91-20-3	Naphthalene	360	U
106-47-8	4-Chloroaniline	360	U
87-68-3	Hexachlorobutadiene	360	U
59-50-7	4-Chloro-3-Methylphenol	360	U
91-57-6	2-Methylnaphthalene	360	U
77-47-4	Hexachlorocyclopentadiene	360	U
88-06-2	2,4,6-Trichlorophenol	360	U
95-95-4	2,4,5-Trichlorophenol	1700	U
91-58-7	2-Chloronaphthalene	360	U
88-74-4	2-Nitroaniline	1700	U
131-11-3	Dimethyl Phthalate	360	U
208-96-8	Acenaphthylene	360	U
606-20-2	2,6-Dinitrotoluene	360	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ET842

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE8517R

Sample wt/vol: 30.2 (g/mL) G Lab File ID: EE8517R

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 9 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/14/88

GPC Cleanup: (Y/N) N pH: 9.0 Dilution Factor: 1.000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	360	U
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	360	U
121-14-2	2,4-Dinitrotoluene	360	U
84-66-2	Diethylphthalate	45	J
7005-72-3	4-Chlorophenyl-phenylether	360	U
86-73-7	Fluorene	360	U
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-Methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	210	~~BJ~~ 330 J
101-55-3	4-Bromophenyl-phenylether	360	U
118-74-1	Hexachlorobenzene	360	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	360	U
120-12-7	Anthracene	360	U
84-74-2	Di-n-Butylphthalate	360	U
206-44-0	Fluoranthene	360	U
129-00-0	Pyrene	360	U
85-68-7	Butylbenzylphthalate	360	U
91-94-1	3,3'-Dichlorobenzidine	720	U
56-55-3	Benzo(a)Anthracene	360	U
218-01-9	Chrysene	360	U
117-81-7	bis(2-Ethylhexyl)Phthalate	410	~~B~~ U
117-84-0	Di-n-Octyl Phthalate	360	U
205-99-2	Benzo(b)Fluoranthene	360	U
207-08-9	Benzo(k)Fluoranthene	360	U
50-32-8	Benzo(a)Pyrene	360	U
193-39-5	Indeno(1,2,3-cd)Pyrene	360	U
53-70-3	Dibenz(a,h)Anthracene	360	U
191-24-2	Benzo(g,h,i)Perylene	360	U

Y.G. 7/14/88

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

ET842

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE8517R

Sample wt/vol: 30.2 (g/mL) G Lab File ID: EE8517R

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 9 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/14/88

GPC Cleanup: (Y/N) N pH: 9.0 Dilution Factor: 1.000

Number TICs found: 8

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 108-21-4	ACETIC ACID, 1-METHYLETHYL E	3.25	300	~~ABJ~~ u
2. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.78	12000	~~ABJ~~ u
3. 110-12-3	2-HEXANONE, 5-METHYL-	4.08	1400	~~ABJ~~ u
4.	UNKNOWN (SAT'D HYDROCARBON)	4.25	290	~~BJ~~ u
5. 3240-09-3	5-HEXEN-2-ONE, 5-METHYL-	5.80	280	~~BJ~~ u
6. 57-15-8	2-PROPANOL, 1,1,1-TRICHLORO-	6.48	150	~~BJ~~ u
7.	UNKNOWN	23.55	290	J
8. 4337-65-9	HEXANEDIOIC ACID, MONO(2-ETH	23.80	15000	J

7/14/
7/1

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ET851

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE8518R

Sample wt/vol: 30.4 (g/mL) G Lab File ID: EE8518R

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 7 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/14/88

GPC Cleanup: (Y/N) N pH: 9.1 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	350	U
111-44-4	bis(2-Chloroethyl)Ether	350	U
95-57-8	2-Chlorophenol	350	U
541-73-1	1,3-Dichlorobenzene	350	U
106-46-7	1,4-Dichlorobenzene	350	U
100-51-6	Benzyl Alcohol	350	U
95-50-1	1,2-Dichlorobenzene	350	U
95-48-7	2-Methylphenol	350	U
108-60-1	bis(2-Chloroisopropyl)Ether	350	U
106-44-5	4-Methylphenol	350	U
621-64-7	N-Nitroso-Di-n-Propylamine	350	U
67-72-1	Hexachloroethane	350	U
98-95-3	Nitrobenzene	350	U
78-59-1	Isophorone	350	U
88-75-5	2-Nitrophenol	350	U
105-67-9	2,4-Dimethylphenol	350	U
65-85-0	Benzoic Acid	1700	U
111-91-1	bis(2-Chloroethoxy)Methane	350	U
120-83-2	2,4-Dichlorophenol	350	U
120-82-1	1,2,4-Trichlorobenzene	350	U
91-20-3	Naphthalene	350	U
106-47-8	4-Chloroaniline	350	U
87-68-3	Hexachlorobutadiene	350	U
59-50-7	4-Chloro-3-Methylphenol	350	U
91-57-6	2-Methylnaphthalene	350	U
77-47-4	Hexachlorocyclopentadiene	350	U
88-06-2	2,4,6-Trichlorophenol	350	U
95-95-4	2,4,5-Trichlorophenol	1700	U
91-58-7	2-Chloronaphthalene	350	U
88-74-4	2-Nitroaniline	1700	U
131-11-3	Dimethyl Phthalate	350	U
208-96-8	Acenaphthylene	350	U
606-20-2	2,6-Dinitrotoluene	350	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ET851

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE8518R

Sample wt/vol: 30.4 (g/mL) G Lab File ID: EE8518R

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 7 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/14/88

GPC Cleanup: (Y/N) N pH: 9.1 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	350	U
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	350	U
121-14-2	2,4-Dinitrotoluene	350	U
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
86-73-7	Fluorene	350	U
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-Methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	130	~~B~~ 330 U
101-55-3	4-Bromophenyl-phenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	350	U
120-12-7	Anthracene	350	U
84-74-2	Di-n-Butylphthalate	350	U
206-44-0	Fluoranthene	350	U
129-00-0	Pyrene	350	U
85-68-7	Butylbenzylphthalate	350	U
91-94-1	3,3'-Dichlorobenzidine	700	U
56-55-3	Benzo(a)Anthracene	350	U
218-01-9	Chrysene	350	U
117-81-7	bis(2-Ethylhexyl)Phthalate	520	~~B~~ U
117-84-0	Di-n-Octyl Phthalate	350	U
205-99-2	Benzo(b)Fluoranthene	350	U
207-08-9	Benzo(k)Fluoranthene	350	U
50-32-8	Benzo(a)Pyrene	350	U
193-39-5	Indeno(1,2,3-cd)Pyrene	350	U
53-70-3	Dibenz(a,h)Anthracene	350	U
191-24-2	Benzo(g,h,i)Perylene	350	U

(1) - Cannot be separated from Diphenylamine

7/14/88

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

ET851

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE8518R

Sample wt/vol: 30.4 (g/mL) G Lab File ID: EE8518R

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 7 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/14/88

GPC Cleanup: (Y/N) N pH: 9.1 Dilution Factor: 1.00

Number TICs found: 8

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 108-21-4	ACETIC ACID, 1-METHYLETHYL E	3.38	250	ABJ U
2. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.92	12000	ABJ U
3. 110-12-3	2-HEXANONE, 5-METHYL-	4.20	1300	ABJ U
4.	UNKNOWN (SAT'D HYDROCARBON)	4.35	260	BJ U
5. 3240-09-3	5-HEXEN-2-ONE, 5-METHYL-	5.85	230	BJ U
6. 57-15-8	2-PROPANOL, 1,1,1-TRICHLORO-	6.52	170	BJ U
7.	UNKNOWN	23.52	560	J
8. 4337-65-9	HEXANEDIOIC ACID, MONO(2-ETH	23.75	1400	J

TLG 7/14/88

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ET852

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE8519

Sample wt/vol: 30.2 (g/mL) G Lab File ID: EE8519

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 9 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/15/88

GPC Cleanup: (Y/N) N pH: 8.6 Dilution Factor: 1.000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	360	U
111-44-4	bis(2-Chloroethyl)Ether	360	U
95-57-8	2-Chlorophenol	360	U
541-73-1	1,3-Dichlorobenzene	360	U
106-46-7	1,4-Dichlorobenzene	360	U
100-51-6	Benzyl Alcohol	360	U
95-50-1	1,2-Dichlorobenzene	360	U
95-48-7	2-Methylphenol	360	U
108-60-1	bis(2-Chloroisopropyl)Ether	360	U
106-44-5	4-Methylphenol	360	U
621-64-7	N-Nitroso-Di-n-Propylamine	360	U
67-72-1	Hexachloroethane	360	U
98-95-3	Nitrobenzene	360	U
78-59-1	Isophorone	360	U
88-75-5	2-Nitrophenol	360	U
105-67-9	2,4-Dimethylphenol	360	U
65-85-0	Benzoic Acid	1700	U
111-91-1	bis(2-Chloroethoxy)Methane	360	U
120-83-2	2,4-Dichlorophenol	360	U
120-82-1	1,2,4-Trichlorobenzene	360	U
91-20-3	Naphthalene	360	U
106-47-8	4-Chloroaniline	360	U
87-68-3	Hexachlorobutadiene	360	U
59-50-7	4-Chloro-3-Methylphenol	360	U
91-57-6	2-Methylnaphthalene	360	U
77-47-4	Hexachlorocyclopentadiene	360	U
88-06-2	2,4,6-Trichlorophenol	360	U
95-95-4	2,4,5-Trichlorophenol	1700	U
91-58-7	2-Chloronaphthalene	360	U
88-74-4	2-Nitroaniline	1700	U
131-11-3	Dimethyl Phthalate	360	U
208-96-8	Acenaphthylene	360	U
606-20-2	2,6-Dinitrotoluene	360	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ET852

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE8519

Sample wt/vol: 30.2 (g/mL) G Lab File ID: EE8519

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 9 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/15/88

GPC Cleanup: (Y/N) N pH: 8.6 Dilution Factor: 1.000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	360	U
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	360	U
121-14-2	2,4-Dinitrotoluene	360	U
84-66-2	Diethylphthalate	360	U
7005-72-3	4-Chlorophenyl-phenylether	360	U
86-73-7	Fluorene	360	U
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-Methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	220	~~BJ~~ 330 U
101-55-3	4-Bromophenyl-phenylether	360	U
118-74-1	Hexachlorobenzene	360	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	360	U
120-12-7	Anthracene	360	U
84-74-2	Di-n-Butylphthalate	360	U
206-44-0	Fluoranthene	360	U
129-00-0	Pyrene	360	U
85-68-7	Butylbenzylphthalate	360	U
91-94-1	3,3'-Dichlorobenzidine	720	U
56-55-3	Benzo(a)Anthracene	360	U
218-01-9	Chrysene	360	U
117-81-7	bis(2-Ethylhexyl)Phthalate	1200	~~B~~ U
117-84-0	Di-n-Octyl Phthalate	360	U
205-99-2	Benzo(b)Fluoranthene	360	U
207-08-9	Benzo(k)Fluoranthene	360	U
50-32-8	Benzo(a)Pyrene	360	U
193-39-5	Indeno(1,2,3-cd)Pyrene	360	U
53-70-3	Dibenz(a,h)Anthracene	360	U
191-24-2	Benzo(g,h,i)Perylene	360	U

(1) - Cannot be separated from Diphenylamine

7/14/88

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

ET852

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE8519

Sample wt/vol: 30.2 (g/mL) G Lab File ID: EE8519

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 9 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/15/88

GPC Cleanup: (Y/N) N pH: 8.6 Dilution Factor: 1.000

Number TICs found: 11

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	108-21-4	ACETIC ACID, 1-METHYLETHYL E	3.42	490	~~ABJ~~ U
2.	123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.93	14000	~~ABJ~~ U
3.	110-12-3	2-HEXANONE, 5-METHYL-	4.22	2200	~~ABJ~~ U
4.	74421-18-4	HEXANE, 1-(HEXYLOXY)-3-METHY	4.30	190	J
5.		UNKNOWN (SAT'D HYDROCARBON)	4.38	440	~~BJ~~ U
6.	3240-09-3	5-HEXEN-2-ONE, 5-METHYL-	5.85	500	~~BJ~~ U
7.	18641-71-9	3-HEPTANONE, 2,4-DIMETHYL-	6.63	210	~~BJ~~ U
8.		UNKNOWN	7.70	220	J
9.	57-10-3	HEXADECANOIC ACID	19.57	240	J
10.		UNKNOWN	23.55	370	J
11.	4337-65-9	HEXANEDIOIC ACID, MONO(2-ETH	23.82	21000	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ET853

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE8520

Sample wt/vol: 30.6 (g/mL) G Lab File ID: EE8520

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 7 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/15/88

GPC Cleanup: (Y/N) N pH: 8.9 Dilution Factor: 1.000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	350	U
111-44-4	bis(2-Chloroethyl)Ether	350	U
95-57-8	2-Chlorophenol	350	U
541-73-1	1,3-Dichlorobenzene	350	U
106-46-7	1,4-Dichlorobenzene	350	U
100-51-6	Benzyl Alcohol	350	U
95-50-1	1,2-Dichlorobenzene	350	U
95-48-7	2-Methylphenol	350	U
108-60-1	bis(2-Chloroisopropyl)Ether	350	U
106-44-5	4-Methylphenol	350	U
621-64-7	N-Nitroso-Di-n-Propylamine	350	U
67-72-1	Hexachloroethane	350	U
98-95-3	Nitrobenzene	350	U
78-59-1	Isophorone	350	U
88-75-5	2-Nitrophenol	350	U
105-67-9	2,4-Dimethylphenol	350	U
65-85-0	Benzoic Acid	1700	U
111-91-1	bis(2-Chloroethoxy)Methane	350	U
120-83-2	2,4-Dichlorophenol	350	U
120-82-1	1,2,4-Trichlorobenzene	350	U
91-20-3	Naphthalene	350	U
106-47-8	4-Chloroaniline	350	U
87-68-3	Hexachlorobutadiene	350	U
59-50-7	4-Chloro-3-Methylphenol	350	U
91-57-6	2-Methylnaphthalene	350	U
77-47-4	Hexachlorocyclopentadiene	350	U
88-06-2	2,4,6-Trichlorophenol	350	U
95-95-4	2,4,5-Trichlorophenol	1700	U
91-58-7	2-Chloronaphthalene	350	U
88-74-4	2-Nitroaniline	1700	U
131-11-3	Dimethyl Phthalate	350	U
208-96-8	Acenaphthylene	350	U
606-20-2	2,6-Dinitrotoluene	350	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ET853

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE8520

Sample wt/vol: 30.6 (g/mL) G Lab File ID: EE8520

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 7 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/15/88

GPC Cleanup: (Y/N) N pH: 8.9 Dilution Factor: 1.000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	350	U
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	350	U
121-14-2	2,4-Dinitrotoluene	350	U
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
86-73-7	Fluorene	350	U
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-Methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	82	~~BJ~~ 33DU
101-55-3	4-Bromophenyl-phenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	350	U
120-12-7	Anthracene	350	U
84-74-2	Di-n-Butylphthalate	350	U
206-44-0	Fluoranthene	350	U
129-00-0	Pyrene	350	U
85-68-7	Butylbenzylphthalate	350	U
91-94-1	3,3'-Dichlorobenzidine	700	U
56-55-3	Benzo(a)Anthracene	350	U
218-01-9	Chrysene	350	U
117-81-7	bis(2-Ethylhexyl)Phthalate	930	~~B~~ U
117-84-0	Di-n-Octyl Phthalate	350	U
205-99-2	Benzo(b)Fluoranthene	350	U
207-08-9	Benzo(k)Fluoranthene	350	U
50-32-8	Benzo(a)Pyrene	350	U
193-39-5	Indeno(1,2,3-cd)Pyrene	350	U
53-70-3	Dibenz(a,h)Anthracene	350	U
191-24-2	Benzo(g,h,i)Perylene	350	U

(1) - Cannot be separated from Diphenylamine

7/6/88

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

ET853

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE8520

Sample wt/vol: 30.6 (g/mL) G Lab File ID: EE8520

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 7 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/15/88

GPC Cleanup: (Y/N) N pH: 8.9 Dilution Factor: 1.000

Number TICs found: 8

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 108-21-4	ACETIC ACID, 1-METHYLETHYL E	3.45	460	~~ABJ~~ U
2. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.97	13000	~~ABJ~~ U
3. 110-12-3	2-HEXANONE, 5-METHYL-	4.25	1700	~~ABJ~~ U
4.	UNKNOWN (SAT'D HYDROCARBON)	4.40	410	~~BJ~~ U
5. 3240-09-3	5-HEXEN-2-ONE, 5-METHYL-	5.87	310	~~BJ~~ U
6. 57-10-3	HEXADECANOIC ACID	19.57	150	J
7.	UNKNOWN	23.55	430	J
8. 4337-65-9	HEXANEDIOIC ACID, MONO(2-ETH	23.82	36000	J

TMJ 7/14/88

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ET854

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE8521

Sample wt/vol: 30.4 (g/mL) G Lab File ID: EE8521

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 10 dec. _____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/15/88

GPC Cleanup: (Y/N) N pH: 8.9 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	360	U
111-44-4	bis(2-Chloroethyl)Ether	360	U
95-57-8	2-Chlorophenol	360	U
541-73-1	1,3-Dichlorobenzene	360	U
106-46-7	1,4-Dichlorobenzene	360	U
100-51-6	Benzyl Alcohol	360	U
95-50-1	1,2-Dichlorobenzene	360	U
95-48-7	2-Methylphenol	360	U
108-60-1	bis(2-Chloroisopropyl)Ether	360	U
106-44-5	4-Methylphenol	360	U
621-64-7	N-Nitroso-Di-n-Propylamine	360	U
67-72-1	Hexachloroethane	360	U
98-95-3	Nitrobenzene	360	U
78-59-1	Isophorone	360	U
88-75-5	2-Nitrophenol	360	U
105-67-9	2,4-Dimethylphenol	360	U
65-85-0	Benzoic Acid	1800	U
111-91-1	bis(2-Chloroethoxy)Methane	360	U
120-83-2	2,4-Dichlorophenol	360	U
120-82-1	1,2,4-Trichlorobenzene	360	U
91-20-3	Naphthalene	360	U
106-47-8	4-Chloroaniline	360	U
87-68-3	Hexachlorobutadiene	360	U
59-50-7	4-Chloro-3-Methylphenol	360	U
91-57-6	2-Methylnaphthalene	360	U
77-47-4	Hexachlorocyclopentadiene	360	U
88-06-2	2,4,6-Trichlorophenol	360	U
95-95-4	2,4,5-Trichlorophenol	1800	U
91-58-7	2-Chloronaphthalene	360	U
88-74-4	2-Nitroaniline	1800	U
131-11-3	Dimethyl Phthalate	360	U
208-96-8	Acenaphthylene	360	U
606-20-2	2,6-Dinitrotoluene	360	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ET854

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE8521

Sample wt/vol: 30.4 (g/mL) G Lab File ID: EE8521

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 10 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/15/88

GPC Cleanup: (Y/N) N pH: 8.9 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1800	U
83-32-9	Acenaphthene	360	U
51-28-5	2,4-Dinitrophenol	1800	U
100-02-7	4-Nitrophenol	1800	U
132-64-9	Dibenzofuran	360	U
121-14-2	2,4-Dinitrotoluene	360	U
84-66-2	Diethylphthalate	360	U
7005-72-3	4-Chlorophenyl-phenylether	360	U
86-73-7	Fluorene	360	U
100-01-6	4-Nitroaniline	1800	U
534-52-1	4,6-Dinitro-2-Methylphenol	1800	U
86-30-6	N-Nitrosodiphenylamine (1)	130	~~BJ~~ 330 U
101-55-3	4-Bromophenyl-phenylether	360	U
118-74-1	Hexachlorobenzene	360	U
87-86-5	Pentachlorophenol	1800	U
85-01-8	Phenanthrene	360	U
120-12-7	Anthracene	360	U
84-74-2	Di-n-Butylphthalate	360	U
206-44-0	Fluoranthene	360	U
129-00-0	Pyrene	360	U
85-68-7	Butylbenzylphthalate	360	U
91-94-1	3,3'-Dichlorobenzidine	720	U
56-55-3	Benzo(a)Anthracene	360	U
218-01-9	Chrysene	360	U
117-81-7	bis(2-Ethylhexyl)Phthalate	680	~~B~~ U
117-84-0	Di-n-Octyl Phthalate	360	U
205-99-2	Benzo(b)Fluoranthene	360	U
207-08-9	Benzo(k)Fluoranthene	360	U
50-32-8	Benzo(a)Pyrene	360	U
193-39-5	Indeno(1,2,3-cd)Pyrene	360	U
53-70-3	Dibenz(a,h)Anthracene	360	U
191-24-2	Benzo(g,h,i)Perylene	360	U

(1) - Cannot be separated from Diphenylamine

Tcy 7/17/88

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE 0189

ET854

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE8521

Sample wt/vol: 30.4 (g/mL) G Lab File ID: EE8521

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 10 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/15/88

GPC Cleanup: (Y/N) N pH: 8.9 Dilution Factor: 1.00

Number TICs found: 11

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 108-21-4	ACETIC ACID, 1-METHYLETHYL E	3.45	420	~~ABJ~~ U
2. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.97	17000	~~ABJ~~ U
3. 110-12-3	2-HEXANONE, 5-METHYL-	4.23	1800	~~ABJ~~ U
4.	UNKNOWN (SAT'D HYDROCARBON)	4.38	290	~~BJ~~ U
5.	UNKNOWN	5.33	150	~~BJ~~ U
6. 3240-09-3	5-HEXEN-2-ONE, 5-METHYL-	5.87	560	~~BJ~~ U
7. 57-15-8	2-PROPANOL, 1,1,1-TRICHLORO-	6.53	350	~~BJ~~ U
8. 18641-71-9	3-HEPTANONE, 2,4-DIMETHYL-	6.65	200	~~BJ~~ U
9. 57-10-3	HEXADECANOIC ACID	19.57	300	J
10.	UNKNOWN	23.54	470	J
11. 4337-65-9	HEXANEDIOIC ACID, MONO(2-ETH	23.77	440	J

T.L. 7/11/

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ET841

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix (soil/water) SOIL Lab Sample ID: EE85140SST-1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 6 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/13/88

GPC Cleanup: (Y/N) N pH: 8.8 Dilution Factor: 1.000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	8.5	U
319-85-7	beta-BHC	8.5	U
319-86-8	delta-BHC	8.5	U
58-89-9	gamma-BHC (Lindane)	8.5	U
76-44-8	Heptachlor	8.5	U
309-00-2	Aldrin	8.5	U
1024-57-3	Heptachlor epoxide	8.5	U
959-98-8	Endosulfan I	8.5	U
60-57-1	Dieldrin	17	U
72-55-9	4,4'-DDE	17	U
72-20-8	Endrin	17	U
33213-65-9	Endosulfan II	17	U
72-54-8	4,4'-DDD	17	U
1031-07-8	Endosulfan sulfate	17	U
50-29-3	4,4'-DDT	17	U
72-43-5	Methoxychlor	85	U
53494-70-5	Endrin ketone	17	U
5103-71-9	alpha-Chlordane	85	U
5103-74-2	gamma-Chlordane	85	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	85	U
11104-28-2	Aroclor-1221	~~85~~	~~U~~X
11141-16-5	Aroclor-1232	85	U
53469-21-9	Aroclor-1242	85	U
12672-29-6	Aroclor-1248	85	U
11097-69-1	Aroclor-1254	170	U
11096-82-5	Aroclor-1260	170	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ET841DL

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE85140SST-5

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 6 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/13/88

GPC Cleanup: (Y/N) N pH: 8.8 Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	43	U
319-85-7	beta-BHC	43	U
319-86-8	delta-BHC	43	U
58-89-9	gamma-BHC (Lindane)	43	U
76-44-8	Heptachlor	43	U
309-00-2	Aldrin	43	U
1024-57-3	Heptachlor epoxide	43	U
959-98-8	Endosulfan I	43	U
60-57-1	Dieldrin	85	U
72-55-9	4,4'-DDE	85	U
72-20-8	Endrin	85	U
33213-65-9	Endosulfan II	85	U
72-54-8	4,4'-DDD	85	U
1031-07-8	Endosulfan sulfate	85	U
50-29-3	4,4'-DDT	85	U
72-43-5	Methoxychlor	430	U
53494-70-5	Endrin ketone	85	U
5103-71-9	alpha-Chlordane	430	U
5103-74-2	gamma-Chlordane	430	U
8001-35-2	Toxaphene	850	U
12674-11-2	Aroclor-1016	430	U
11104-28-2	Aroclor-1221	85	~~U~~JU
11141-16-5	Aroclor-1232	430	U
53469-21-9	Aroclor-1242	430	U
12672-29-6	Aroclor-1248	430	U
11097-69-1	Aroclor-1254	850	U
11096-82-5	Aroclor-1260	850	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. C391

ET842

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE85175T-1

Sample wt/vol: 30.2 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 9 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/13/88

GPC Cleanup: (Y/N) N pH: 9.0 Dilution Factor: 1.000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	8.7	U
319-85-7	beta-BHC	8.7	U
319-86-8	delta-BHC	8.7	U
58-89-9	gamma-BHC (Lindane)	8.7	U
76-44-8	Heptachlor	8.7	U
309-00-2	Aldrin	8.7	U
1024-57-3	Heptachlor epoxide	8.7	U
959-98-8	Endosulfan I	8.7	U
60-57-1	Dieldrin	17	U
72-55-9	4,4'-DDE	17	U
72-20-8	Endrin	17	U
33213-65-9	Endosulfan II	17	U
72-54-8	4,4'-DDD	17	U
1031-07-8	Endosulfan sulfate	17	U
50-29-3	4,4'-DDT	17	U
72-43-5	Methoxychlor	87	U
53494-70-5	Endrin ketone	17	U
5103-71-9	alpha-Chlordane	87	U
5103-74-2	gamma-Chlordane	87	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	87	U
11104-28-2	Aroclor-1221	~~87~~	~~U~~
11141-16-5	Aroclor-1232	87	U
53469-21-9	Aroclor-1242	87	U
12672-29-6	Aroclor-1248	87	U
11097-69-1	Aroclor-1254	170	U
11096-82-5	Aroclor-1260	170	U

II

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

0395

ET842DL

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EES517ST-5

Sample wt/vol: 30.2 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 3 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/22/88

GPC Cleanup: (Y/N) N pH: 9.0 Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	44	U
319-85-7	beta-BHC	44	U
319-86-8	delta-BHC	44	U
58-89-9	gamma-BHC (Lindane)	44	U
76-44-8	Heptachlor	44	U
309-00-2	Aldrin	44	U
1024-57-3	Heptachlor epoxide	44	U
959-98-8	Endosulfan I	44	U
60-57-1	Dieldrin	87	U
72-55-9	4,4'-DDE	87	U
72-20-8	Endrin	87	U
33213-65-9	Endosulfan II	87	U
72-54-8	4,4'-DDD	87	U
1031-07-8	Endosulfan sulfate	87	U
50-29-3	4,4'-DDT	87	U
72-43-5	Methoxychlor	440	U
53494-70-5	Endrin ketone	87	U
5103-71-9	alpha-Chlordane	440	U
5103-74-2	gamma-Chlordane	440	U
8001-35-2	Toxaphene	870	U
12674-11-2	Aroclor-1016	440	U
11104-28-2	Aroclor-1221	87	~~U~~ JU
11141-16-5	Aroclor-1232	440	U
53469-21-9	Aroclor-1242	440	U
12672-29-6	Aroclor-1248	440	U
11097-69-1	Aroclor-1254	870	U
11096-82-5	Aroclor-1260	870	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE 0401

ET851

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET341

Matrix: (soil/water) SOIL Lab Sample ID: EE85168T-1

Sample wt/vol: 30.4 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 7 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/13/88

GPC Cleanup: (Y/N) N pH: 9.1 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	8.5	U
319-85-7	beta-BHC	8.5	U
319-86-8	delta-BHC	8.5	U
58-89-9	gamma-BHC (Lindane)	8.5	U
76-44-8	Heptachlor	8.5	U
309-00-2	Aldrin	8.5	U
1024-57-3	Heptachlor epoxide	8.5	U
959-98-8	Endosulfan I	8.5	U
60-57-1	Dieldrin	17	U
72-55-9	4,4'-DDE	17	U
72-20-8	Endrin	17	U
33213-65-9	Endosulfan II	17	U
72-54-8	4,4'-DDD	17	U
1031-07-8	Endosulfan sulfate	17	U
50-29-3	4,4'-DDT	17	U
72-43-5	Methoxychlor	85	U
53494-70-5	Endrin ketone	17	U
5103-71-9	alpha-Chlordane	85	U
5103-74-2	gamma-Chlordane	85	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	85	U
11104-28-2	Aroclor-1221	85	U
11141-16-5	Aroclor-1232	85	U
53469-21-9	Aroclor-1242	85	U
12672-29-6	Aroclor-1248	85	U
11097-69-1	Aroclor-1254	170	U
11096-82-5	Aroclor-1260	170	U

EPA SAMPLE NO. 0405

ET852

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: SE85198T-1

Sample wt/vol: 30.2 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 9 dec. ____ Date Extracted: 05/25/88

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 06/13/88

GPC Cleanup: (Y/N) N pH: 8.6 Dilution Factor: 1.000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	8.7	U
319-85-7	beta-BHC	8.7	U
319-86-8	delta-BHC	8.7	U
58-89-9	gamma-BHC (Lindane)	8.7	U
76-44-8	Heptachlor	8.7	U
309-00-2	Aldrin	8.7	U
1024-57-3	Heptachlor epoxide	8.7	U
959-98-8	Endosulfan I	8.7	U
60-57-1	Dieldrin	17	U
72-55-9	4,4'-DDE	17	U
72-20-8	Endrin	17	U
33213-65-9	Endosulfan II	17	U
72-54-8	4,4'-DDD	17	U
1031-07-8	Endosulfan sulfate	17	U
50-29-3	4,4'-DDT	17	U
72-43-5	Methoxychlor	87	U
53494-70-5	Endrin ketone	17	U
5103-71-9	alpha-Chlordane	87	U
5103-74-2	gamma-Chlordane	87	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	87	U
11104-28-2	Aroclor-1221	~~87~~	~~UX~~
11141-16-5	Aroclor-1232	87	U
53469-21-9	Aroclor-1242	87	U
12672-29-6	Aroclor-1248	87	U
11097-69-1	Aroclor-1254	170	U
11096-82-5	Aroclor-1260	170	U

EPA SAMPLE NO. U409

PESTICIDE ORGANICS ANALYSIS DATA SHEET

ET852DL

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE85198T-5

Sample wt/vol: 30.2 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 9 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/22/88

GPC Cleanup: (Y/N) N pH: 8.6 Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	44	U
319-85-7	beta-BHC	44	U
319-86-8	delta-BHC	44	U
58-89-9	gamma-BHC (Lindane)	44	U
76-44-8	Heptachlor	44	U
309-00-2	Aldrin	44	U
1024-57-3	Heptachlor epoxide	44	U
959-98-8	Endosulfan I	44	U
60-57-1	Dieldrin	87	U
72-55-9	4,4'-DDE	87	U
72-20-8	Endrin	87	U
33213-65-9	Endosulfan II	87	U
72-54-8	4,4'-DDD	87	U
1031-07-8	Endosulfan sulfate	87	U
50-29-3	4,4'-DDT	87	U
72-43-5	Methoxychlor	440	U
53494-70-5	Endrin ketone	87	U
5103-71-9	alpha-Chlordane	440	U
5103-74-2	gamma-Chlordane	440	U
8001-35-2	Toxaphene	870	U
12674-11-2	Aroclor-1016	440	U
11104-28-2	Aroclor-1221	87	JU
11141-16-5	Aroclor-1232	440	U
53469-21-9	Aroclor-1242	440	U
12672-29-6	Aroclor-1248	440	U
11097-69-1	Aroclor-1254	870	U
11096-82-5	Aroclor-1260	870	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 0415

ET853

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET341

Matrix: (soil/water) SOIL Lab Sample ID: SE8520-1

Sample wt/vol: 30.6 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 7 dec. ____ Date Extracted: 05/23/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/08/88

GPC Cleanup: (Y/N) N pH: 8.9 Dilution Factor: 1.000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	8.4	U
319-85-7	beta-BHC	8.4	U
319-86-8	delta-BHC	8.4	U
58-89-9	gamma-BHC (Lindane)	8.4	U
76-44-8	Heptachlor	8.4	U
309-00-2	Aldrin	8.4	U
1024-57-3	Heptachlor epoxide	8.4	U
959-98-8	Endosulfan I	8.4	U
60-57-1	Dieldrin	17	U
72-55-9	4,4'-DDE	17	U
72-20-8	Endrin	17	U
33213-65-9	Endosulfan II	17	U
72-54-8	4,4'-DDD	17	U
1031-07-8	Endosulfan sulfate	17	U
50-29-3	4,4'-DDT	17	U
72-43-5	Methoxychlor	84	U
53494-70-5	Endrin ketone	17	U
5103-71-9	alpha-Chlordane	84	U
5103-74-2	gamma-Chlordane	84	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	84	U
11104-28-2	Aroclor-1221	~~84~~	~~U~~
11141-16-5	Aroclor-1232	84	U
53469-21-9	Aroclor-1242	84	U
12672-29-6	Aroclor-1248	84	U
11097-69-1	Aroclor-1254	170	U
11096-82-5	Aroclor-1260	170	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ET853DL

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE8520-5

Sample wt/vol: 30.6 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 7 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/22/88

GPC Cleanup: (Y/N) N pH: 8.9 Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	42	U
319-85-7	beta-BHC	42	U
319-86-8	delta-BHC	42	U
58-89-9	gamma-BHC (Lindane)	42	U
76-44-8	Heptachlor	42	U
309-00-2	Aldrin	42	U
1024-57-3	Heptachlor epoxide	42	U
959-98-8	Endosulfan I	42	U
60-57-1	Dieldrin	84	U
72-55-9	4,4'-DDE	84	U
72-20-8	Endrin	84	U
33213-65-9	Endosulfan II	84	U
72-54-8	4,4'-DDD	84	U
1031-07-8	Endosulfan sulfate	84	U
50-29-3	4,4'-DDT	84	U
72-43-5	Methoxychlor	420	U
53494-70-5	Endrin ketone	84	U
5103-71-9	alpha-Chlordane	420	U
5103-74-2	gamma-Chlordane	420	U
8001-35-2	Toxaphene	840	U
12674-11-2	Aroclor-1016	420	U
11104-28-2	Aroclor-1221	84	~~U~~JU
11141-16-5	Aroclor-1232	420	U
53469-21-9	Aroclor-1242	420	U
12672-29-6	Aroclor-1248	420	U
11097-69-1	Aroclor-1254	840	U
11096-82-5	Aroclor-1260	840	U

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

0427

ET854

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE8521-1

Sample wt/vol: 30.4 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 10 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/08/88

GPC Cleanup: (Y/N) N pH: 8.9 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	8.8	U
319-85-7	beta-BHC	8.8	U
319-86-8	delta-BHC	8.8	U
58-89-9	gamma-BHC (Lindane)	8.8	U
76-44-8	Heptachlor	8.8	U
309-00-2	Aldrin	8.8	U
1024-57-3	Heptachlor epoxide	8.8	U
959-98-8	Endosulfan I	8.8	U
60-57-1	Dieldrin	18	U
72-55-9	4,4'-DDE	18	U
72-20-8	Endrin	18	U
33213-65-9	Endosulfan II	18	U
72-54-8	4,4'-DDD	18	U
1031-07-8	Endosulfan sulfate	18	U
50-29-3	4,4'-DDT	18	U
72-43-5	Methoxychlor	88	U
53494-70-5	Endrin ketone	18	U
5103-71-9	alpha-Chlordane	88	U
5103-74-2	gamma-Chlordane	88	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	88	U
11104-28-2	Aroclor-1221	~~88~~	~~U~~X
11141-16-5	Aroclor-1232	88	U
53469-21-9	Aroclor-1242	88	U
12672-29-6	Aroclor-1248	88	U
11097-69-1	Aroclor-1254	180	U
11096-82-5	Aroclor-1260	180	U

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

0433

ET8C4DL

Lab Name: ITAS-KNOXVILLE Contract: 68-01-7468

Lab Code: IT-STU Case No.: 9519 SAS No.: _____ SDG No.: ET841

Matrix: (soil/water) SOIL Lab Sample ID: EE8521-5

Sample wt/vol: 30.4 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 05/16/88

% Moisture: not dec. 10 dec. ____ Date Extracted: 05/25/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/22/88

GPC Cleanup: (Y/N) N pH: 8.9 Dilution Factor: 3.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	44	U
319-85-7	beta-BHC	44	U
319-86-8	delta-BHC	44	U
58-89-9	gamma-BHC (Lindane)	44	U
76-44-8	Heptachlor	44	U
309-00-2	Aldrin	44	U
1024-57-3	Heptachlor epoxide	44	U
959-98-8	Endosulfan I	44	U
60-57-1	Dieldrin	88	U
72-55-9	4,4'-DDE	88	U
72-20-8	Endrin	88	U
33213-65-9	Endosulfan II	88	U
72-54-8	4,4'-DDD	88	U
1031-07-8	Endosulfan sulfate	88	U
50-29-3	4,4'-DDT	88	U
72-43-5	Methoxychlor	440	U
53494-70-5	Endrin ketone	88	U
5103-71-9	alpha-Chlordane	440	U
5103-74-2	gamma-Chlordane	440	U
8001-35-2	Toxaphene	880	U
12674-11-2	Aroclor-1016	440	U
11104-28-2	Aroclor-1221	98	~~U~~ JU
11141-16-5	Aroclor-1232	440	U
53469-21-9	Aroclor-1242	440	U
12672-29-6	Aroclor-1248	440	U
11097-69-1	Aroclor-1254	880	U
11096-82-5	Aroclor-1260	880	U

Copy - Dup

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 6.30.88

SUBJECT: Review of Region V CLP Data
Received for Review on 6-16-88

FROM: Curtis Ross, Director (5SCRL)
Central Regional Laboratory
Ada Leoni

TO: Data User: MPCA
Dave Kowbsky

We have reviewed the data for the following case(s).

SITE NAME: Belgrade Muni. Well Field SMO Case No. 9519

EPA Data Set No. SF5152 No. of Samples: 6 D.U./Activity Numbers 19051C72222

CRL No. 88YL08SC1-SC6

SMO Traffic No. MEN 614, 624 625, 633-635

CLP Laboratory: VERSAT Hrs. Required for Review: 4.5

Following are our findings:

This review covers the analysis of 6 low soil samples for metals and cyanide.

ICAP Analysis: Matrix spike recovery for Mn(265%) indicates high bias. All Mn values are estimated(J). Recovery for Ag(51%) indicates low bias. All Ag results are estimated(UJ) and detection limits may be elevated.

Duplicate RPD values for Sb(77), Ca(24), Fe(85), Cr(32), Mn(156) and Zn(52) indicates results out of control limits. All Sb, Fe and Zn results are estimated(J). Ca and Cr results are acceptable since the RPD control limit for soils is 35%. Mn results are already estimated as previously noted.

>>>**Please see next page**<<<

Richard Dilg
6-30-88

( ) Data are acceptable for use.
(X) Data are acceptable for use with qualifications referenced above. See Data Qualifier sheets and Calibration Outlier forms for flags and additional comments.
( ) Data are preliminary - pending verification by Contractor Laboratory. See Case Summary above.
( ) Data are unacceptable.

cc: Carla Dempsey, CLP Quality Assurance Officer, Analytical Operations Branch
James Petty, Chief Quality Assurance Research, EMSL, Las Vegas

DATA QUALIFIERS

LABORATORY: Versar **CASE: 9519**

GFAA Analysis: Matrix spike recovery for Se(0%) indicates low bias. All Se results are unusable(R). A dilution factor was omitted in the calculation of the Se results and the results are incorrectly reported on the Form 1 sheets. However, the reviewer has not corrected these since the results are unusable.

Hg results are acceptable. The guideline holding time of 14 days was exceeded for the cyanide analysis (21 days). Thus cyanide results are estimated(J),

Reviewed By: Richard Dilg
Date: June 30, 1988

Richard Dilg
6-30-88

QC EXCEPTION SUMMARY REPORT

CASE # 9519
DATA SET # SF5152
LAB Q.C. #
DATE: 6-29-88

SITE BELGRADE MUN. WELL
LAB VERSAR
REVIEWED BY RDILG

MATRIX: SOIL
CONC. : LOW
MATRIX:
CONC. :

WATER SAMPLE SPK.
WATER SAMPLE DUP.
SOIL SAMPLE SPK.
SOIL SAMPLE DUP.

	OVERALL CASE QC									MATRIX SPECIFIC QC						SAMPLE SPECIFIC QC		FIELD QC			REGIONAL QC			OTHER/ COMMENTS
	Holding Time	Cal Blanks	Ind Calver	Contin Calver	Prep Blk AQ	Prep Blk SOL	ICS %R	LCS % AQ	LCS % SOL	Sol Dup RPD	Sol Spk %R	AQ Dup RPD	AQ Spk %R	Ser Dilu AQ	Ser Dilu SOL	GFAA Dup	GFAA Spike	Blank	Dup RPD	Spike %R	Blind Blank	Blind Spike %R	Split Sample RPD	
Aluminum																								
Antimony										77														
Arsenic																								
Barium																								
Beryllium																								
Cadmium																								
Calcium										24														
Chromium										32														
Cobalt																								
Copper																								
Iron										85														
Lead																								
Magnesium																								
Manganese										156	265													
Mercury																								
Nickel																								
Potassium																								
Selenium											0													
Silver											51													
Sodium																								
Thallium																								
Tin																								
Vanadium																								
Zinc										52														
Cyanide	*																							21 days

USEPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 ALEXANDRIA, VA 22313
703/557-2490 FTS 557-2490

CASE NO: 95

SAS NO: (IF APPLICABLE)

INORGANIC TRAFFIC REPORT

(FOR CLP USE ONLY)

TYPE OF ACTIVITY (CIRCLE ONE) ①
SUPERFUND—PA (SI) ESI RIFS RD RA ER NPLD O&M OTHER
NON-SUPERFUND— PROGRAM

SITE NAME: BELGRADE MUNICIPAL WELL FIELD

CITY, STATE: BELGRADE, MN SITE SPILL ID: ZZ

REGION NO: 5 SAMPLING COMPANY: ② MPCA

SAMPLER: (NAME) REBECCA LOFGREN

SHIP TO: ③ Versar Inc (VERSAR)
6850 Versar Center
P.O. Box 1549
Springfield, Virginia 22151
ATTN: Janet Beckman

SAMPLING DATE: ④
BEGIN: 5/2/88 END: 5/5/88

DATE SHIPPED: 5/12/88 CARRIER: FED. EX
AIRBILL NO: 6820695593

SAMPLE DESCRIPTION ⑥
(ENTER IN BOX A)
1. SURFACE WATER
2. GROUND WATER
3. LEACHATE
4. SOIL
5. SEDIMENT
6. OIL (SAS)
7. WASTE (SAS)

DOUBLE VOLUME REQUIRED FOR MATRIX SPIKE/DUPLICATE AQUEOUS SAMPLE

SHIP MEDIUM AND HIGH CONCENTRATION SAMPLES IN PAINT CANS

SEE REVERSE FOR ADDITIONAL INSTRUCTIONS

CLP SAMPLE NUMBER (FROM LABELS)	Ⓐ SAMPLE DESCRIPTION (FROM BOX 1)	Ⓑ CONCENTRATION L = LOW M = MED H = HIGH (SAS)	Ⓒ RAS ANALYSIS: TOTAL METALS	CYANIDE	DISSOLVED METALS	HIGH ONLY (SAS): SULFIDE	pH	CONDUCTIVITY	CHLORIDE	Ⓓ SPECIAL HANDLING	Ⓔ STATION LOCATION
MEW 614	4	L	X	X							B-1
MEW 624	4	L	X	X							B-2
MEW 625	4	L	X	X							B-3
MEW 633	4	L	X	X							B-4
MEW 634	4	L	X	X							B-5
MEW 635	4	L	X	X							B-6
SAMPLING COMPLETE											
1 of 1 Cooler shipped											

PA Form 2075-6 (8-87)

WHITE — SMO COPY PINK — CLIENT COPY WHITE — LAB COPY FOR RETURN TO SMO YELLOW — LAB COPY

ORGANICS, INORGANICS

THIS FORM IS TO BE USED FOR SAMPLES SENT TO CONTRACT ONLY

CASE NUMBER/SAS No. 9519 SITE NAME BELGRADE MUNI. WELL FIELD (SIO8) LABORATORY WILSON-ORGANIC VERSAR-INORGANIC DATE SHIPPED 5-12-88

SUPERFUND DU NUMBER 4905 EPA RPM or OSC (S.M.S.)/(CES) DAVE KOUBSKY, MPCA PAGE 1 OF 1

ACTIVITY NUMBER

CRL LOG NUMBER	ORGANIC TRAFFIC REPORT NUMBER or SAS Packing List No.	INORGANIC TRAFFIC REPORT NUMBER or SAS Packing List No.	WATER OR LIQUIDS: ACID-BASE NEUTRAL CPOS ORGANIC SCAN UG L TOX17974	VOLATILE ORGANIC ANALYSIS ORGANIC SCAN UG L TOX17564	WATER POLYCHLORINATED BIPHENYLS UG L PES 17144	WATER CHLORINATED PESTICIDES UG L PES17134	TOTAL METALS IN WATER UG L MET111	WATER CYANIDE UG L MIN74919	NITRATE NITRITE MG L MIN7284	AMMONIA MG L MIN7294	RESIDUE, FILTERABLE TDS MG L MIN7382	RESIDUE, NON-FILT TSS MG L MIN7372			SEDIMENTS or SOILS: ACID-BASE NEUTRAL CPOS ORGANIC SCAN MG KG TOX215722	VOLATILE ORGANIC ANALYSIS ORGANIC SCAN MG KG TOX215622	SEDIMENTS POLYCHLORINATED BIPHENYLS MG KG PES211422	SEDIMENT CHLORINATED PESTICIDES MG KG 211322	TOTAL METALS MG KG MET413	CYANIDE MG KG MIN44930	EP TOXICITY METALS MG KG	AMMONIA MG KG MIN42925				
88YL08501	ET 841	MEW 614													X		X	X	X	X						
88YL08502	ET 842	MEW 624													X		X	X	X	X						
88YL08503	ET 851	MEW 625													X		X	X	X	X						
88YL08504	ET 852	MEW 633													X		X	X	X	X						
88YL08505	ET 853	MEW 634													X		X	X	X	X						
88YL08506	ET 854	MEW 635													X		X	X	X	X						

US ENVIRONMENTAL PROTECTION AGENCY
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 - ALEXANDRIA, VA 22313
703/557-2490 FTS:8-557-2490

DATE: 6/01/88

COVER PAGE
INORGANIC ANALYSES DATA PACKAGE

LAB NAME: VERSAR, INC.
SOW NO.: 785

Q.C. REPORT: 212
CASE NO.: 9519
PROJECT NO.:.5027.0000

SAMPLE NUMBERS

EPA NO.	LAB ID NO.	EPA NO.	LAB ID NO.
MEW 614	49335	MEW 625	49337
MEW 624	49336	MEW 634	49339
MEW 633	49338	MEW 635	49340

COMMENTS:

ICP INTERELEMENT AND BACKGROUND CORRECTION APPLIED? YES.
CORRECTIONS APPLIED BEFORE GENERATION OF RAW DATA.

FOOTNOTES:

NR - NOT REQUIRED BY CONTRACT AT THIS TIME
FORM I:

VALUE - IF THE RESULT IS A VALUE GREATER THAN OR EQUAL TO THE INSTRUMENT DETECTION LIMIT BUT LESS THAN THE CONTRACT REQUIRED DETECTION LIMIT, REPORT THE VALUE IN BRACKETS (I.E., [10]). INDICATE THE ANALYTICAL METHOD USED WITH P (FOR ICP/FLAME AA) OR F (FOR FURNACE).
U - INDICATES ELEMENT WAS ANALYZED FOR BUT NOT DETECTED. REPORT WITH THE DETECTION LIMIT VALUE (E.G., 10U).
- INDICATES A VALUE ESTIMATED OR NOT REPORTED DUE TO THE PRESENCE OF INTERFERENCE. EXPLANATORY NOTE INCLUDED ON COVER PAGE.
- INDICATES VALUE DETERMINED BY METHOD OF STANDARD ADDITION
- INDICATES SPIKE SAMPLE RECOVERY IS NOT WITHIN CONTROL LIMITS.
* - INDICATES DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS.
+ - INDICATES THE CORRELATION COEFFICIENT FOR METHOD OF STANDARD ADDITION IS LESS THAN 0.995
F - DILUTION FACTOR
SD - SAMPLE USED FOR ICP SERIAL DILUTION
- INDICATES DUPLICATE INJECTION RESULTS EXCEED CONTROL LIMITS

INDICATE METHOD USED: P FOR ICP; A FOR FLAME AA; AND F FOR FURNACE.

FORM I

S. EPA CONTRACT LABORATORY PROGRAM
MPLE MANAGEMENT OFFICE
.O. BOX 818 - ALEXANDRIA, VA. 22313
703/557-2490 FTS: 8-557-2490

SAMPLE NO.
MEW 614

DATE 6/01/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME VERSAR INC.

CASE NO. 9519

SOW NO. 785

LAB RECEIPT DATE 5/13/88

LAB SAMPLE ID. NO. 49335

QC REPORT NO. 212

PROJECT-TASK 5027.0000

BATCH 212

ELEMENTS IDENTIFIED AND MEASURED

CONCENTRATION: LOW X MEDIUM HIGH

MATRIX: WATER SOIL X WIPE

MG/KG DRY WEIGHT

1.	ALUMINUM	2510.	P	13.	MAGNESIUM	17000.	P
2.	ANTIMONY	16. *	P	14.	MANGANESE	288. N*	P
3.	ARSENIC	2.1 U	F	15.	MERCURY	0.11 U	
4.	BARIUM	[28.]	P	16.	NICKEL	[7.3]	P
5.	BERYLLIUM	[0.78]	P	17.	POTASSIUM	[399.]	P
6.	CADMIUM	0.85 U	P	18.	SELENIUM	11. UN	F
7.	CALCIUM	60900. *	P	19.	SILVER	0.42 UN	P
8.	CHROMIUM	12. *	P	20.	SODIUM	[108.]	P
9.	COBALT	[2.8]	P	21.	THALLIUM	2.1 U	F
10.	COPPER	[3.6]	P	22.	VANADIUM	12.	P
11.	IRON	8050. *	P	23.	ZINC	17. *	P
12.	LEAD	1.4	F		PERCENT SOLIDS	94.2	
	CYANIDE	0.53 U					

FOOTNOTES: SEE COVER PAGE.

COMMENTS: COLOR - BROWN; TEXTURE - MEDIUM; DF OF 10 FOR SE;

00002

LAB SUPERVISOR Janet Beck

JANET BECKMAN

FORM I

U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 - ALEXANDRIA, VA. 22313
703/557-2490 FTS: 8-557-2490

SAMPLE NO.
MEW 624

DATE 6/01/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME VERSAR INC.

CASE NO. 9519

SDW NO. 785

LAB RECEIPT DATE 5/13/88

LAB SAMPLE ID. NO. 49336

QC REPORT NO. 212

PROJECT-TASK 5027.0000

BATCH 212

ELEMENTS IDENTIFIED AND MEASURED

CONCENTRATION: LOW X MEDIUM HIGH

MATRIX: WATER SOIL X WIPE

MG/KG DRY WEIGHT

1.	ALUMINUM	2170.	P	13.	MAGNESIUM	19100.	P
2.	ANTIMONY	14. *	P	14.	MANGANESE	307. N*	P
3.	ARSENIC	2.2 U	F	15.	MERCURY	0.11 U	
4.	BARIUM	[23.]	P	16.	NICKEL	4.0 U	P
5.	BERYLLIUM	[0.84]	P	17.	POTASSIUM	266. U	P
6.	CADMIUM	0.89 U	P	18.	SELENIUM	11. UN	F
7.	CALCIUM	62100. *	P	19.	SILVER	0.44 UN	P
8.	CHROMIUM	8.4 *	P	20.	SODIUM	[91.]	P
9.	COBALT	[1.8]	P	21.	THALLIUM	2.2 U	F
10.	COPPER	[2.9]	P	22.	VANADIUM	[9.3]	P
11.	IRON	7030. *	P	23.	ZINC	16. *	P
12.	LEAD	1.8	F		PERCENT SOLIDS	90.2	
	CYANIDE	0.55 U					

FOOTNOTES: SEE COVER PAGE.

COMMENTS: COLOR - BROWN; TEXTURE - MEDIUM; DF OF 10 FOR SE;

00003

LAB SUPERVISOR Janet Beckman

JANET BECKMAN

FORM I

U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 - ALEXANDRIA, VA. 22313
703/557-2490 FTS: 8-557-2490

SAMPLE NO.
MEW 625

DATE 6/01/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME VERSAR INC.

CASE NO. 9519

SOW NO. 785

LAB RECEIPT DATE 5/13/88

LAB SAMPLE ID. NO. 49337

QC REPORT NO. 212

PROJECT-TASK 5027.0000

BATCH 212

ELEMENTS IDENTIFIED AND MEASURED

CONCENTRATION: LOW X MEDIUM HIGH

MATRIX: WATER SOIL X WIPE

MG/KG DRY WEIGHT

1.	ALUMINUM	2040.	P	13.	MAGNESIUM	11100.	P
2.	ANTIMONY	[12.] *	P	14.	MANGANESE	278. N*	P
3.	ARSENIC	4.3	F S	15.	MERCURY	0.11 U	
4.	BARIUM	[17.]	P	16.	NICKEL	[8.2]	P
5.	BERYLLIUM	0.22 U	P	17.	POTASSIUM	264. U	P
6.	CADMIUM	0.88 U	P	18.	SELENIUM	11. UN	F
7.	CALCIUM	35300. *	P	19.	SILVER	0.44 UN	P
8.	CHROMIUM	9.6 *	P	20.	SODIUM	[77.]	P
9.	COBALT	[2.2]	P	21.	THALLIUM	2.2 U	F
10.	COPPER	[2.3]	P	22.	VANADIUM	[7.9]	P
11.	IRON	6280. *	P	23.	ZINC	12. *	P
12.	LEAD	10.	F		PERCENT SOLIDS	90.8	
	CYANIDE	0.55 U					

FOOTNOTES: SEE COVER PAGE.

COMMENTS: COLOR - BROWN; TEXTURE - MEDIUM; DF OF 2 FOR PB; DF OF 10 FOR SE;

00004

LAB SUPERVISOR PKW for

JANET BECKMAN

FORM I

U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 - ALEXANDRIA, VA. 22313
703/557-2490 FTS: 8-557-2490

SAMPLE NO.
MEW 633

DATE 6/01/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME VERSAR INC.

CASE NO. 9519

SDW NO. 785

LAB RECEIPT DATE 5/13/88

LAB SAMPLE ID. NO. 49338

QC REPORT NO. 212

PROJECT-TASK 5027.0000

BATCH 212

ELEMENTS IDENTIFIED AND MEASURED

CONCENTRATION: LOW X MEDIUM HIGH

MATRIX: WATER SOIL X WIPE

MG/KG DRY WEIGHT

1.	ALUMINUM	1900.	P	13.	MAGNESIUM	13900.	P
2.	ANTIMONY	16. *	P	14.	MANGANESE	374. N*	P
3.	ARSENIC	2.2 U	F	15.	MERCURY	0.35	
4.	BARIUM	[34.]	P	16.	NICKEL	[4.0]	P
5.	BERYLLIUM	0.22 U	P	17.	POTASSIUM	260. U	P
6.	CADMIUM	0.87 U	P	18.	SELENIUM	11. UN	F
7.	CALCIUM	37500. *	P	19.	SILVER	0.43 UN	P
8.	CHROMIUM	11. *	P	20.	SODIUM	[84.]	P
9.	COBALT	[2.5]	P	21.	THALLIUM	2.2 U	F
10.	COPPER	[4.7]	P	22.	VANADIUM	[8.7]	P
11.	IRON	8340. *	P	23.	ZINC	45. *	P
12.	LEAD	13.	F		PERCENT SOLIDS	92.2	
	CYANIDE	0.77					

FOOTNOTES: SEE COVER PAGE.

COMMENTS: COLOR - BROWN; TEXTURE - MEDIUM; DF OF 2 FOR PB; DF OF 10 FOR SE; SD;

00005

LAB SUPERVISOR PKW for

JANET BECKMAN

FORM I

S. EPA CONTRACT LABORATORY PROGRAM
MPLE MANAGEMENT OFFICE
.O. BOX 818 - ALEXANDRIA, VA. 22313
703/557-2490 FTS: 8-557-2490

SAMPLE NO.
MEW 634

DATE 6/01/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME VERSAR INC.

CASE NO. 9519

SOW NO. 785

LAB RECEIPT DATE 5/13/88

LAB SAMPLE ID. NO. 49339

QC REPORT NO. 212

PROJECT-TASK 5027.0000

BATCH 212

ELEMENTS IDENTIFIED AND MEASURED

CONCENTRATION: LOW X MEDIUM HIGH

MATRIX: WATER SOIL X WIPE

MG/KG DRY WEIGHT

1.	ALUMINUM	1850.	P	13.	MAGNESIUM	21900.	P
2.	ANTIMONY	[12.] *	P	14.	MANGANESE	258. N*	P
3.	ARSENIC	5.0	F S	15.	MERCURY	0.11 U	
4.	BARIUM	[19.]	P	16.	NICKEL	[6.0]	P
5.	BERYLLIUM	0.22 U	P	17.	POTASSIUM	259. U	P
6.	CADMIUM	0.86 U	P	18.	SELENIUM	11. UN	F
7.	CALCIUM	58700. *	P	19.	SILVER	0.43 UN	P
8.	CHROMIUM	10. *	P	20.	SODIUM	[94.]	P
9.	COBALT	[1.9]	P	21.	THALLIUM	2.2 U	F
10.	COPPER	[2.0]	P	22.	VANADIUM	[8.5]	P
11.	IRON	6840. *	P	23.	ZINC	14. *	P
12.	LEAD	1.6	F		PERCENT SOLIDS	92.8	
	CYANIDE	0.54 U					

FOOTNOTES: SEE COVER PAGE.

COMMENTS: COLOR - BROWN; TEXTURE - MEDIUM; DF OF 10 FOR SE;

00006

LAB SUPERVISOR Janet Beckman

JANET BECKMAN

FORM I

U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 - ALEXANDRIA, VA. 22313
703/557-2490 FTS: 8-557-2490

SAMPLE NO.
MEW 635

DATE 6/01/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME VERSAR INC.

CASE NO. 9519

SDW NO. 785

LAB RECEIPT DATE 5/13/88

LAB SAMPLE ID. NO. 49340

QC REPORT NO. 212

PROJECT-TASK 5027.0000

BATCH 212

ELEMENTS IDENTIFIED AND MEASURED

CONCENTRATION: LOW X MEDIUM HIGH

MATRIX: WATER SOIL X WIPE

MG/KG DRY WEIGHT

1.	ALUMINUM	2350.	P	13.	MAGNESIUM	28700.	P
2.	ANTIMONY	17. *	P	14.	MANGANESE	289. N*	P
3.	ARSENIC	[2.0]	F S	15.	MERCURY	0.11 U	
4.	BARIUM	[25.]	P	16.	NICKEL	4.1 U	P
5.	BERYLLIUM	0.23 U	P	17.	POTASSIUM	272. U	P
6.	CADMIUM	0.91 U	P	18.	SELENIUM	11. UN	F
7.	CALCIUM	65000. *	P	19.	SILVER	0.45 UN	P
8.	CHROMIUM	11. *	P	20.	SODIUM	[94.]	P
9.	COBALT	[1.6]	P	21.	THALLIUM	2.3 U	F
10.	COPPER	[3.5]	P	22.	VANADIUM	13.	P
11.	IRON	8940. *	P	23.	ZINC	16. *	P
12.	LEAD	1.4	F		PERCENT SOLIDS	88.2	
	CYANIDE	0.57 U					

FOOTNOTES: SEE COVER PAGE.

COMMENTS: COLOR - BROWN; TEXTURE - MEDIUM;

00007

LAB SUPERVISOR Janet Beck

JANET BECKMAN

FORM III A
BLANKS

Q.C. REPORT: 212

LAB NAME: VERSAR, INC.
DATE: 6/01/88

CASE NO.: 9519
UNITS: UG/L

MATRIX HOH

COMPOUND	INITIAL CALIB BLANK VALUE	CONTINUING CALIB BLANK VALUE 1	2	3	4	PREP BLANK (1) MATRIX 1: SOIL	MATRIX 2:
1. ALUMINUM	10.U	10.U	10.U	10.U	[11.]	[4.5]	
2. ANTIMONY	21.U	21.U	21.U	21.U	21.U	4.2U	
3. ARSENIC	3.0U	3.0U	---	---	---	0.60U	
4. BARIUM	2.0U	2.0U	2.0U	2.0U	2.0U	0.40U	
5. BERYLLIUM	[1.3]	1.0U	1.0U	1.0U	1.0U	[0.53]	
6. CADMIUM	4.0U	4.0U	4.0U	4.0U	4.0U	0.80U	
7. CALCIUM	9.0U	9.0U	[55.]	[10.]	9.0U	[3.3]	
8. CHROMIUM	6.0U	6.0U	6.0U	6.0U	6.0U	1.2U	
9. COBALT	6.0U	6.0U	6.0U	6.0U	6.0U	1.2U	
10. COPPER	4.0U	4.0U	4.0U	4.0U	4.0U	0.80U	
11. IRON	[8.4]	[8.9]	[9.9]	8.0U	8.0U	[1.8]	
12. LEAD	2.0U	2.0U	2.0U	2.0U	---	0.40U	
13. MAGNESIUM	[9.8]	[9.0]	[18.]	2.0U	[13.]	[1.6]	
14. MANGANESE	2.0U	2.0U	2.0U	2.0U	2.0U	[1.0]	
15. MERCURY	0.2U	0.2U	---	---	---	0.10U	
16. NICKEL	18.U	18.U	18.U	18.U	18.U	3.6U	
17. POTASSIUM	1200.U	1200.U	1200.U	1200.U	1200.U	240.U	
18. SELENIUM	3.0U	3.0U	---	---	---	0.60U	
19. SILVER	2.0U	2.0U	2.0U	2.0U	2.0U	0.40U	
20. SODIUM	[102.]	[138.]	82.U	82.U	82.U	16.U	
21. THALLIUM	3.0U	3.0U	3.0U	---	---	0.60U	
22. VANADIUM	3.0U	3.0U	3.0U	3.0U	3.0U	0.60U	
23. ZINC	9.0U	9.0U	9.0U	9.0U	9.0U	1.8U	
24. CYANIDE	10.U	10.U	---	---	---	2.5U	

(1) REPORTING UNITS: AQUEOUS, UG/L; SOLID, MG/KG

FORM III B
BLANKS

Q.C. REPORT: 212

LAB NAME: VERSAR, INC.
DATE: 6/01/88

CASE NO.: 9519
UNITS: UG/L

MATRIX HOH

COMPOUND	INITIAL CALIB BLANK VALUE	CONTINUING CALIB BLANK VALUE 1	2	3	4	PREP BLANK (1) MATRIX 1:	MATRIX 2:
1. ALUMINUM							
2. ANTIMONY							
3. ARSENIC	3.0U	3.0U					
4. BARIUM							
5. BERYLLIUM							
6. CADMIUM							
7. CALCIUM							
8. CHROMIUM							
9. COBALT							
10. COPPER							
11. IRON							
12. LEAD							
13. MAGNESIUM							
14. MANGANESE							
15. MERCURY							
16. NICKEL							
17. POTASSIUM							
18. SELENIUM	3.0U	3.0U	3.0U				
19. SILVER							
20. SODIUM							
21. THALLIUM	3.0U	3.0U					
22. VANADIUM							
23. ZINC							
24. CYANIDE							

00013

1) REPORTING UNITS: AQUEOUS, UG/L; SOLID, MG/KG

FORM III C
BLANKS

Q.C. REPORT: 212

LAB NAME: VERSAR, INC.
DATE: 6/01/88

CASE NO.: 9519
UNITS: UG/L

MATRIX HOH

COMPOUND	INITIAL CALIB BLANK VALUE	CONTINUING CALIB BLANK VALUE 1	2	3	4	PREP BLANK (1) MATRIX 1:	MATRIX 2:
1. ALUMINUM							
2. ANTIMONY							
3. ARSENIC	3.0U	3.0U					
4. BARIUM							
5. BERYLLIUM							
6. CADMIUM							
7. CALCIUM							
8. CHROMIUM							
9. COBALT							
10. COPPER							
11. IRON							
12. LEAD							
13. MAGNESIUM							
14. MANGANESE							
15. MERCURY							
16. NICKEL							
17. POTASSIUM							
18. SELENIUM	3.0U	3.0U					
19. SILVER							
20. SODIUM							
21. THALLIUM							
22. VANADIUM							
23. ZINC							
24. CYANIDE							

00014

(1) REPORTING UNITS: AQUEOUS, UG/L; SOLID, MG/KG

FORM V A
SPIKE SAMPLE RECOVERY

Q.C. REPORT: 212

AB NAME: VERSAR, INC.
DATE: 6/01/88

ATRIX: L. SOIL

CASE NO.: 9519
EPA SAMPLE NO.: MEW 614
LAB SAMPLE ID NO.: 49335
UNITS: MG/KG

COMPOUND	CONTROL LIMIT %R	SPIKED SAMPLE RESULT (SSR)	SAMPLE RESULT (SR)	SPIKED ADDED (SA)	%R (1)	
1. ALUMINUM	75-125	NR	---	---	---	
2. ANTIMONY	75-125	104.	16.	106.	83.	
3. ARSENIC	75-125	8.3	2.1U	8.5	102.	
4. BARIUM	75-125	447.	[28.]	425.	98.	
5. BERYLLIUM	75-125	11.	[0.78]	11.	93.	
6. CADMIUM	75-125	10.	0.85U	11.	91.	
7. CALCIUM	75-125	NR	---	---	---	
8. CHROMIUM	75-125	57.	12.	42.	107.	
9. COBALT	75-125	108.	[2.8]	106.	99.	
10. COPPER	75-125	55.	[3.6]	53.	97.	
11. IRON	75-125	NR	---	---	---	
12. LEAD	75-125	12.	1.4	11.	96.	
13. MAGNESIUM	75-125	NR	---	---	---	
14. MANGANESE	75-125	569.	288.	106.	265.	N
15. MERCURY (2)	75-125	0.53	0.11U	0.54	98.	
16. NICKEL	75-125	111.	[7.3]	106.	98.	
17. POTASSIUM	75-125	NR	---	---	---	
18. SELENIUM	75-125	1.1U	11.U	2.1	0.0	N
19. SILVER	75-125	5.6	0.42U	11.	51.	N
20. SODIUM	75-125	NR	---	---	---	
21. THALLIUM	75-125	8.4	2.1U	11.	76.	
22. VANADIUM	75-125	121.	12.	106.	103.	
23. ZINC	75-125	127.	17.	106.	104.	
24. CYANIDE (3)	75-125	4.97	0.57U	5.44	91.	

(1) %R = [(SSR-SR)/SA] X 100 "N"- OUT OF CONTROL "NR" - NOT REQUIRED
(2) EPA # MEW 634 - LAB # 49339 (3) EPA # MEW 635 - LAB # 49340

FORM VI A
DUPLICATES

Q.C. REPORT: 212

LAB NAME: VERSAR, INC.
DATE: 6/01/88

MATRIX: L. SOIL

CASE NO.: 9519
EPA SAMPLE NO.: MEW 614
LAB SAMPLE ID NO.: 49335
UNITS: MG/KG

COMPOUND	CONTROL LIMITS (1)		SAMPLE(S)	DUPLICATE(D)	RPD(2)	
1. ALUMINUM			2510.	2380.	5.3	
2. ANTIMONY	+/-	13.	16.	36.	77.	*
3. ARSENIC			2.1U	2.1U	NC	
4. BARIUM			[28.]	135.	NC	
5. BERYLLIUM			[0.78]	[0.75]	NC	
6. CADMIUM			0.85U	0.85U	NC	
7. CALCIUM			60900.	47700.	24.	*
8. CHROMIUM	+/-	2.1	12.	8.7	32.	*
9. COBALT			[2.8]	[9.4]	NC	
10. COPPER			[3.6]	5.9	NC	
11. IRON			8050.	20000.	85.	*
12. LEAD	+/-	1.1	1.4	1.1	24.	
13. MAGNESIUM			17000.	15600.	8.6	
14. MANGANESE			288.	2350.	156.	*
15. MERCURY (3)			0.11U	0.11U	NC	
16. NICKEL			[7.3]	9.1	NC	
17. POTASSIUM			[399.]	[416.]	NC	
18. SELENIUM			11.U	11.U	NC	
19. SILVER			0.42U	0.42U	NC	
20. SODIUM			[108.]	[241.]	NC	
21. THALLIUM			2.1U	2.1U	NC	
22. VANADIUM	+/-	11.	12.	14.	15.	
23. ZINC	+/-	4.2	17.	26.	52.	*
24. CYANIDE (4)			0.57U	0.57U	NC	

(1) TO BE ADDED AT A LATER DATE (2) RPD = [(S-D)/((S+D)/2)]X100
(3) EPA # MEW 634 - LAB # 49339 (4) EPA # MEW 635 - LAB # 49340
NC - NON CALCULABLE RPD DUE TO VALUE(S) LESS THAN CRDL * - OUT OF CONTROL

FORM VII A Q.C. REPORT: 212

INSTRUMENT DETECTION LIMITS AND LABORATORY CONTROL SAMPLE

LAB NAME: VERSAR, INC. CASE NO.: 9519 DATE: 6/01/88

LCS NO.: LCSA OR LCSF (SOIL)

COMPOUND	CRDL	IDL (UG/L) ICP/AA ID# 9	IDL (UG/L) Furnace ID# 3	LABORATORY CONTROL SAMPLE UNITS: UG/L TRUE	FOUND	%R
1. ALUMINUM	200.	10.		1980.	1890.	95.
2. ANTIMONY (1)	60.	21.		1010.	994.	98.
3. ARSENIC	10.					
4. BARIUM	200.	2.		1980.	1930.	97.
5. BERYLLIUM	5.	1.		481.	458.	95.
6. CADMIUM	5.	4.		489.	480.	98.
7. CALCIUM	5000.	9.		49800.	46100.	92.
8. CHROMIUM	10.	6.		506.	488.	96.
9. COBALT	50.	6.		474.	488.	103.
10. COPPER	25.	4.		542.	505.	93.
11. IRON	100.	8.		1990.	1840.	92.
12. LEAD	5.		2.	97.9	94.	96.
13. MAGNESIUM	5000.	2.		25000.	22700.	91.
14. MANGANESE	15.	2.		513.	486.	95.
15. MERCURY	0.2					
16. NICKEL	40.	18.		496.	464.	94.
17. POTASSIUM	5000.	1200.		50200.	46500.	93.
18. SELENIUM	5.					
19. SILVER	10.	2.		509.	440.	86.
20. SODIUM	5000.	82.		50700.	47400.	93.
1. THALLIUM	10.		3.	97.3	113.	116.
22. VANADIUM	50.	3.		511.	493.	96.
23. ZINC	20.	9.		3100.	2860.	92.
24. CYANIDE	10.	NR	NR	1000.	920.	92.

NR - NOT REQUIRED ID# 9- JARRELL ASH ICAP 61 ID# 3- PERKIN ELMER 2380

(1) LCS NO. IS LCSB

FORM VII B Q.C. REPORT: 212

INSTRUMENT DETECTION LIMITS AND LABORATORY CONTROL SAMPLE

LAB NAME: VERSAR, INC. CASE NO.: 9519 DATE: 6/01/88

LCS NO.: LCSF (SOIL)

COMPOUND	CRDL	IDL (UG/L) ICP/AA ID#	IDL (UG/L) Furnace ID# 5	LABORATORY CONTROL SAMPLE UNITS: UG/L TRUE	FOUND	%R
1. ALUMINUM	200.					
2. ANTIMONY	60.					
3. ARSENIC	10.		3.	47.0	48.	102.
4. BARIUM	200.					
5. BERYLLIUM	5.					
6. CADMIUM	5.					
7. CALCIUM	5000.					
8. CHROMIUM	10.					
9. COBALT	50.					
10. COPPER	25.					
11. IRON	100.					
12. LEAD	5.					
13. MAGNESIUM	5000.					
14. MANGANESE	15.					
15. MERCURY	0.2					
16. NICKEL	40.					
17. POTASSIUM	5000.					
18. SELENIUM	5.					
19. SILVER	10.					
20. SODIUM	5000.					
21. THALLIUM	10.					
22. VANADIUM	50.					
23. ZINC	20.					
24. CYANIDE	10.					

NR - NOT REQUIRED ID# 5- PERKIN ELMER 5000

FORM VII C Q.C. REPORT: 212

INSTRUMENT DETECTION LIMITS AND LABORATORY CONTROL SAMPLE

LAB NAME: VERSAR, INC. CASE NO.: 9519 DATE: 6/01/88

LCS NO.: LCSF (SOIL)

COMPOUND	CRDL	IDL (UG/L) ICP/AA ID#	IDL (UG/L) Furnace ID# 6	LABORATORY CONTROL SAMPLE UNITS: UG/L TRUE	FOUND	%R
1. ALUMINUM	200.					
2. ANTIMONY	60.					
3. ARSENIC	10.					
4. BARIUM	200.					
5. BERYLLIUM	5.					
6. CADMIUM	5.					
7. CALCIUM	5000.					
8. CHROMIUM	10.					
9. COBALT	50.					
10. COPPER	25.					
11. IRON	100.					
12. LEAD	5.					
13. MAGNESIUM	5000.					
14. MANGANESE	15.					
15. MERCURY	0.2					
16. NICKEL	40.					
17. POTASSIUM	5000.					
18. SELENIUM	5.		3.	104.	98.	94.
19. SILVER	10.					
20. SODIUM	5000.					
21. THALLIUM	10.					
22. VANADIUM	50.					
23. ZINC	20.					
24. CYANIDE	10.					

00020

NR - NOT REQUIRED ID# 6- PERKIN ELMER 5000

FORM VII D Q.C. REPORT: 212

INSTRUMENT DETECTION LIMITS AND LABORATORY CONTROL SAMPLE

LAB NAME: VERSAR, INC. CASE NO.: 9519 DATE: 6/01/88

LCS NO.: LCSF (SOIL)

COMPOUND	CRDL	IDL (UG/L) ICP/AA ID#	IDL (UG/L) Furnace ID# 7	LABORATORY CONTROL SAMPLE UNITS: UG/L TRUE	FOUND	%R
1. ALUMINUM	200.					
2. ANTIMONY	60.					
3. ARSENIC	10.					
4. BARIUM	200.					
5. BERYLLIUM	5.					
6. CADMIUM	5.					
7. CALCIUM	5000.					
8. CHROMIUM	10.					
9. COBALT	50.					
10. COPPER	25.					
11. IRON	100.					
12. LEAD	5.					
13. MAGNESIUM	5000.					
14. MANGANESE	15.					
15. MERCURY	0.2		0.2	5.2	5.0	96.
16. NICKEL	40.					
17. POTASSIUM	5000.					
18. SELENIUM	5.					
19. SILVER	10.					
20. SODIUM	5000.					
21. THALLIUM	10.					
22. VANADIUM	50.					
23. ZINC	20.					
24. CYANIDE	10.					

NR - NOT REQUIRED ID# 7- MAS 50

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 7/25/88

SUBJECT: Review of Region V CLP Data
Received for Review on 7-6-88

FROM: Curtis Ross, Director (5SCRL)
Central Regional Laboratory
Patrick J. Chunilla for

TO: Data User: MPCA

We have reviewed the data for the following case(s).

SITE NAME: Belgrade munic. well field SMO Case No. 9261

EPA Data Set No. SF5244 No. of Samples: 9 D.U./Activity Numbers Y905/C72222

CRL No. 88Y08507-512, D01, R01, R03

SMO Traffic No. E4623-629, 633, 635

CLP Laboratory: Cenref Hrs. Required for Review: 8hrs

Following are our findings:

This review covers 9 samples (All low level waters) for volatile; (9 samples), Semivolatile; (7 samples), Pesticide/PCB's; (7 samples) Analysis.

Qualifiers and calibration outliers are noted on the following pages of the review narrative.

John Sasito 7-19-88
Roy F Weston/ESAT

( ) Data are acceptable for use.
(✓) Data are acceptable for use with qualifications referenced above. See Data Qualifier sheets and Calibration Outlier forms for flags and additional comments.
( ) Data are preliminary - pending verification by Contractor Laboratory. See Case Summary above.
( ) Data are unacceptable.

cc: Carla Dempsey, CLP Quality Assurance Officer, Analytical Operations Branch
James Petty, Chief Quality Assurance Research, EMSL, Las Vegas

DATA QUALIFIERS

Contractor: CenRed

Case 9761

Below is a summary of the out-of-control audits and the possible effect on the data for this case:

① Holding times

All volatile samples (EY 623 to EY 633) have exceeded the 7 day time limit, from time of sampling to time of analysis by 3 days. Therefore, positive results for the aromatic compounds: (Benzene, Toluene, chlorobenzene, Ethylbenzene, Styrene, total xylenes) should be flagged (J) as estimated and the quantitation limits flagged (UJ).

All Semi-volatile and pesticide sample holding times were met. Therefore, analytical results for these samples should be considered acceptable for use.

② GC/MS tuning and GC instrument performance.

All (BFB) and (DFTPP) tuning criteria have been met and therefore, the volatile and semi-volatile analytical results should be considered acceptable. The pesticide/PCB GC performance is acceptable with respect to DDT retention time, DDT/Endrin Breakdown and DBC retention time shifts, were all within Q.C. limits and therefore the results from these analyses should be considered acceptable

③. Calibration

Volatile and semi-volatile outliers for initial and continuing calibration are noted on the calibration outliers form which follows. For the pesticide/PCB initial calibration the % RSD for Aldrin, Endrin, 4,4'-DDT, Dibutylchlorendate is less than 10% and well within Q.C. limits. Also the correct analytical sequence was followed. For the pesticide/PCB continuing calibration the percent D between calibration factors

Reviewed by: John Vasilko

Phone: (312) 353-2947

DATA QUALIFIERS

Contractor: CenRef

Case 9761

Below is a summary of the out-of-control audits and the possible effect on the data for this case:

(3) calibration cont.
is less than 15% for compounds being quantitated and less than 20% for compounds being confirmed

(4) Blanks
A) volatile
The volatile blank (VBIK1) had detectable amounts of the compounds: Methylene chloride, Acetone, and 2-Butanone, All of the volatile samples: (EY 623 to EY635) had detectable amounts of the compounds Methylene chloride and Acetone At levels that are less than 10x that of the blank, Therefore, in the samples listed Above the compounds Methylene Chloride And Acetone have been flagged (U) As undetected. The compound 2-Butanone was detected in the samples: (EY 625, 627, 628, 633, 635) At levels that were less than 10 x that of the blank, Therefore, in the samples listed Above the compound 2-Butanone has been flagged (U) As undetected.
B) Semi-volatile
The Semi-volatile blank (SBIK) reports NO detectable level of contamination.
C). pesticide/PCB
The pesticide/PCB blank (PBIK) reports no detectable level of contamination

(5) Surrogate recoveries
The volatile, Semi-volatile, And pesticide/PCB samples All report surrogate recoveries All well within Q.C. limits, therefore, Analytical results for All sample fractions should

Reviewed by: John Vasinko
Phone: (312) 353-2947
Date: 7-19-88

DATA QUALIFIERS

Contractor: CanRef

Case 9761

Below is a summary of the out-of-control audits and the possible effect on the data for this case:

(5) Surrogate recoveries (cont.)
be considered Acceptable for use based on surrogate recoveries

(6) Matrix spike/Matrix spike duplicate
The volatile, semi-volatile, and pesticide/PCB matrix spike and matrix spike duplicates were within Q.C. limits with respect to percent recoveries and RPD values. Therefore, the results from all sample fractions should be considered acceptable for use.

(7) Field duplicates
The volatile, semi-volatile, and pesticide field sample (EY628) and it's duplicate (EY629) report very close agreement between analytical results. Therefore, the results of this case should be considered acceptable for use.

(8) Internal Standards Performance
Both the volatile and semi-volatile internal standard performance was well within Q.C. limits with respect to internal standard areas and standard retention time stability. Therefore, the results based on these internal standards should be considered acceptable for use.

Reviewed by: John Vasinko
Phone: (312) 353-2947

DATA QUALIFIERS

Contractor: CanRef

Case 9761

Below is a summary of the out-of-control audits and the possible effect on the data for this case:

(9) TCL compound Identification

For both the volatile and semi-volatile fractions the TCL compound identification was correct with respect to standard retention time and standard mass spectral comparison. Also the pesticide/PCB TCL compound identification was correct based on standard retention times on dissimilar columns. Therefore, the TCL compound identification for all sample fractions is correct and should be considered acceptable for use.

(10) Compound Quantitation and reported detection limits

The analytical results for this case have been calculated correctly based on the appropriate internal standard, quantitation ion and relative response factor. Also the CRQL have been adjusted to reflect the dilution and size of the sample.

(11) System performance.

It should be noted at this point that the total ion chromatograms for all semi-volatile samples show irregular baselines for the first 7 to 8 minutes of the analysis. However, there is no indication of problems with either the internal standards or surrogates.

(12) Additional case specific problems

It is my professional judgement, that the analytical results for this case be considered acceptable for use with the above mentioned qualifiers.

Reviewed by: John Varichko

Phone: (312) 353-2947

Date: 7-17-89

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION V
CALIBRATION OUTLIERS
VOLATILE HSL COMPOUNDS

CASE/SAS # 9761 CONTRACTOR CanREF

Instrument # 2B	Init. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.		
DATE/TIME:	5/24 1528			6-17 901											
	RF	%RSD	*	RF	%D	*	RF	%D	*	RF	%D	*	RF	%D	*
Chloromethane	.315			.416	32.3	J									
Bromomethane															
Vinyl Chloride															
Chloroethane															
Methylene Chloride															
Acetone															
Carbon Disulfide	3.247			2.158	34.5	J									
1,1-Dichloroethane	2.524			2.544	29.8	J									
1,1-Dichloroethene															
Trans-1,2-Dichloroethene															
Chloroform															
2-Butanone	.045	5.1	J	.060	34.9	J									
1,2-Dichloroethane	2.916			1.61	41.8	J									
1,1,1-Trichloroethane															
Carbon Tetrachloride															
Vinyl Acetate															
Bromodichloromethane															
1,2-Dichloropropane															
Trans-1,3-Dichloropropene	.410			.344	21.8	J									
Trichloroethene															
Dibromochloromethane															
1,1,2-Trichloroethane															
Benzene															
cis-1,3-Dichloropropene															
2-Chloroethylvinylether															
Bromoform															
4-Methyl-2-Pentanone															
2-Hexanone															
Tetrachloroethene															
1,1,2,2-Tetrachloroethane															
Toluene															
Chlorobenzene															
Ethylbenzene															
Styrene															
m-Xylene															
o/p-Xylene															

AFFECTED SAMPLES:

VBK1
EY623
to
EY629
EY633
EY635
EY624MS
EY624MSD

Reviewer's Initials/Date: J.V. 7-19-88

* These flags should be applied to the analytes on the sample data sheets.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION V
CALIBRATION OUTLIERS
SEMIVOLATILE HSL COMPOUNDS
(Page 1)

CASE/SAS # 9761 CONTRACTOR CENREF

Instrument # IC	Init. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.		
DATE/TIME:	6-9 1126			6-20 1211											
	RF	%RSD	*	RF	%D	*	RF	%D	*	RF	%D	*	RF	%D	*
Phenol															
bis(-2-Chloroethyl)Ether															
2-Chlorophenol															
1,3-Dichlorobenzene															
1,4-Dichlorobenzene															
Benzyl Alcohol															
1,2-Dichlorobenzene															
2-Methylphenol															
bis(2-chloroisopropyl)Ether															
4-Methylphenol	1.118			1.474	31.9	J									
N-Nitroso-Di-n-Propylamine															
Hexachloroethane	.709			1.015	43.2	J									
Nitrobenzene															
Isophorone															
2-Nitrophenol															
2,4-Dimethylphenol															
Benzoic Acid	.247			.143	42.1	J									
bis(2-Chloroethoxy)Methane															
2,4-Dichlorophenol															
1,2,4-Trichlorobenzene															
Naphthalene															
4-Chloroaniline															
Hexachlorobutadiene															
4-Chloro-3-Methylphenol															
2-Methylnaphthalene															
Hexachlorocyclopentadiene															
2,4,6-Trichlorophenol															
2,4,5-Trichlorophenol															
2-Chloronaphthalene															
2-Nitroaniline															
Dimethyl Phthalate															
Acenaphthylene															
3-Nitroaniline	.295			.160	43.7	J									
Acenaphthene	1.491			1.194	32.8	J									
2,4-Dinitrophenol															
4-Nitrophenol															
Dibenzofuran															

AFFECTED SAMPLES:

SBLK1
EY623
to
EY629
EY624MS
EY624MSD

Reviewer Initials/Date J.V. 7-19-88

* These flags should be applied to the analytes on the sample data sheets.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION V
CALIBRATION OUTLIERS
SEMIVOLATILE HSL COMPOUNDS
Page 2

CASE/SAS # 9761 CONTRACTOR CENRKF

Instrument # 1C	Init. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.		
DATE/TIME:	6-9 1126			6-20 1211											
	RF	%RSD	*	RF	%D	*	RF	%D	*	RF	%D	*	RF	%D	*
2,4-Dinitrotoluene															
2,6-Dinitrotoluene															
Diethylphthalate	1.272			1.745	41	J									
4-Chlorophenyl-phenylether	.584	30.4	J	.752	28.8	J									
Fluorene															
4-Nitroaniline															
4,6-Dinitro-2-Methylphenol															
N-Nitrosodiphenylamine															
4-Bromophenyl-phenylether															
Hexachlorobenzene															
Pentachlorophenol															
Phenanthrene															
Anthracene															
Di-n-Butylphthalate															
Fluoranthene															
Pyrene															
Butylbenzylphthalate															
Benzo(a)Anthracene															
bis(2-Ethylhexyl)Phthalate															
Chrysene															
Di-n-Octyl Phthalate															
Benzo(b)Fluoranthene															
Benzo(k)Fluoranthene															
Benzo(a)Pyrene															
Indeno(1,2,3-cd)Pyrene															
Dibenz(a,h)Anthracene															
Benzo(g,h,i) Perylene															

SEE PAGE 1 FOR AFFECTED SAMPLES.

* These flags should be applied to the analytes on the sample data sheets.

Reviewer's Initials/Date: J.V. / 7-19-88

Case: 9761

Contractor: CanRef

TENTATIVELY IDENTIFIED COMPOUNDS MATCH ASSESSMENT

NOTE: Reviewer should note directly on Organic Analysis Data Sheet (OADS) those matches that in his opinion (based on contract criteria) are unreasonable.

CRITERIA

(1) Relative intensities of major ions (>10%) reference spectrum should be present in the sample spectrum.

(2) Relative intensities of major ions in sample spectrum should agree to within ± 20% of reference spectrum intensities.

(3) Molecular ions present in reference spectrum should be present in sample spectrum.

(4) Ions present in sample spectrum, but not in reference spectrum should be reviewed for possible background contamination or presence of coeluting interferences.

(5) Ions present in reference spectrum, but not in the sample spectrum should be reviewed for possible subtraction from the sample spectrum because of background contamination or coeluting interferences.

(6) If, in the reviewer's opinion, no valid identification can be made the compound should be labelled as "unknown" and the initials and date of the reviewer placed on the OADS.

John Vasiuk 7-19-88

USEPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 ALEXANDRIA VA 22313
703 557-2490 FTS-557-2490

CASE NO: 4761

SAS NO: (IF APPLICABLE)

004

ORGANIC TRAFFIC REPORT

(FOR CLP USE ONLY)

TYPE OF ACTIVITY (CIRCLE ONE) ①
SUPERFUND—PA (SI) ESI RIFS RD RA ER
NPLD O&M OTHER _____
NON-SUPERFUND—_____ PROGRAM

SAMPLE DESCRIPTION
(ENTER IN BOX A)
1. SURFACE WATER
2. GROUND WATER
3. LEACHATE
4. SOIL
5. SEDIMENT
6. OIL (SAS)
7. WASTE (SAS)

REGION NO: V

SAMPLING COMPANY ② MKA

SAMPLER: (NAME) REBECCA LOFGREN

SHIP TO: ③ Cenref Labs (CENREF)
695 North Seventh Street
P.O. Box 68
Brighton, CO 80601-1559
ATTN: Kari Gelok

SAMPLING DATE: ④
BEGIN: 6/7/88 END: 6/8/88

DATE SHIPPED: 6/9/88 CARRIER: F.E.C.
AIRBILL NO: 6520695685 6520695696, 6520695700

DATE REC'D: 6/10/88 SDG NO: ⑥ EY623 final SDG EY635 LS 6/10/8

REC'D BY: Lynne J. Schomyder 579

LABORATORY CONTRACT NO. 68-01-7465 UNIT PRICE 579.00

TRANSFER TO: DATE REC'D: ⑦

REC'D BY: CONTRACT NO./PRICE:

CLP SAMPLE NUMBER (FROM LABELS)	Ⓐ SAMPLE DESCRIPTION (FROM BOX 1) 1 2 3 4 5 6 7	Ⓑ CONCENTRATION L = LOW/MED. H = HIGH (SAS)	Ⓒ RAS ANALYSIS VOLATILE	BASE/NEUT /ACID	PESTICIDE /PCB's		Ⓓ SPECIAL HANDLING	Ⓔ STATION LOCATION	Ⓕ SAMPLE CONDITION ON RECEIPT	Ⓖ HIGH CONC. PHASES (CHECK) SOLID	WATER—MIS LIQUID	NON WATER—MIS LIQUID
EY623	2	L	X	X	X			MW1				
EY624	2	L	X	X	X			MW2				
EY625	2	L	X	X	X			MW3				
EY626	2	L	X	X	X			MW4				
EY627	2	L	X	X	X			MW5				
EY628	2	L	X	X	X			MW6				
EY629	2	L	X	X	X			MW7				
EY633	2	L	X					FIELD BLANK-1				
EY635	2	L	X					BAILER BLANK-				

1 of 3 coolers shipped
sampling complete

EPA Form 2075-7 (8-87)

WHITE — SMO COPY PINK — CLIENT COPY WHITE — LAB COPY FOR RETURN TO SMO YELLOW — LAB COPY

SUPERFUND 5244

CENTRAL REGIONAL LABORATORY SAMPLE DATA REPORT

ORGANICS/INORGANICS

THIS FORM IS TO BE USED FOR SAMPLES SENT TO CONTRACT ONLY

DUE DATE: 7/11/88

CASE NUMBER/SAS No. 9761 / [redacted] SITE NAME BELGRADE MUNICIPAL WELL FIELD (SIU8) LABORATORY CENREF DATE SHIPPED 6/9/88

SUPERFUND DU NUMBER Y405 EPA RPM or OSC (S.M.S.)/(CES) _____ CERCLIS NUMBER _____ PAGE 2 OF 4

ACTIVITY NUMBER C72200

CRL LOG NUMBER	ORGANIC TRAFFIC REPORT NUMBER or SAS Packing List No.	INORGANIC TRAFFIC REPORT NUMBER or SAS Packing List No.			WATER OR LIQUIDS: ACID-BASE NEUTRAL CPDS ORGANIC SCAN UG/L TOX17574	VOLATILE ORGANIC ANALYSIS ORGANIC SCAN UG/L TOX17564	WATER POLYCHLORINATED BIPHENYLS UG/L PES 17144	WATER CHLORINATED PESTICIDES UG/L PES17134	TOTAL METALS IN WATER UG/L MET111	WATER CYANIDE UG/L MIN74919	NITRATE/NITRITE MG/L MIN7284	AMMONIA MG/L MIN7294	RESIDUE, FILTERABLE TDS MG/L MIN7362	RESIDUE, NON-FILT TSS MG/L MIN7372			SEDIMENTS or SOILS: ACID-BASE NEUTRAL CPDS ORGANIC SCAN MG/KG TOX215722	VOLATILE ORGANIC ANALYSIS ORGANIC SCAN MG/KG TOX215622	SEDIMENTS POLYCHLORINATED BIPHENYLS MG/KG PES211422	SEDIMENT CHLORINATED PESTICIDES MG/KG 211322	TOTAL METALS MG/KG MET413	CYANIDE MG/KG MIN44930	EP TOXICITY METALS MG/KG	AMMONIA MG/KG MIN42925			
88YL08S07	EY623	✓	✓	✓	X	X	X	X																			
88YL08S08	EY624	✓	✓	✓	X	X	X	X																			
88YL08S09	EY625	✓	✓	✓	X	X	X	X																			
88YL08S10	EY626	✓	✓	✓	X	X	X	X																			
88YL08S11	EY627	✓	✓	✓	X	X	X	X																			
88YL08S12	EY628	✓	✓	✓	X	X	X	X																			
88YL08D01	EY629	✓	✓	✓	X	X	X	X																			
88YL08R01	EY633	✓	✓	✓		X																					
88YL08R03	EY635	✓	✓	✓		X																					
		SCANNED																									

695 North Seventh Street
Brighton, Colorado 80601-1559
Telephone 303 659-0497

RECEIVED
JUL 05 1988
U.S. EPA CENTRAL
REGIONAL LAB

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U.S. EPA CENTRAL
REGIONAL LAB

Cenref Labs
Analytical Chemistry Laboratories

001

July 1, 1988

Case Narrative

Case : 9761, ALL RAS
SDG No. : EY623
Region : V
Contract: 68-01-7465

Samples: EY623,EY624,EY624MS,EY624MSD,EY625,EY626,EY627,EY628,EY629--Low Level Waters for VOA, BNA, and Pesticide analysis.

EY633,EY635--Low Level Waters for VOA analysis only.

General

Seven water samples plus associated matrix spike samples were analyzed for full HSL compounds. Two additional samples were analyzed for VOA compounds only.

Sample Receiving/Chain of Custody

1. All samples were received in good condition June 10, 1988.

VOAs

1. All samples were analyzed within the holding time period.

2. All surrogate recoveries were inside Q.C. Limits.

3. The spike recoveries and RPDs were inside Q.C. Limits.

4. All Internal Standard Areas were inside Q.C. Limits.

5. There are no FormIE pages on the diskette for the TIC compounds. This is due to an HP1000 software problem. We have been unable to create the "L" files needed to generate these forms on the diskette. These have been generated for the hardcopy.

6. The Hewlett-Packard data system does not report spectrum matches for TIC's when the probability of a match is less than one percent. All possible matches have been reported.

BNAs

1. All samples were extracted and analyzed within the holding time period.

2. All surrogate recoveries were inside Q.C. Limits.

3. All spike recoveries and RPDs were inside Q.C. Limits.

4. All Internal Standard Areas were inside Q.C. Limits.

5. There are no Form1F pages on the diskette for the TIC compounds. This is due to a software problem on the HP1000 computer. We have been unable to generate the "L" files needed to create these forms on the diskette. These have been generated for the hardcopy.

6. The Hewlett-Packard data system does not report spectrum matches for TIC's when the probability of a match is less than one percent. All possible matches have been reported.

Pesticides

1. All samples were extracted and analyzed within the holding time period.

2. All surrogate recoveries were inside Q.C. Limits.

3. All spike recoveries and RPDs were inside Q.C. Limits

4. No Pesticides/PCBs were detected in any of the samples.

5. There are several problems with the diskette. All the quantitations are rounded incorrectly. The Lab Blank ID is missing. These problems have been corrected on the hardcopy.

"Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature."

Karen Kuoppala (7-01-88)

Karen Kuoppala, Organic Section Supervisor

Optional Flags used for Reporting GC/MS Data

A - Aldol condensation product. This flag is used for tentatively identified compounds in soil samples when the compound is suspected aldol condensation byproduct of the extraction technique.

M - Analyte has not met the identification criteria, but, in the opinion of the Mass Spectral Interpretation Specialist, the identification is correct.

This flag is used when the mass spectrum of the target analyte does not meet all of the criteria in the contract Task III, but the Mass Spectral Interpretation Specialist feels that the compound is actually present.

Sp- Spike compound.

This flag is used for Matrix Spike results to indicate that the compound was spiked into the sample before analysis.

DL- Diluted

This flag is used for samples analyzed at a secondary dilution.

E- Exceeds calibration range

This flag is used to flag compounds that are present outside the linear calibration range.

2A
WATER VOLATILE SURROGATE RECOVERY

005

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

	EPA SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#	OTHER	TOT OUT
1	VBLK1	99	98	109		0
2	EY623	102	103	98		0
3	EY624	101	103	110		0
4	EY624MS	99	100	100		0
5	EY625	102	101	105		0
6	EY626	101	100	110		0
7	EY627	102	99	107		0
8	EY628	103	101	113		0
9	EY629	105	99	98		0
10	EY633	102	100	112		0
11	EY635	99	97	108		0
12	EY624MSD	103	101	111		0
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	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

ok 6/29/88 K/L

FORM II VOA-1 1/87 Rev.

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

	EPA SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	S6 (TBP)#	OTHER	TOT OUT
1	SBLK1	83	79	87	44	58	73		0
2	EY623	78	73	83	25	35	49		0
3	EY624	88	70	80	38	58	66		0
4	EY624MS	72	65	73	39	55	59		0
5	EY624MSD	78	70	75	40	58	60		0
6	EY625	79	70	77	24	38	20		0
7	EY626	76	69	81	33	50	58		0
8	EY627	78	80	82	34	56	58		0
9	EY628	70	66	74	32	49	65		0
10	EY629	75	68	80	39	59	64		0
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		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(35-114)
S2 (FBP)	= 2-Fluorobiphenyl	(43-116)
S3 (TPH)	= Terphenyl-d14	(33-141)
S4 (PHL)	= Phenol-d6	(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

OK 6/28/88 KC

2E
WATER PESTICIDE SURROGATE RECOVERY

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

	EPA SAMPLE NO.	S1 (DBC)#	OTHER
1	PBLK1	75	
2	EY623	65	
3	EY624	51	
4	EY624MS	71	
5	EY624MSD	55	
6	EY625	83	
7	EY626	81	
8	EY627	41	
9	EY628	50	
10	EY629	69	
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ADVISORY QC LIMITS (24-154)

S1 (DBC) = Dibutyl Chlorendate

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

OK 6/29/88 KK

FORM II PEST-1 1/87 Rev.

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

006

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Matrix Spike - EPA Sample No.: EY624

COMPOUND	SPIKE ADDED (UG/L)	SAMPLE CONCENTRATION (UG/L)	MS CONCENTRATION (UG/L)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50.	0.	38.	77.	61-145
Trichloroethene	50.	0.	38.	75.	71-120
Benzene	50.	0.	39.	79.	76-127
Toluene	50.	0.	41.	82.	76-125
Chlorobenzene	50.	0.	46.	93.	75-130

COMPOUND	SPIKE ADDED (UG/L)	MSD CONCENTRATION (UG/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	50.	38.	76.	0.	14	61-145
Trichloroethene	50.	36.	72.	4.	14	71-120
Benzene	50.	40.	80.	2.	11	76-127
Toluene	50.	40.	80.	2.	13	76-125
Chlorobenzene	50.	45.	91.	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:

OK 6/29/88 KC

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Matrix Spike - EPA Sample No.: EY624

COMPOUND	SPIKE ADDED (UG/L)	SAMPLE CONCENTRATION (UG/L)	MS CONCENTRATION (UG/L)	MS % REC #	QC LIMITS REC.
Phenol	200.	0.	46.	23.	12- 89
2-Chlorophenol	200.	0.	114.	57.	27-123
1,4-Dichlorobenzene	100.	0.	40.	40.	36- 97
N-Nitroso-di-n-prop.(1)	100.	0.	95.	95.	41-116
1,2,4-Trichlorobenzene	100.	0.	52.	52.	39- 98
4-Chloro-3-methylphenol	200.	0.	84.	42.	23- 97
Acenaphthene	100.	0.	69.	69.	45-118
4-Nitrophenol	200.	0.	64.	32.	10- 80
2,4-Dinitrotoluene	100.	0.	83.	83.	24- 96
Pentachlorophenol	200.	0.	97.	48.	9-103
Pyrene	100.	0.	74.	74.	26-127

COMPOUND	SPIKE ADDED (UG/L)	MSD CONCENTRATION (UG/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	200.	47.	23.	2.	42	12- 89
2-Chlorophenol	200.	117.	59.	3.	40	27-123
1,4-Dichlorobenzene	100.	46.	46.	12.	28	36- 97
N-Nitroso-di-n-prop.(1)	100.	111.	111.	15.	38	41-116
1,2,4-Trichlorobenzene	100.	56.	56.	7.	28	39- 98
4-Chloro-3-methylphenol	200.	85.	43.	2.	42	23- 97
Acenaphthene	100.	75.	75.	8.	31	45-118
4-Nitrophenol	200.	53.	26.	19.	50	10- 80
2,4-Dinitrotoluene	100.	92.	92.	10.	38	24- 96
Pentachlorophenol	200.	94.	47.	2.	50	9-103
Pyrene	100.	81.	81.	9.	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:

DL 6/28/86 KC

3E

WATER PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Matrix Spike - EPA Sample No.: EY624

COMPOUND	SPIKE ADDED (UG/L)	SAMPLE CONCENTRATION (UG/L)	MS CONCENTRATION (UG/L)	MS % REC #	QC LIMITS REC.
gamma-BHC (Lindane)	.20	.00	.18	92.	56-123
Heptachlor	.20	.00	.17	86.	35-130
Aldrin	.20	.00	.17	86.	40-120
Dieldrin	.50	.00	.45	90.	52-126
Endrin	.50	.00	.43	87.	56-121
4,4'-DDT	.50	.00	.52	104.	38-127

COMPOUND	SPIKE ADDED (UG/L)	MSD CONCENTRATION (UG/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
gamma-BHC (Lindane)	.20	.19	94.	2.	15	56-123
Heptachlor	.20	.17	87.	2.	20	35-130
Aldrin	.20	.18	88.	2.	22	40-120
Dieldrin	.50	.46	92.	3.	18	52-126
Endrin	.50	.44	88.	1.	21	56-121
4,4'-DDT	.50	.51	101.	3.	27	38-127

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

* Values outside of QC limits

RPD: 0 out of 6 outside limits
Spike Recovery: 0 out of 12 outside limits

COMMENTS:

OK 6/29/88 KK

4A
VOLATILE METHOD BLANK SUMMARY

007

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Lab File ID: > B0536 Lab Sample ID: VBLK1

Date Analyzed: 6/17/88 Time Analyzed: 10:39

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

Instrument ID: 2B

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
1	EY623		>B0537	11:28
2	EY624		>B0538	12:11
3	EY624MS		>B0539	12:54
4	EY625		>B0541	14:20
5	EY626		>B0542	15:03
6	EY627		>B0543	16:41
7	EY628		>B0544	17:24
8	EY629		>B0545	18:13
9	EY633		>B0546	18:56
10	EY635		>B0547	19:39
11	EY624MSD		>B0548	20:22
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COMMENTS:

OK 6/29/88 EK

FORM IV VOA 1/87 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK1

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 5. (g/mL) ML Lab File ID: B0536 113

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec.100. Date Analyzed: 6/17/88

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	15.	
67-64-1	Acetone	13.	
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	5.	J
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	Xylene (total)	5.	U

OK 6/29/88 KLC

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK1

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Matrix: (soil/water) WATER Lab Sample ID: VBLK1 114

Sample wt/vol: 5. (g/mL) ML Lab File ID: >B0536

Level: (low/med) LOW Date Received: 0/ 0/00

% Moisture: not dec. 100. Date Analyzed: 6/17/88

Column: 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
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DIC 6/28/88 KIC

4B
SEMIVOLATILE METHOD BLANK SUMMARY

130

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Lab File ID: >C0557 Lab Sample ID: SBLK1

Date Extracted: 6/14/88 Extraction:(SepF/Cont/Sonc) SEPF

Date Analyzed: 6/20/88 Time Analyzed: 13:00

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

Instrument ID: 1C

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	EY623		>C0558	6/20/88
2	EY624		>C0559	6/20/88
3	EY624MS		>C0560	6/20/88
4	EY624MSD		>C0561	6/20/88
5	EY625		>C0562	6/20/88
6	EY626		>C0563	6/20/88
7	EY627		>C0564	6/20/88
8	EY628		>C0565	6/20/88
9	EY629		>C0566	6/20/88
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COMMENTS:

OK 6/28/88 KL

FORM IV SV 1/87 Rev.

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK1

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 1000. (g/mL) ML Lab File ID: >C0557 252

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec.100. dec. 0. Date Extracted: 6/14/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

PK 6/28/88 KK

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK1

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Matrix: (soil/water) WATER Lab Sample ID: 253

Sample wt/vol: 1000. (g/mL) ML Lab File ID: >C0557

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec.100. dec. 0. Date Extracted: 6/14/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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	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-octylphthalate	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

(1) - Cannot be separated from diphenylamine

6/28/88 KK

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLK1

254

Lab Name: Cenref Labs Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 1000. (g/mL) ML Lab File ID: >C0557

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 100. dec. 0. Date Extracted: 6/14/88

Extraction: (Sepf/Cont/Sonc) Sepf Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 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
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OK 6/24/88 KC

4C

PESTICIDE METHOD BLANK SUMMARY

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Lab Sample ID: PBLK1 Lab File ID: EY016

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

Date Extracted: 6/13/88 Extraction: (SepF/Cont/Sonc) SEP

Date Analyzed (1): 6/28/88 Date Analyzed (2): 0/ 0/ 0

Time Analyzed (1): 13:59 Time Analyzed (2): 0:00

Instrument ID (1): D Instrument ID (2):

GC Column ID (1): SP2100 GC Column ID (2):

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

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
1	EY623		6/28/88	
2	EY624		6/28/88	
3	EY624MS		6/28/88	
4	EY624MSD		6/28/88	
5	EY625		6/28/88	
6	EY626		6/28/88	
7	EY627		6/28/88	
8	EY628		6/28/88	
9	EY629		6/28/88	
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Comments:

OK 6/30/88 KC

FORM IV PEST 1/87 Rev.

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLK1

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Matrix: (soil/water) WATER Lab Sample ID: 303

Sample wt/vol: 1000. (g/mL)ML Lab File ID: EY016

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec.100. dec. 0. Date Extracted: 6/13/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/28/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	.05	U
319-85-7	beta-BHC	.05	U
319-86-8	delta-BHC	.05	U
58-89-9	gamma-BHC (Lindane)	.05	U
76-44-8	Heptachlor	.05	U
309-00-2	Aldrin	.05	U
1024-57-3	Heptachlor Epoxide	.05	U
959-98-8	Endosulfan I	.05	U
60-57-1	Dieldrin	.1	U
72-55-9	4,4'-DDE	.1	U
72-20-8	Endrin	.1	U
33213-65-9	Endosulfan II	.1	U
72-54-8	4,4'-DDD	.1	U
1031-07-8	Endosulfan Sulfate	.1	U
50-29-3	4,4'-DDT	.1	U
72-43-5	Methoxychlor	.5	U
53494-70-5	Endrin Ketone	.1	U
5103-71-9	alpha-Chlordane	.5	U
5103-74-2	gamma-Chlordane	.5	U
8001-35-2	Toxaphene	1.	U
12674-11-2	Aroclor-1016	.5	U
11104-28-2	Aroclor-1221	.5	U
11141-16-5	Aroclor-1232	.5	U
53469-21-9	Aroclor-1242	.5	U
12672-29-6	Aroclor-1248	.5	U
11097-69-1	Aroclor-1254	1.	U
11096-82-5	Aroclor-1260	1.	U

DK 6/29/88 KK

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY623

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 5. (g/mL) ML Lab File ID: B0537 010

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. Date Analyzed: 6/17/88

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	12.	BU
67-64-1	Acetone	12.	BU
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	Xylene (total)	5.	U

OK 6/29/88 W.J.V. 7-18-88

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EY623

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Matrix: (soil/water) WATER Lab Sample ID: 011

Sample wt/vol: 5. (g/mL) ML Lab File ID: >B0537

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec. 100. Date Analyzed: 6/17/88

Column: 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
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OK 6/28/88 EK

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY624

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

019

Sample wt/vol: 5. (g/mL) ML Lab File ID: B0538

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. Date Analyzed: 6/17/88

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	12.	~~B~~ U
67-64-1	Acetone	22.	~~B~~ 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	Xylene (total)	5.	U

OK 6/29/88 KK

U.S.V. 7-18-88

FORM I VOA 1/87 Rev.

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EY624

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Matrix: (soil/water) WATER Lab Sample ID: _____ 020

Sample wt/vol: 5. (g/mL) ML Lab File ID: >B0538

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec. 100. Date Analyzed: 6/17/88

Column: 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
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OK 6/28/88 KK

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY625

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Matrix: (soil/water) WATER Lab Sample ID: 027

Sample wt/vol: 5. (g/mL) ML Lab File ID: >B0541

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. Date Analyzed: 6/17/88

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	7.	~~B~~ u
67-64-1	Acetone	13.	~~B~~ 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	4.	~~B~~ J 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	Xylene (total)	5.	U

OK 6/29/88 KK

u: S.V. 7-18-88

FORM I VOA 1/87 Rev.

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EY625

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Matrix: (soil/water) WATER Lab Sample ID: 028

Sample wt/vol: 5. (g/mL) ML Lab File ID: >B0541

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec. 100. Date Analyzed: 6/17/88

Column: 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
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OK 6/28/88 KK

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY626

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 5. (g/mL) ML Lab File ID: B0542 036

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. Date Analyzed: 6/17/88

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	17.	~~B~~ U
67-64-1	Acetone	20.	~~B~~ 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	Xylene (total)	5.	U

OK 6/29/88 KC

u: J.V. 7-18-88

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EY626

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Matrix: (soil/water) WATER Lab Sample ID: 037

Sample wt/vol: 5. (g/mL) ML Lab File ID: >B0542

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec. 100. Date Analyzed: 6/17/88

Column: 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
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OK 6/28/88 EK

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY627

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

045

Sample wt/vol: 5. (g/mL) ML Lab File ID: B0543

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. Date Analyzed: 6/17/88

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	12.	~~B~~ u
67-64-1	Acetone	10.	~~B~~ 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	4.	~~B~~ 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	Xylene (total)	5.	U

u: J.M 7-18-88

OK 6/29/88 KL

FORM I VOA 1/87 Rev.

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EY627

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Matrix: (soil/water) WATER Lab Sample ID: 046

Sample wt/vol: 5. (g/mL) ML Lab File ID: >B0543

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec. 100. Date Analyzed: 6/17/88

Column: 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
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OK 6/28/88 EIC

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY628

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY628 054

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

Sample wt/vol: 5. (g/mL) ML Lab File ID: B0544

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. Date Analyzed: 6/17/88

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	12.	~~B~~ U
67-64-1	Acetone	27.	~~B~~ 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	3.	~~B~~ J 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	Xylene (total)	5.	U

OK 6/29/88 K/L

LC: JLV 7-18-88

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EY628

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Matrix: (soil/water) WATER Lab Sample ID: _____ 055

Sample wt/vol: 5. (g/mL) ML Lab File ID: >B0544

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec. 100. Date Analyzed: 6/17/88

Column: 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
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OK 6/28/88 K/C

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY629

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 5. (g/mL) ML Lab File ID: B0545 063

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. Date Analyzed: 6/17/88

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	6.	~~B~~ u
67-64-1	Acetone	12.	~~B~~ 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	3.	J
108-90-7	Chlorobenzene	5.	U
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
1330-20-7	Xylene (total)	5.	U

OK 6/29/88 LL u: J.V. 7-18-88

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EY629

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Matrix: (soil/water) WATER Lab Sample ID: _____ 064

Sample wt/vol: 5. (g/mL) ML Lab File ID: >B0545

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec. 100. Date Analyzed: 6/17/88

Column: 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
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ok 6/28/88

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY633

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 5. (g/mL) ML Lab File ID: B0546 073

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. Date Analyzed: 6/17/88

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	11.	~~B~~ U
67-64-1	Acetone	10.	~~B~~ 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	5.	~~B~~ 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	3.	J
108-90-7	Chlorobenzene	5.	U
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
1330-20-7	Xylene (total)	5.	U

OK 6/29/88 KCL

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
EY633

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Matrix: (soil/water) WATER Lab Sample ID: 074

Sample wt/vol: 5. (g/mL) ML Lab File ID: >B0546

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec. 100. Date Analyzed: 6/17/88

Column: 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. 1066406	TRIMETHYL-SILANOL	5.34	10	J
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OK 6/28/88

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY635

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 5. (g/mL) ML Lab File ID: B0547 085

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. Date Analyzed: 6/17/88

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	12.	~~B~~ u
67-64-1	Acetone	18.	~~B~~ 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	7.	~~B~~ 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	Xylene (total)	5.	U

OK 6/29/88 KIL

W. JV, 7-18-88

FORM I VOA 1/87 Rev.

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EY635

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Matrix: (soil/water) WATER Lab Sample ID: 086

Sample wt/vol: 5. (g/mL) ML Lab File ID: >B0547

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec. 100. Date Analyzed: 6/17/88

Column: 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
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DK 6/28/88

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY623

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 1000. (g/mL) ML Lab File ID: C0558 133

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. dec. 0. Date Extracted: 6/14/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

OK 6/28/88 KC

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY623

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Matrix: (soil/water) WATER Lab Sample ID: 134

Sample wt/vol: 1000. (g/mL) ML Lab File ID: C0558

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. dec. 0. Date Extracted: 6/14/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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	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.	J
117-84-0	Di-n-octylphthalate	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

(1) - Cannot be separated from diphenylamine

OK 6/28/88 KC

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EY623

Lab Name: Cenref Labs Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

135

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

Sample wt/vol: 1000. (g/mL) ML Lab File ID: >C0558

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec. 100. dec. 0. Date Extracted: 6/14/88

Extraction: (Sepf/Cont/Sonc) Sepf Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 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
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OK 6/24/88 KC

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY624

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 1000. (g/mL) ML Lab File ID: C0559 141

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. dec. 0. Date Extracted: 6/14/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

OK 6/28/88 EK

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY624

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 1000. (g/mL) ML Lab File ID: C0559 142

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. dec. 0. Date Extracted: 6/14/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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	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-octylphthalate	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

(1) - Cannot be separated from diphenylamine

6/28/88

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EY624

Lab Name: Cenref Labs Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

143

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

Sample wt/vol: 1000. (g/mL) ML Lab File ID: >C0559

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec. 100. dec. 0. Date Extracted: 6/14/88

Extraction: (Sepf/Cont/Sonc) Sepf Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 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.	UNKNOWN	10.63	10	J
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OK 6/24/88 KK

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY625

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 1000. (g/mL) ML Lab File ID: C0562

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. dec. 0. Date Extracted: 6/14/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

DKC 6/28/88 KC

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY625

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 1000. (g/mL) ML Lab File ID: C0562 151

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. dec. 0. Date Extracted: 6/14/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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	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-octylphthalate	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

(1) - Cannot be separated from diphenylamine

OK 6/28/88 KC

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
EY625

Lab Name: Cenref Labs Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 1000. (g/mL) ML Lab File ID: >C0562

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec. 100. dec. 0. Date Extracted: 6/14/88

Extraction: (Sepf/Cont/Sonc) Sepf Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	10.63	13	J
2.	UNKNOWN ALKENE	25.16	26	J
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OK 6/24/88 KL

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY626

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 1000. (g/mL) ML Lab File ID: C0563 161

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. dec. 0. Date Extracted: 6/14/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

OK 6/28/88 KL

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY626

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 1000. (g/mL) ML Lab File ID: C0563

162

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. dec. 0. Date Extracted: 6/14/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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	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-octylphthalate	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

(1) - Cannot be separated from diphenylamine

DLC 6/28/88 RLC

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EY626

Lab Name: Cenref Labs Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

163

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

Sample wt/vol: 1000. (g/mL) ML Lab File ID: >C0563

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec. 100. dec. 0. Date Extracted: 6/14/88

Extraction: (Sepf/Cont/Sonc) Sepf Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 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
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ok 6/24/88 KC

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY627

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Matrix: (soil/water) WATER Lab Sample ID: 168

Sample wt/vol: 1000. (g/mL) ML Lab File ID: C0564

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. dec. 0. Date Extracted: 6/14/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

OK 6/28/88 KK

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY627

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

169

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

Sample wt/vol: 1000. (g/mL) ML Lab File ID: C0564

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. dec. 0. Date Extracted: 6/14/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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	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-octylphthalate	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

(1) - Cannot be separated from diphenylamine

DIC 6/28/88

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EY627

170

Lab Name: Cenref Labs Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 1000. (g/mL) ML Lab File ID: >C0564

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec. 100. dec. 0. Date Extracted: 6/14/88

Extraction: (Sepf/Cont/Sonc) Sepf Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 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
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DL 6/24/88 KK

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY628

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Matrix: (soil/water) WATER Lab Sample ID: _____ 175

Sample wt/vol: 1000. (g/mL) ML Lab File ID: C0565

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. dec. 0. Date Extracted: 6/14/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

OK 6/28/88 KC

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY628

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 1000. (g/mL) ML Lab File ID: C0565

176

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. dec. 0. Date Extracted: 6/14/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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	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-octylphthalate	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

(1) - Cannot be separated from diphenylamine

DJE 6/28/88 KLC

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EY628

Lab Name: Cenref Labs Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

177

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

Sample wt/vol: 1000. (g/mL) ML Lab File ID: >C0565

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec. 100. dec. 0. Date Extracted: 6/14/88

Extraction: (Sepf/Cont/Sonc) Sepf Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

Number TICs found: 8

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN ALKANE	18.78	16	J
2.		UNKNOWN ALKANE	20.28	21	J
3.		UNKNOWN ALKANE	20.37	9	J
4.		UNKNOWN ALKANE	21.71	21	J
5.		UNKNOWN ALKANE	21.85	8	J
6.		UNKNOWN ALKANE	23.07	20	J
7.		UNKNOWN ALKANE	24.38	13	J
8.		UNKNOWN	25.15	19	J
9.					
10.					
11.					
12.					
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DK 6/24/88 KC

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY629

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 1000. (g/mL) ML Lab File ID: C0566 198

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. dec. 0. Date Extracted: 6/14/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

OK 6/28/88

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY629

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 1000. (g/mL) ML Lab File ID: C0566 199

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. dec. 0. Date Extracted: 6/14/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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	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	8.	J
117-84-0	Di-n-octylphthalate	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

(1) - Cannot be separated from diphenylamine

DKL 6/28/88 #K

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EY629

Lab Name: Cenref Labs Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

200

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

Sample wt/vol: 1000. (g/mL) ML Lab File ID: >C0566

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec. 100. dec. 0. Date Extracted: 6/14/88

Extraction: (Sepf/Cont/Sonc) Sepf Date Analyzed: 6/20/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

Number TICs found: 9

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN ALKANE	18.77	24	J
2. 629787	HEPTADECANE	20.28	30	J
3.	UNKNOWN ALKANE	20.38	12	J
4.	UNKNOWN ALKANE	21.70	31	J
5.	UNKNOWN ALKANE	21.85	12	J
6.	UNKNOWN ALKANE	23.07	29	J
7.	UNKNOWN ALKANE	24.37	18	J
8.	UNKNOWN	25.17	15	J
9.	UNKNOWN ALKANE	25.62	8	J
10.				
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OK 6/24/88 KK

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY623

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 1000. (g/mL)ML Lab File ID: EY017 270

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. dec. 0. Date Extracted: 6/13/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/28/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	.05	U
319-85-7	beta-BHC	.05	U
319-86-8	delta-BHC	.05	U
58-89-9	gamma-BHC (Lindane)	.05	U
76-44-8	Heptachlor	.05	U
309-00-2	Aldrin	.05	U
1024-57-3	Heptachlor Epoxide	.05	U
959-98-8	Endosulfan I	.05	U
60-57-1	Dieldrin	.1	U
72-55-9	4,4'-DDE	.1	U
72-20-8	Endrin	.1	U
33213-65-9	Endosulfan II	.1	U
72-54-8	4,4'-DDD	.1	U
1031-07-8	Endosulfan Sulfate	.1	U
50-29-3	4,4'-DDT	.1	U
72-43-5	Methoxychlor	.5	U
53494-70-5	Endrin Ketone	.1	U
5103-71-9	alpha-Chlordane	.5	U
5103-74-2	gamma-Chlordane	.5	U
8001-35-2	Toxaphene	1.	U
12674-11-2	Aroclor-1016	.5	U
11104-28-2	Aroclor-1221	.5	U
11141-16-5	Aroclor-1232	.5	U
53469-21-9	Aroclor-1242	.5	U
12672-29-6	Aroclor-1248	.5	U
11097-69-1	Aroclor-1254	1.	U
11096-82-5	Aroclor-1260	1.	U

OK 6/29/88 KK

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY624

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Matrix: (soil/water) WATER Lab Sample ID: 272

Sample wt/vol: 1000. (g/mL)ML Lab File ID: EY018

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. dec. 0. Date Extracted: 6/13/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/28/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	.05	U
319-85-7	beta-BHC	.05	U
319-86-8	delta-BHC	.05	U
58-89-9	gamma-BHC (Lindane)	.05	U
76-44-8	Heptachlor	.05	U
309-00-2	Aldrin	.05	U
1024-57-3	Heptachlor Epoxide	.05	U
959-98-8	Endosulfan I	.05	U
60-57-1	Dieldrin	.1	U
72-55-9	4,4'-DDE	.1	U
72-20-8	Endrin	.1	U
33213-65-9	Endosulfan II	.1	U
72-54-8	4,4'-DDD	.1	U
1031-07-8	Endosulfan Sulfate	.1	U
50-29-3	4,4'-DDT	.1	U
72-43-5	Methoxychlor	.5	U
53494-70-5	Endrin Ketone	.1	U
5103-71-9	alpha-Chlordane	.5	U
5103-74-2	gamma-Chlordane	.5	U
8001-35-2	Toxaphene	1.	U
12674-11-2	Aroclor-1016	.5	U
11104-28-2	Aroclor-1221	.5	U
11141-16-5	Aroclor-1232	.5	U
53469-21-9	Aroclor-1242	.5	U
12672-29-6	Aroclor-1248	.5	U
11097-69-1	Aroclor-1254	1.	U
11096-82-5	Aroclor-1260	1.	U

OK 6/29/88 KK

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY625

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 1000. (g/mL)ML Lab File ID: EY021 274

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. dec. 0. Date Extracted: 6/13/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/28/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	.05	U
319-85-7	beta-BHC	.05	U
319-86-8	delta-BHC	.05	U
58-89-9	gamma-BHC (Lindane)	.05	U
76-44-8	Heptachlor	.05	U
309-00-2	Aldrin	.05	U
1024-57-3	Heptachlor Epoxide	.05	U
959-98-8	Endosulfan I	.05	U
60-57-1	Dieldrin	.1	U
72-55-9	4,4'-DDE	.1	U
72-20-8	Endrin	.1	U
33213-65-9	Endosulfan II	.1	U
72-54-8	4,4'-DDD	.1	U
1031-07-8	Endosulfan Sulfate	.1	U
50-29-3	4,4'-DDT	.1	U
72-43-5	Methoxychlor	.5	U
53494-70-5	Endrin Ketone	.1	U
5103-71-9	alpha-Chlordane	.5	U
5103-74-2	gamma-Chlordane	.5	U
8001-35-2	Toxaphene	1.	U
12674-11-2	Aroclor-1016	.5	U
11104-28-2	Aroclor-1221	.5	U
11141-16-5	Aroclor-1232	.5	U
53469-21-9	Aroclor-1242	.5	U
12672-29-6	Aroclor-1248	.5	U
11097-69-1	Aroclor-1254	1.	U
11096-82-5	Aroclor-1260	1.	U

OK 6/29/88 KK

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY626

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Matrix: (soil/water) WATER Lab Sample ID: 276

Sample wt/vol: 1000. (g/mL)ML Lab File ID: EY022

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. dec. 0. Date Extracted: 6/13/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/28/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	.05	U
319-85-7	beta-BHC	.05	U
319-86-8	delta-BHC	.05	U
58-89-9	gamma-BHC (Lindane)	.05	U
76-44-8	Heptachlor	.05	U
309-00-2	Aldrin	.05	U
1024-57-3	Heptachlor Epoxide	.05	U
959-98-8	Endosulfan I	.05	U
60-57-1	Dieldrin	.1	U
72-55-9	4,4'-DDE	.1	U
72-20-8	Endrin	.1	U
33213-65-9	Endosulfan II	.1	U
72-54-8	4,4'-DDD	.1	U
1031-07-8	Endosulfan Sulfate	.1	U
50-29-3	4,4'-DDT	.1	U
72-43-5	Methoxychlor	.5	U
53494-70-5	Endrin Ketone	.1	U
5103-71-9	alpha-Chlordane	.5	U
5103-74-2	gamma-Chlordane	.5	U
8001-35-2	Toxaphene	1.	U
12674-11-2	Aroclor-1016	.5	U
11104-28-2	Aroclor-1221	.5	U
11141-16-5	Aroclor-1232	.5	U
53469-21-9	Aroclor-1242	.5	U
12672-29-6	Aroclor-1248	.5	U
11097-69-1	Aroclor-1254	1.	U
11096-82-5	Aroclor-1260	1.	U

OK 6/29/88 KK

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY627

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

278

Sample wt/vol: 1000. (g/mL)ML Lab File ID: EY023

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. dec. 0. Date Extracted: 6/13/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/28/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	.05	U
319-85-7	beta-BHC	.05	U
319-86-8	delta-BHC	.05	U
58-89-9	gamma-BHC (Lindane)	.05	U
76-44-8	Heptachlor	.05	U
309-00-2	Aldrin	.05	U
1024-57-3	Heptachlor Epoxide	.05	U
959-98-8	Endosulfan I	.05	U
60-57-1	Dieldrin	.1	U
72-55-9	4,4'-DDE	.1	U
72-20-8	Endrin	.1	U
33213-65-9	Endosulfan II	.1	U
72-54-8	4,4'-DDD	.1	U
1031-07-8	Endosulfan Sulfate	.1	U
50-29-3	4,4'-DDT	.1	U
72-43-5	Methoxychlor	.5	U
53494-70-5	Endrin Ketone	.1	U
5103-71-9	alpha-Chlordane	.5	U
5103-74-2	gamma-Chlordane	.5	U
8001-35-2	Toxaphene	1.	U
12674-11-2	Aroclor-1016	.5	U
11104-28-2	Aroclor-1221	.5	U
11141-16-5	Aroclor-1232	.5	U
53469-21-9	Aroclor-1242	.5	U
12672-29-6	Aroclor-1248	.5	U
11097-69-1	Aroclor-1254	1.	U
11096-82-5	Aroclor-1260	1.	U

DC 6/29/88 FK

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY628

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

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

Sample wt/vol: 1000. (g/mL)ML Lab File ID: EY024 280

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. dec. 0. Date Extracted: 6/13/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/28/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	.05	U
319-85-7	beta-BHC	.05	U
319-86-8	delta-BHC	.05	U
58-89-9	gamma-BHC (Lindane)	.05	U
76-44-8	Heptachlor	.05	U
309-00-2	Aldrin	.05	U
1024-57-3	Heptachlor Epoxide	.05	U
959-98-8	Endosulfan I	.05	U
60-57-1	Dieldrin	.1	U
72-55-9	4,4'-DDE	.1	U
72-20-8	Endrin	.1	U
33213-65-9	Endosulfan II	.1	U
72-54-8	4,4'-DDD	.1	U
1031-07-8	Endosulfan Sulfate	.1	U
50-29-3	4,4'-DDT	.1	U
72-43-5	Methoxychlor	.5	U
53494-70-5	Endrin Ketone	.1	U
5103-71-9	alpha-Chlordane	.5	U
5103-74-2	gamma-Chlordane	.5	U
8001-35-2	Toxaphene	1.	U
12674-11-2	Aroclor-1016	.5	U
11104-28-2	Aroclor-1221	.5	U
11141-16-5	Aroclor-1232	.5	U
53469-21-9	Aroclor-1242	.5	U
12672-29-6	Aroclor-1248	.5	U
11097-69-1	Aroclor-1254	1.	U
11096-82-5	Aroclor-1260	1.	U

OK 6/29/88 K/C

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY629

Lab Name: CENREF Contract: 68-01-7465

Lab Code: CENREF Case No.: 9761 SAS No.: SDG No.: EY623

Matrix: (soil/water) WATER Lab Sample ID: 282

Sample wt/vol: 1000. (g/mL)ML Lab File ID: EY025

Level: (low/med) LOW Date Received: 6/10/88

% Moisture: not dec.100. dec. 0. Date Extracted: 6/13/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/28/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	.05	U
319-85-7	beta-BHC	.05	U
319-86-8	delta-BHC	.05	U
58-89-9	gamma-BHC (Lindane)	.05	U
76-44-8	Heptachlor	.05	U
309-00-2	Aldrin	.05	U
1024-57-3	Heptachlor Epoxide	.05	U
959-98-8	Endosulfan I	.05	U
60-57-1	Dieldrin	.1	U
72-55-9	4,4'-DDE	.1	U
72-20-8	Endrin	.1	U
33213-65-9	Endosulfan II	.1	U
72-54-8	4,4'-DDD	.1	U
1031-07-8	Endosulfan Sulfate	.1	U
50-29-3	4,4'-DDT	.1	U
72-43-5	Methoxychlor	.5	U
53494-70-5	Endrin Ketone	.1	U
5103-71-9	alpha-Chlordane	.5	U
5103-74-2	gamma-Chlordane	.5	U
8001-35-2	Toxaphene	1.	U
12674-11-2	Aroclor-1016	.5	U
11104-28-2	Aroclor-1221	.5	U
11141-16-5	Aroclor-1232	.5	U
53469-21-9	Aroclor-1242	.5	U
12672-29-6	Aroclor-1248	.5	U
11097-69-1	Aroclor-1254	1.	U
11096-82-5	Aroclor-1260	1.	U

DC 6/29/88 KC

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 7-29-88

SUBJECT: Review of Region V CLP Data
Received for Review on 7-20-88

FROM. Curtis Ross, Director (5SCRL) Jay Thakkar
Central Regional Laboratory

TO: Data User: MPCA

We have reviewed the data for the following case(s).

RAS via fax R. Lofgren MPCA

SITE NAME: Belgrade Municipal SMO Case No. 9761 ~~SAS 38460~~

EPA Data Set No. SF5244 No. of Samples: 7 D.U./Activity Numbers 4905 / C7227

CRL No. 88408807-812, D01

SMO Traffic No. MEW644 - 650

CLP Laboratory: CSMRI Hrs. Required for Review: 1½

Following are our findings:

This review covers analysis of seven low H_2O samples for total metals and CN. Data for Se, Ag and Tl are flagged as estimated for low spikes on a sample having no detection of any of these analytes in them. (UJ). This is indicative of low biased spikes, from 5% to 10% biased. The only other noted non-uniformity is in reporting values below CRDL and IDL. Form I reports some to CRDL limit and others to IDL value, while QC forms III, V and VI report blanks to IDL and samples on forms V and VI to both detections as are on Form I. All data otherwise is satisfactory.

7-29-88

DMM

( ) Data are acceptable for use.
(X) Data are acceptable for use with qualifications referenced above. See Data Qualifier sheets and Calibration Outlier forms for flags and additional comments.
( ) Data are preliminary - pending verification by Contractor Laboratory. See Case Summary above.
( ) Data are unacceptable.

cc: Carla Dempsey, CLP Quality Assurance Officer, Analytical Operations Branch
James Petty, Chief Quality Assurance Research, EMSL, Las Vegas

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

ESD/Central Regional Laboratory
DATA TRACKING FORM FOR CONTRACT SAMPLES

CRL Data Set No. SF 5244 CERCLIS No. _____

SMO Case No. 9761SAS3846E Site Name and Location: Belgrade muni - well

Name of Contractor or EPA Laboratory: CSMRI Data User: MPCA

No. of Samples: 7 Date Samples or Data Received: 7-20-88

1. Have chain-of-custody records been received? YES ✓ NO ___
2. Have Traffic Reports or packing lists been received? YES ✓ NO ___
3. If no, are Traffic Report or packing list numbers written on the chain-of-custody record? YES ___ NO ___
4. If no, which Traffic report or packing list numbers are missing?

Are basic data forms in? YES ✓ NO ___

Number of samples claimed: 7 Number of samples received: 7

Checked by: Adriene D Haus Date: 7-20-88

Received by Contract Project Management Section: DMM Date: 7-20-88

Review Started: July 28, 1988 Reviewer Signature: Dorothy M. May

Total time spent on review: 1½ Date review completed: July 29, 1988

Copied (xeroxed) by: John Date: 8/1/88

Mailed to Data User by: D H Haus Date: 8-1-88

DATA USERS:

Please fill in the blanks below and return this form to: Sylvia Griffin, Data Management Coordinator, Region V, SSCRL

Data received by: _____ Date: _____

Q.A. review received by: _____ Date: _____

Inorganic Date Complete [ ], Suitable for Intended Purposes [ ] ✓ [ ] if acceptable.
Organic Data Complete [ ], Suitable for Intended Purposes [ ] List problems below.
Dioxin Data Complete [ ], Suitable for Intended Purposes [ ]
SAS Data Complete [ ], Suitable for Intended Purposes [ ]

See Attached "Missing Data Request Form" [ ]
PROBLEMS: Please indicate reasons (if any) why data are not suitable for your uses. Other problems.

Received by Data Management Coordinator, CRL for File: Date: _____

Signature:

QC EXCEPTION SUMMARY REPORT

CASE # 9761
DATA SET # SE 5244
LAB Q.C. # 10042
DATE: 7-29-88

SITE Belgrade Municipal
LAB GSMRL
REVIEWED BY Dorothy M. May

MATRIX: H_2O
CONC. : low

WATER SAMPLE SPK. MEW 645
WATER SAMPLE DUP. MEW 644
SOIL SAMPLE SPK.
SOIL SAMPLE DUP.

	OVERALL CASE QC									MATRIX SPECIFIC QC						SAMPLE SPECIFIC QC		FIELD QC			REGIONAL QC			OTHER COMMENTS
	Holding Time	Cal Blanks	Mid Calcver	Contin Calcver	Prep Blk AQ	Prep Blk SOL	MS %R	LCS % AQ	LCS % SOL	Sol Dup RPD	Sol Spk %R	AQ Dup RPD	AQ Spk %R	Ser Dilu AQ	Ser Dilu SOL	GFAA Dup	GFAA Spike	Blank	Dup RPD	Spike %R	Blank Blank	Blank Spike %R	Split Sample RPD	
Aluminum																								
Antimony																								
Arsenic																								
Barium																								
Beryllium																								
Cadmium																								
Calcium																								
Chromium																								
Cobalt																								
Copper																								
Iron																								
Lead																								
Magnesium																								
Manganese																								
Mercury																								
Nickel																								
Potassium																								
Selenium													72%											
Silver													68%											
Sodium																								
Thallium													68%											
Tin																								
Vanadium																								
Zinc																								
Cyanide																								

USEPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 ALEXANDRIA, VA 22313
703/557-2490 FTS-557-2490

CASE NO: 4761 | SAS NO: (IF APPLICABLE)

INORGANIC TRAFFIC REPORT
(FOR CLP USE ONLY)

TYPE OF ACTIVITY (CIRCLE ONE) ①
SUPERFUND—PA SI ESI RIFS RD RA ER NPLD O&M OTHER ____
NON-SUPERFUND— ____ PROGRAM

SAMPLE DESCRIPTION
(ENTER IN BOX A)
1. SURFACE WATER 4. SOIL
2. GROUND WATER 5. SEDIMENT
3. LEACHATE 6. OIL (SAS)
7. WASTE (SAS)

REGION NO: V
SAMPLING COMPANY ②: MPCA
SAMPLER: (NAME) REBECCA LEFGREN

SHIP TO: ③
CSMRI Analytical, Inc. (CSMRI)
5930 McIntyre Street
Golden, CO 80403
ATTN: Steve Hiatt

SAMPLING DATE: ④
BEGIN: 6/7/88 END: 6/8/88

DATE SHIPPED: 6/9/88 CARRIER: Fed Ex ⑤
AIRBILL NO: 6820695674

DATE REC'D: 6-10-88
SDG NO: ⑥
REC'D BY: Carole Rowe
LABORATORY CONTRACT NO. / UNIT PRICE: 7306-15 Bid Lot $110.00

TRANSFER TO: ⑦
DATE REC'D:
REC'D BY:
CONTRACT NO./PRICE:

CLP SAMPLE NUMBER (FROM LABELS)	A SAMPLE DESCRIPTION (FROM BOX 1) 1 2 3 4 5 6 7	B CONCENTRATION L = LOW M = MED H = HIGH (SAS)	C RAS ANALYSIS: TOTAL METALS	CYANIDE	DISSOLVED METALS	HIGH ONLY (SAS): SULFIDE	pH	CONDUCTIVITY	CHLORIDE	D SPECIAL HANDLING	E STATION LOCATION	F SAMPLE CONDITION ON RECEIPT	G HIGH CONC. PHASES (CHECK): SOLID	WATER—MIS LIQUID	NON WATER—MIS LIQUID
MEW 644	2	L	X	X							MW1	Sample OK			
MEW 645	2	L	X	X							MW2				
MEW 646	2	L	X	X							MW3				
MEW 647	2	L	X	X							MW4				
MEW 648	2	L	X	X							MW5				
MEW 649	2	L	X	X							MW6				
MEW 650	2	L	X	X							MW7				
1 of 1	cooler shipped														
Shipping complete															

EPA Form 2075-6 (8-87)

WHITE — SMO COPY PINK — CLIENT COPY WHITE — LAB COPY FOR RETURN TO SMO YELLOW — LAB COPY

SAMPLE DATES 7-01
LOG IN DATE. 6/13/88
DUE DATE: 7/11/88

SUPERFUND 5244

CENTRAL REGIONAL LABORATORY SAMPLE DATA REPORT
ORGANICS/INORGANICS
THIS FORM IS TO BE USED FOR SAMPLES SENT TO CONTRACT ONLY

CASE NUMBER/SAS No. 9761/~~[illegible]~~ SITE NAME BELGRADE MUNICIPAL WELL FIELD (SIU8) LABORATORY CSMRI ANALYTICAL INC. DATE SHIPPED 6/9/88

SUPERFUND DU NUMBER Y905 EPA RPM or OSC (S.M.S.)/(CES) _____ CERCLIS NUMBER _____ PAGE 3 OF 4

ACTIVITY NUMBER C72200

CRL LOG NUMBER	ORGANIC TRAFFIC REPORT NUMBER or SAS Packing List No.	INORGANIC TRAFFIC REPORT NUMBER or SAS Packing List No.	WATER OR LIQUIDS: ACID-BASE NEUTRAL CPDS ORGANIC SCAN UG/L TOX17574	VOLATILE ORGANIC ANALYSIS ORGANIC SCAN UG/L TOX17564	WATER POLYCHLORINATED BIPHENYLS UG/L PES 17144	WATER CHLORINATED PESTICIDES UG/L PES17134	TOTAL METALS IN WATER UG/L MET111	WATER CYANIDE UG/L MIN74919	NITRATE/NITRITE MG/L MIN7284	AMMONIA MG/L MIN7294	RESIDUE, FILTERABLE TDS MG/L MIN7362	RESIDUE, NON-FILT TSS MG/L MIN7372			SEDIMENTS or SOILS: ACID-BASE NEUTRAL CPDS ORGANIC SCAN MG/KG TOX215722	VOLATILE ORGANIC ANALYSIS ORGANIC SCAN MG/KG TOX215822	SEDIMENTS POLYCHLORINATED BIPHENYLS MG/KG PES211422	SEDIMENT CHLORINATED PESTICIDES MG/KG 211322	TOTAL METALS MG/KG MET413	CYANIDE MG/KG MIN44930	EP TOXICITY METALS MG/KG	AMMONIA MG/KG MIN42925				
88YL08S07		MEW644	✓	✓	✓		X	X																		
88YL08S08		MEW645	✓	✓	✓		X	X																		
88YL08S09		MEW646	✓	✓	✓		X	X																		
88YL08S10		MEW647	✓	✓	✓		X	X																		
88YL08S11		MEW648	✓	✓	✓		X	X																		
88YL08S12		MEW649	✓	✓	✓		X	X																		
88YL08D01		MEW650	✓	✓	✓		X	X																		
			COCR		DW																					

U. S. EPA Contract Laboratory Program
Sample Management Office
P. O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS 8-557-2490

Page 1 of 1
Date 7/9-88

COVER PAGE
INORGANIC ANALYSES DATA PACKAGE

Lab Name ANALYTICA INCORPORATED
Case No. 9761
SOW No. 785
Q. C. Report No. 10042

Sample Numbers

EPA No.	Lab ID No.	EPA No.	Lab ID No.
MEW 644	—		
645	—		
646	—		
647	—		
648	—		
649	—		
MEW 650	—		

RECEIVED
JUL 20 1988
U.S. EPA CENTRAL REGIONAL LAB

Comments: SEVEN (7) LOW WATER SAMPLES ANALYZED FOR TOTAL METALS AND CYANIDE

ICP interelement and background corrections applied? Yes X No ____.

If yes, corrections applied before X or after ____ generation of raw data.

Footnotes:

NR - Not required by contract at this time.

Form I:

Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract-required detection limit, report the value in brackets (i.e. [10]). Indicate the analytical method used P (for ICP), A (for Flame AA) or F (for Furnace AA).
U - Indicates element was analyzed for but not detected. Report with the instrument detection limit value (e.g., 10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
N - Indicates spike sample recovery is not within control limits.
* - Indicates duplicate analysis is not within control limits
+ - Indicates the correlation coefficient for method of standard addition is less than 0.995
M - Indicates duplicate injection results exceeded control limits.

Form I

U. S. EPA Contract Laboratory Program
Sample Management Office
P. O. Bos 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEW 644

Date 7-19-88

INORGANIC ANALYSIS DATA SHEET

LAB NAME ANALYTICA INCORPORATED

CASE NO. 9761

SOW NO. 785

Lab Receipt Date 6-10-88

LAB SAMPLE ID. NO. ——

QC REPORT NO. 10042

Elements Identified and Measured

Concentration: Low X Medium

Matrix: Water X Soil Sludge Other

(ug/L) or mg/kg dry weight (Circle One)

1. Aluminum	[159]	P	13. Magnesium	22900	P
2. Antimony	60U	F	14. Manganese	891	P
3. Arsenic	10U	F	15. Mercury	0.2U	CV
4. Barium	[162]	P	16. Nickel	12U	P
5. Beryllium	1U	P	17. Potassium	[3110]	P
6. Cadmium	4U	P	18. Selenium	5U N	F
7. Calcium	78700	P	19. Silver	8U N	P
8. Chromium	10U	P	20. Sodium	10000	P
9. Cobalt	10U	P	21. Thallium	10U N	F
10. Copper	14U	P	22. Vanadium	10U	P
11. Iron	[68]	P	23. Zinc	22	P
12. Lead	5U	F	Percent Solids (%)	NR	

Cyanide 10U

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: SAMPLE DESCRIPTION: WATER, CLEAR, COLORLESS

Lab Manager Michael P Chaney

IFB Amend. One

Form I

U. S. EPA Contract Laboratory Program
Sample Management Office
P. O. Bos 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEW 645

Date 7-19-88

INORGANIC ANALYSIS DATA SHEET

LAB NAME ANALYTICA INCORPORATED

CASE NO. 9761

SOW NO. 785

Lab Receipt Date 6-10-88

LAB SAMPLE ID. NO. ——

QC REPORT NO. 10042

Elements Identified and Measured

Concentration: Low X Medium

Matrix: Water X Soil Sludge Other

ug/L or mg/kg dry weight (Circle One)

1. Aluminum	[165]	P		13. Magnesium	22000		P
2. Antimony	60U	F		14. Manganese	693		P
3. Arsenic	10U	F		15. Mercury	0.2U		CV
4. Barium	[131]	P		16. Nickel	12U		P
5. Beryllium	1U	P		17. Potassium	[3400]		P
6. Cadmium	4U	P		18. Selenium	5U	N	F
7. Calcium	80200	P		19. Silver	8U	N	P
8. Chromium	10U	P		20. Sodium	6620		P
9. Cobalt	10U	P		21. Thallium	10U	N	F
10. Copper	14U	P		22. Vanadium	10U		P
11. Iron	[56]	P		23. Zinc	[19]		P
12. Lead	5U	F		Percent Solids (%)	NR		

Cyanide 10U

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: SAMPLE DESCRIPTION: WATER, CLEAR, COLORLESS

Lab Manager Michael P Chauney

IFB Amend. One

Form I

U. S. EPA Contract Laboratory Program
Sample Management Office
P. O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEW 646

Date 7-19-88

INORGANIC ANALYSIS DATA SHEET

LAB NAME ANALYTICA INCORPORATED

CASE NO. 9761

SOW NO. 785

Lab Receipt Date 6-10-88

LAB SAMPLE ID. NO. ——

QC REPORT NO. 10042

Elements Identified and Measured

Concentration: Low X Medium

Matrix: Water X Soil Sludge Other

ug/L or mg/kg dry weight (Circle One)

1. Aluminum	[145]	P		13. Magnesium	26100		P
2. Antimony	60U	F		14. Manganese	1210		P
3. Arsenic	10U	F		15. Mercury	0.2U		CV
4. Barium	[121]	P		16. Nickel	[12]		P
5. Beryllium	1U	P		17. Potassium	[2900]		P
6. Cadmium	4U	P		18. Selenium	5U	N	F
7. Calcium	89200	P		19. Silver	8U	N	P
8. Chromium	10U	P		20. Sodium	7850		P
9. Cobalt	10U	P		21. Thallium	10U	N	F
10. Copper	14U	P		22. Vanadium	10U		P
11. Iron	[41]	P		23. Zinc	[13]		P
12. Lead	5U	F		Percent Solids (%)	NR		

Cyanide 10U

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: SAMPLE DESCRIPTION: WATER, CLEAR, COLORLESS

Lab Manager Michael P Chang

IFB Amend. One

Form I

U. S. EPA Contract Laboratory Program
Sample Management Office
P. O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEW 647

Date 7-19-88

INORGANIC ANALYSIS DATA SHEET

LAB NAME ANALYTICA INCORPORATED

CASE NO. 9761

SOW NO. 785

Lab Receipt Date 6-10-88

LAB SAMPLE ID. NO. ——

QC REPORT NO. 10042

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

ug/L or mg/kg dry weight (Circle One)

1. Aluminum	[136]	P		13. Magnesium	23600		P
2. Antimony	60U	F		14. Manganese	229		P
3. Arsenic	10U	F		15. Mercury	0.2U		CV
4. Barium	[59]	P		16. Nickel	12U		P
5. Beryllium	1U	P		17. Potassium	[2540]		P
6. Cadmium	4U	P		18. Selenium	5U	N	F
7. Calcium	89300	P		19. Silver	8U	N	P
8. Chromium	10U	P		20. Sodium	9670		P
9. Cobalt	10U	P		21. Thallium	10U	N	F
10. Copper	14U	P		22. Vanadium	10U		P
11. Iron	[79]	P		23. Zinc	[13]		P
12. Lead	5U	F		Percent Solids (%)	NR		

Cyanide 10U

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: SAMPLE DESCRIPTION: WATER, CLEAR, COLORLESS

Lab Manager [signature]

IFB Amend. One

Form I

U. S. EPA Contract Laboratory Program
Sample Management Office
P. O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEW 648

Date 7-19-88

INORGANIC ANALYSIS DATA SHEET

LAB NAME ANALYTICA INCORPORATED

CASE NO. 9761

SOW NO. 785

Lab Receipt Date 6-10-88

LAB SAMPLE ID. NO. ——

QC REPORT NO. 10042

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

ug/L or mg/kg dry weight (Circle One)

1. Aluminum	210		P	13. Magnesium	22700		P
2. Antimony	60U		F	14. Manganese	91		P
3. Arsenic	10U		F	15. Mercury	0.2U		CV
4. Barium	[56]		P	16. Nickel	12U		P
5. Beryllium	1U		P	17. Potassium	[3180]		P
6. Cadmium	mx 4U		P	18. Selenium	5U	N	F
7. Calcium	76700		P	19. Silver	8U	N	P
8. Chromium	10U		P	20. Sodium	10800		P
9. Cobalt	10U		P	21. Thallium	10U	N	F
10. Copper	14U		P	22. Vanadium	10U		P
11. Iron	[66]		P	23. Zinc	[11]		P
12. Lead	5U		F	Percent Solids (%)	NR		

Cyanide 10U

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: SAMPLE DESCRIPTION: WATER, CLEAR, COLORLESS

Lab Manager Michael P Chum

IFB Amend. One

Form I

U. S. EPA Contract Laboratory Program
Sample Management Office
P. O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No. MEW 649

Date 7-19-88

INORGANIC ANALYSIS DATA SHEET

LAB NAME ANALYTICA INCORPORATED

CASE NO. 9761

SOW NO. 785

Lab Receipt Date 6-10-88

LAB SAMPLE ID. NO. ——

QC REPORT NO. 10042

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

ug/L or mg/kg dry weight (Circle One)

1. Aluminum	[163]	P	13. Magnesium	24300	P
2. Antimony	60U	F	14. Manganese	130	P
3. Arsenic	10U	F	15. Mercury	0.2U	CV
4. Barium	[101]	P	16. Nickel	12U	P
5. Beryllium	1U	P	17. Potassium	[2760]	P
6. Cadmium	4U	P	18. Selenium	5U N	F
7. Calcium	81500	P	19. Silver	8U N	P
8. Chromium	10U	P	20. Sodium	7190	P
9. Cobalt	10U	P	21. Thallium	10U N	F
10. Copper	14U	P	22. Vanadium	10U	P
11. Iron	[18]	P	23. Zinc	76	P
12. Lead	5U	F	Percent Solids (%)	NR	

Cyanide 10U

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: SAMPLE DESCRIPTION: WATER, CLEAR, COLORLESS

Lab Manager Michael P. Chamy

IFB Amend. One

Form I

U. S. EPA Contract Laboratory Program
Sample Management Office
P. O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEW 650

Date 7-19-88

INORGANIC ANALYSIS DATA SHEET

LAB NAME ANALYTICA INCORPORATED

CASE NO. 9761

SOW NO. 785

Lab Receipt Date 6-10-88

LAB SAMPLE ID. NO. ——

QC REPORT NO. 10042

Elements Identified and Measured

Concentration: Low X Medium

Matrix: Water X Soil Sludge Other

ug/L or mg/kg dry weight (Circle One)

1. Aluminum	214		P	13. Magnesium	24200		P
2. Antimony	60U		F	14. Manganese	176		P
3. Arsenic	10U		F	15. Mercury	0.2U		CV
4. Barium	[111]		P	16. Nickel	12U		P
5. Beryllium	[1]		P	17. Potassium	[2400]		P
6. Cadmium	4U		P	18. Selenium	5U	N	F
7. Calcium	81000		P	19. Silver	8U	N	P
8. Chromium	10U		P	20. Sodium	[7560]		P
9. Cobalt	10U		P	21. Thallium	10U	N	F
10. Copper	14U		P	22. Vanadium	10U		P
11. Iron	[50]		P	23. Zinc	[17]		P
12. Lead	5U		F	Percent Solids (%)	NR		

Cyanide 10U

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: SAMPLE DESCRIPTION: WATER, CLEAR, COLORLESS

Lab Manager Michael P Charney

IFB Amend. One

ANALYTICA INC.

ICP RAW DATA

ICP raw data output is, unless otherwise noted, mg/L in solution. For the serial dilution, the dilution factor has not been applied to the raw data. STD 1 REP 1 is the Calibration Blank, STD 2 REP 1 is is the Instrument Calibration.

GFAA RAW DATA

GFAA raw data output is the concentration of the aliquot in ug/L (ppb). Initial concentrations are reported to IDL; however, final concentrations are reported to CRDL in ug/L for aqueous samples and mg/kg wet weight for solid samples.

MERCURY RAW DATA

The initial output of mercury analysis is total micrograms which is corrected for the analysis aliquot and sample weight to yield concentrations in ug/L for aqueous samples and mg/kg (wet) for solid samples. Solid samples containing high Hg concentrations are usually diluted by adding a 13.6 ml aliquot of the prepared sample (0.2g to 136.5 total ml), to prepared blank, for a 10X serial dilution (5000X total dilution factor) or a 10.0 ml aliquot, to a prepared blank, for a 13.6X serial dilution (6800X total dilution factor).

SF5244

Page _____ of _____

COVER SHEET

LABORATORY RESPONSE TO RESULTS OF CONTRACT COMPLIANCE SCREENING (CCS)

Response To: (Check one) _____ Organcis CCS

X Inorganics CCS

Response materials sent to Organics CCS should be sent to the attention of Dipti Singh, SMO.

Response materials sent to Inorganics CCS should be sent to the attention of Jeff Dodd, SMO.

Laboratory Name CSMRT-ANALYTICA

Response Date 8-1-88

Date Screening Results Received at Laboratory 8-1-88

EPA Contract No. 68-01-7306

Case No. 09761

SDG No. 10042

Sample Nos.* MEW 650

RECEIVED
U.S. EPA CENTRAL REGIONAL LAB

*Only list sample numbers that require reconciliation.

This form is used to identify materials sent in response to results of Contract Compliance Screening (CCS). A separate form must accompany the response for each Case.

Please indicate (on the attached continuation form) which fractions and/or which criteria correspond with your resubmission. Response materials sent to CCS should also be copied to the Region and to EMSL/LV, each with this blue Cover Sheet.

7/26/88

COVER SHEET

LABORATORY RESPONSE TO RESULTS OF CONTRACT COMPLIANCE SCREENING (CCS)

Response To: (Check one) _____ Organcis CCS

_____ Inorganics CCS

Response materials sent to Organics CCS should be sent to the attention of Doris Ling, SMO.

Response materials sent to Inorganics CCS should be sent to the attention of Sa'ad Masri, SMO.

Laboratory Name _____ Response Date_____

Date Screening Results Received at Laboratory_____

EPA Contract No. _____

Case No. _____

SDG No. _____

Sample Nos.* _____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

*Only list sample numbers that require reconciliation.

This form is used to identify materials sent in response to results of Contract Compliance Screening (CCS). A separate form must accompany the response for each Case.

Please indicate (on the attached continuation form) which fractions and/or which criteria correspond with your resubmission. Response materials sent to CCS should also be copied to the Region and to EMSL/LV, each with this blue Cover Sheet.

INORGANICS

LABORATORY RESPONSE TO RESULTS OF CCS

CASE: 09761 QC GROUP: 10042

Criterion	Comments
B1	CORRECTED + RS

In Reference to Case No(s):
9761

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM
Telephone Record Log

Date of Call: 7-21-88

Laboratory Name: CSMRI - ANALYTICA

Lab Contact: MICHAEL CHARNEY

Region: V

Regional Contact: RAY PICCIONE

Call Initiated By: ___ Laboratory X Region

In reference to data for the following sample number(s):

ALL MEW 644 – MEW 650

Summary of Questions/Issues Discussed:

1) DATA ANALYZED AS RAS - SHOULD BE LOW DL - MSA SAS w/ 15 DAY T/A.

Summary of Resolution:

1) CASE BOOKED TO LAB AS RAS. ITR DOES NOT SHOW CASE TO BE SAS.

~~EAT~~ MRC REGION WILL CONTACT SMO AND ADVISE LAB IF REANALYSIS IS NECESSARY.

This case is RAS as per conversation with Rebecca Lofgren, MPCA, July 27, 1988.
Ray Piccione

Michael P Charney — Signature

7/21/88 — Date

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

LGN 10042
CASE 9761
MATRIX LA
DATE 7-19-88

ANALYTICA INC.

100002

QUALITY CONTROL SOURCES

-- Inductively Coupled Plasma --

Calibration	ERA Lot (8805)
ICV	ICV-1 (0487) EPA-LV
ICS	ICS A+B (0387) EPA-LV
LRS	Analytica Lot 1087
LCS	ICV-1 (0487) EPA-LV
CCV	Analytica Lot 0388
Matrix Spike	Analytica Lot 1187
Matrix Spike (Sb)	Analytica Lot 0388

-- Graphite Furnace AA --

Calibration	Analytica Lot 0388
ICV (Sb)	ICV-3 (0787) EPA-LV
(As)	ICV-2 (0887) EPA-LV
(Pb)	ICV-4 (0387) EPA-LV
(Se)	ICV-2 (0887) EPA-LV
(Tl)	ICV-4 (0387) EPA-LV
CCV	Analytica Lot 0388
LCS (Sb)	ICV-3 (0787) EPA-LV
(As)	ICV-2 (0887) EPA-LV
(Pb)	ICV-4 (0387) EPA-LV
(Se)	ICV-2 (0887) EPA-LV
(Tl)	ICV-4 (0387) EPA-LV
Matrix Spike	Analytica Lot 1287
Analytical Spike	Analytica Lot 0388

-- Cold Vapor AA Hg --

Calibration	Analytica Lot 0588
ICV	ICV-5 (0487) EPA-LV
LCS	ICV-5 (0487) EPA-LV
CCV	Analytica Lot 0588
Matrix Spike	Analytica Lot 0588

-- Cyanide --

Calibration	Analytica Lot 0987
ICV	ICV-6 (0987) EPA-LV
CCV	Analytica Lot 1087
LCS	Analytica Lot 1087
Matrix Spike	Analytica Lot 0987

FORM II

Q. C. Report No. 10042
INITIAL AND CONTINUING CALIBRATION VERIFICATION(3)

LAB NAME ANALYTICAL INCORPORATED

CASE NO. 9761

SOW NO. 785

DATE 7-19-88

UNITS ug/L

Compound	Initial Calib.(1)			Continuing Calibration(2)					
Metals:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method(4)
1. Aluminum	1980	1990	101	5000	4640	93	4540	91	P
2. Antimony	1010	1040	103	180	180	100	183	102	F
3. Arsenic	47	48	102	50	51	102	52	104	F
4. Barium	1980	1990	101	2000	1870	94	1900	95	P
5. Beryllium	481	517	107	2000	1910	96	1820	91	P
6. Cadmium	489	501	102	2000	1820	91	1800	90	P
7. Calcium	49800	53800	108	50000	46900	94	44900	90	P
8. Chromium	506	462	91	2000	1810	90	1810	90	P
9. Cobalt	474	502	106	2000	1870	94	1840	92	P
10. Copper	542	537	99	2000	1840	92	1860	93	P
11. Iron	1990	2060	104	5000	4780	96	4780	96	P
12. Lead	97.9	94	96	50	52	104	48	96	F
13. Magnesium	25000	26400	106	50000	46000	92	45300	91	P
14. Manganese	513	522	102	2000	1920	96	1910	96	P
15. Mercury	5.2	5.5	106	1.0	1.0	100	1.0	100	CV
16. Nickel	496	488	98	2000	1820	91	1830	92	P
17. Potassium	50200	49900	99	50000	45900	92	47000	94	P
18. Selenium	104	102	98	50	49	98	45	90	F
19. Silver	509	496	97	2000	1890	94	1810	90	P
20. Sodium	50700	51700	102	50000	48800	98	49300	99	P
21. Thallium	97.3	96	99	50	52	104	52	104	F
22. Vanadium	511	498	97	2000	1940	97	1810	90	P
23. Zinc	3100	2900	94	2000	1840	92	1970	98	P
Other:									
Cyanide	90	85	94	200	190	95	187	94	

(1)Initial Calibration Source EPA-ICV's (2)Continuing Calibration Source CAI STANDARDS
(3)Control Limits: Mercury and Tin 80-120; Other Metals 90-110: Cyanide 85-115
(4)Indicate Analytical Method Used: P - ICP; A- Flame AA; F - Furnace AA; CV - Cold Vapor AA

IFB Amend. One

FORM II

Q. C. Report No. 10042

INITIAL AND CONTINUING CALIBRATION VERIFICATION(3)

LAB NAME ANALYTICAL INCORPORATED

CASE NO. 9761

SOW NO. 785

DATE 7-19-88

UNITS ug/L

Compound	Initial Calib.(1)			Continuing Calibration(2)					
Metals:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method(4)
1. Aluminum	1980			5000	4670	93	4570	91	P
2. Antimony	1010			180					F
3. Arsenic	47			50					F
4. Barium	1980			2000	1930	96	1890	94	P
5. Beryllium	481			2000	1860	93	1800	90	P
6. Cadmium	489			2000	1850	92	1800	90	P
7. Calcium	49800			50000	45400	91	45400	91	P
8. Chromium	506			2000	1850	92	1820	91	P
9. Cobalt	474			2000	1820	91	1850	92	P
10. Copper	542			2000	1880	94	1830	92	P
11. Iron	1990			5000	4850	97	4790	96	P
12. Lead	97.9			50					F
13. Magnesium	25000			50000	45100	90	46300	93	P
14. Manganese	513			2000	~~1910~~ 1950	98	1920	96	P
15. Mercury	5.2			1.0					CV
16. Nickel	496			2000	1870	94	1840	92	P
17. Potassium	50200			50000	45500	91	49700	99	P
18. Selenium	104			50	48	96			F
19. Silver	509			2000	1830	92	1840	92	P
20. Sodium	50700			50000	49200	98	48200	96	P
21. Thallium	97.3			50	50	100			F
22. Vanadium	511			2000	1850	92	1830	92	P
23. Zinc	3100			2000	2000	100	1960	98	P
Other:									
Cyanide	90			200					

(1)Initial Calibration Source EPA-ICV's (2)Continuing Calibration Source CAI STANDARDS

(3)Control Limits: Mercury and Tin 80-120; Other Metals 90-110: Cyanide 85-115

(4)Indicate Analytical Method Used: P - ICP; A- Flame AA; F - Furnace AA; CV - Cold Vapor AA

IFB Amend. One

FORM II

Q. C. Report No. 10042

INITIAL AND CONTINUING CALIBRATION VERIFICATION(3)

LAB NAME ANALYTICAL INCORPORATED

CASE NO. 9761

SOW NO. 785

DATE 7-19-88

UNITS ug/L

Compound	Initial Calib.(1)			Continuing Calibration(2)					
Metals:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method(4)
1. Aluminum	1980			5000	4550	91	4660	93	P
2. Antimony	1010			180					F
3. Arsenic	47			50					F
4. Barium	1980			2000	1890	94	1860	93	P
5. Beryllium	481			2000	1810	90	1810	90	P
6. Cadmium	489			2000	1850	92	1860	93	P
7. Calcium	49800			50000	45600	91	45700	91	P
8. Chromium	506			2000	1830	92	1820	91	P
9. Cobalt	474			2000	1850	92	1860	93	P
10. Copper	542			2000	1840	92	1830	92	P
11. Iron	1990			5000	4730	95	4810	96	P
12. Lead	97.9			50					F
13. Magnesium	25000			50000	46500	93	47500	95	P
14. Manganese	513			2000	1910	96	1900	95	P
15. Mercury	5.2			1.0					CV
16. Nickel	496			2000	1840	92	1850	92	P
17. Potassium	50200			50000	49300	99	48500	97	P
18. Selenium	104			50					F
19. Silver	509			2000	~~19~~ 1790	90	1830	92	P
20. Sodium	50700			50000	47900	96	47000	94	P
21. Thallium	97.3			50					F
22. Vanadium	511			2000	1810	90	1810	90	P
23. Zinc	3100			2000	1980	99	2000	100	P
Other:									
Cyanide	90			200					

(1)Initial Calibration Source EPA-ICV's (2)Continuing Calibration Source CAI STANDARDS

(3)Control Limits: Mercury and Tin 80-120; Other Metals 90-110: Cyanide 85-115

(4)Indicate Analytical Method Used: P - ICP; A- Flame AA; F - Furnace AA; CV - Cold Vapor AA

IFB Amend. One

FORM IV

Q. C. Report No. 10042
ICP INTERFERENCE CHECK SAMPLE

LAB NAME ANALYTICA INCORPORATED

CASE NO. 9761

Check Sample I.D. ICS-0387

DATE 7-19-88

Check Sample Source EPA

Units: ug/L

Compound	Control Limits(1) Mean	Control Limits(1) Std. Dev.	True(2)	Initial Observed	Initial %R	Final Observed	Final %R
Metals:							
1. Aluminum			508000	497000	98	514000	101
2. Antimony							
3. Arsenic							
4. Barium			483	455	94	447	93
5. Beryllium			474	475	100	451	95
6. Cadmium			909	884	97	886	97
7. Calcium			516000	525000	102	483000	94
8. Chromium			513	451	88	498	97
9. Cobalt			478	473	99	435	91
10. Copper			534	541	101	529	99
11. Iron			203000	176000	87	170000	84
12. Lead							
13. Magnesium			509000	450000	88	424000	83
14. Manganese			531	547	103	520	98
15. Mercury							
16. Nickel			916	865	94	871	95
17. Potassium				847U	—	847U	—
18. Selenium							
19. Silver			993	943	95	937	94
20. Sodium				1880U	—	1880U	—
21. Thallium							
22. Vanadium			475	461	97	469	99
23. Zinc			973	961	99	1010	104
Other:							

(1) Mean value based on n = _____.
(2) True value of EPA ICP Interference check sample or contractor standard.

IFB Amend One.

FORM III

Q. C. Report No. 10042
BLANKS

LAB NAME ANALYTICA, INCORPORATED CASE NO. 9761

DATE 7-19-88 Units: ug/L

Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank[1] Matrix: LA (1)	Matrix: (2)
Metals:							
1. Aluminum	131U	131U	131U	[188]	131U	[167]	
2. Antimony	7U	7U	7U			7U	
3. Arsenic	2U	2U	2U			2U	
4. Barium	11U	11U	11U	11U	11U	11U	
5. Beryllium	1U	1U	1U	1U	1U	1U	
6. Cadmium	4U	4U	4U	4U	4U	4U	
7. Calcium	135U	135U	135U	[219]	[159]	[162]	
8. Chromium	10U	10U	10U	10U	10U	10U	
9. Cobalt	10U	10U	10U	10U	10U	10U	
10. Copper	14U	14U	14U	14U	14U	14U	
11. Iron	11U	11U	[25]	[14]	11U	[17]	
12. Lead	1U	1U	1U			[1.5]	
13. Magnesium	141U	141U	141U	141U	141U	141U	
14. Manganese	2U	2U	2U	2U	2U	2U	
15. Mercury	0.2U	0.2U	0.2U			0.2U	
16. Nickel	12U	12U	12U	12U	12U	12U	
17. Potassium	847U	847U	847U	847U	847U	847U	
18. Selenium	1U	1U	1U	1U		1U	
19. Silver	8U	8U	8U	8U	8U	8U	
20. Sodium	1880U	1880U	1880U	1880U	1880U	1880U	
21. Thallium	1U	1U	1U	1U		1U	
22. Vanadium	10U	10U	10U	10U	10U	10U	
23. Zinc	10U	10U	10U	10U	10U	[11]	
Other:							
Cyanide	10U	10U	10U			10U	

[1] Reporting Units: aqueous, ug/L; solid mg/kg

IFB Amend One.

FORM III

Q. C. Report No. 10042
BLANKS

LAB NAME ANALYTICA, INCORPORATED CASE NO. 9761

DATE 7-19-88 Units: ug/L

Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank[1] Matrix: (1)	Matrix: (2)
Metals:							
1. Aluminum		131U	131U				
2. Antimony							
3. Arsenic							
4. Barium		11U	11U				
5. Beryllium		[1]	[1]				
6. Cadmium		4U	4U				
7. Calcium		[212]	[369]				
8. Chromium		10U	10U				
9. Cobalt		10U	10U				
10. Copper		14U	14U				
11. Iron		11U	[84]				
12. Lead							
13. Magnesium		141U	[262]				
14. Manganese		2U	2U				
15. Mercury							
16. Nickel		12U	12U				
17. Potassium		847U	847U				
18. Selenium							
19. Silver		8U	8U				
20. Sodium		1880U	1880U				
21. Thallium							
22. Vanadium		10U	10U				
23. Zinc		10U	10U				
Other:							
Cyanide							

[1] Reporting Units: aqueous, ug/L; solid mg/kg

IFB Amend One.

FORM V

Q. C. Report No. 10042
SPIKE SAMPLE RECOVERY

LAB NAME ANALYTICA INCORPORATED

CASE NO. 9761

EPA Sample No. MEW 645

DATE 7-19-88

Lab Sample ID No. —

Units ug/L

Matrix Low Water

Compound	Control Limit %R	Spiked Sample Result (SSR)	Sample Result (SR)	Spike Added (SA)	%R(1)
Metals:					
1. Aluminum	75-125	2180	[165]	2000	101
2. Antimony	"	90	60U	100	90
3. Arsenic	"	21	10U	20	105
4. Barium	"	2080	[131]	2000	97
5. Beryllium	"	48	1U	50	96
6. Cadmium	"	51	4U	50	102
7. Calcium	"	78300	80200	NR	NR
8. Chromium	"	207	10U	200	104
9. Cobalt	"	474	10U	500	95
10. Copper	"	264	14U	250	106
11. Iron	"	1170	[56]	1000	111
12. Lead	"	16	5U	20	80
13. Magnesium	"	22100	22000	NR	NR
14. Manganese	"	857	693	200	82
15. Mercury	"	1.1	0.2U	1	110
16. Nickel	"	420	12U	400	105
17. Potassium	"	[2990]	[3400]	NR	NR
18. Selenium	"	7.2	1U	10	72 N
19. Silver	"	34	8U	50	68 N
20. Sodium	"	7130	6620	NR	NR
21. Thallium	"	34	10U	50	68 N
22. Vanadium	"	507	10U	500	101
23. Zinc	"	240	[19]	200	110
Other:					
Cyanide	"	89	10U	100	89

(1) %R = [(SSR - SR)/SA] x 100
"N" - Out of Control
"NR" - Not Required (by contract or due to initial sample amount > 4 X spike amount)
Comments:

Form VI

Q. C. Report No. 10042

DUPLICATES

LAB NAME ANALYTICA INCORPORATED

CASE NO. 9761

EPA Sample NO. MEW 644

DATE 7-19-88

Lab Sample ID No. —

Units ug/L

Matrix Low Water

Compound	Control Limit	Samples(S)	Duplicate(D)	RPD(1)
Metals:				
1. Aluminum	± 200 ug/L	[159]	[159]	NC
2. Antimony	± 60 ug/L	60U	60U	NC
3. Arsenic	± 10 ug/L	10U	10U	NC
4. Barium	± 200 ug/L	[162]	[158]	NC
5. Beryllium	± 5 ug/L	1U	1U	NC
6. Cadmium	± 5 ug/L	4U	4U	NC
7. Calcium	± 5000 ug/L	78700	79500	1.0
8. Chromium	± 10 ug/L	10U	10U	NC
9. Cobalt	± 50 ug/L	10U	10U	NC
10. Copper	± 25 ug/L	14U	14U	NC
11. Iron	± 100 ug/L	[68]	[70]	NC
12. Lead	± 5 ug/L	5U	5U	NC
13. Magnesium	± 5000 ug/L	22900	23100	0.87
14. Manganese	± 15 ug/L	891	886	0.56
15. Mercury	± 0.2 ug/L	0.2U	0.2U	NC
16. Nickel	± 40 ug/L	12U	12U	NC
17. Potassium	± 5000 ug/L	[3110] ~~12U~~ mpc	[2920]	NC
18. Selenium	± 5 ug/L	5U	5U	NC
19. Silver	± 10 ug/L	8U	8U	NC
20. Sodium	± 5000 ug/L	10000	10100	NC
21. Thallium	± 10 ug/L	10U	10U	NC
22. Vanadium	± 50 ug/L	10U	10U	NC
23. Zinc	± 20 ug/L	22	[15]	NC
Other:	± ug/L			
Cyanide	± 10 ug/L	10U	10U	NC

* Out of Control NC - Non calculable RPD due to value(s) less than CRDL

(1) RPD = [|S - D|/|(S + D)/2|] x 100

Form VII

Q. C. Report No. 10042
INSTUMENT DETECTION LIMITS AND
LABORATORY CONTROL SAMPLE

LAB NAME ANALYTICA INCORPORATED CASE NO. 9761 DATE 7-19-88
LCS NO. EPA-LV: ICV 1-A 6

Compound	Required Detection Limits (CRDL)-ug/l	Instrument Detection Limits (IDL)-ug/l ICP/AA ID#ICP-2.5	Furnace ID#2380/BD	Lab Control Sample ug/L mg/kg (circle one) True	Found	%R
Metals:						
1. Aluminum	200	131		1980	2110	107
2. Antimony	60		7	1010	1000	99
3. Arsenic	10			47	50	106
4. Barium	200	11		1980	1920	97
5. Beryllium	5	1		481	455	95
6. Cadmium	5	4		489	484	99
7. Calcium	5000	135		49800	48200	97
8. Chromium	10	10		506	499	99
9. Cobalt	50	10		474	442	93
10. Copper	25	14		542	511	94
11. Iron	100	11		1990	2010	101
12. Lead	5	52	1	97.9	88	90
13. Magnesium	5000	141		25000	25300	101
14. Manganese	15	2		513	521	102
15. Mercury	0.2		0.2 CV	NR	NR	NR
16. Nickel	40	12		496	483	97
17. Potassium	5000	847		50200	46600	93
18. Selenium	5			104		
19. Silver	10	8		509	493	97
20. Sodium	5000	1880		50700	49800	98
21. Thallium	10		1	97.3	100	103
22. Vanadium	50	10		511	512	100
23. Zinc	20	10		3100	2960	95
Other:						
Cyanide	10	NR	NR	200	171	86

NR - Not Required

Form VII

Q. C. Report No. 10042
INSTUMENT DETECTION LIMITS AND
LABORATORY CONTROL SAMPLE

LAB NAME ANALYTICA INCORPORATED CASE NO. 9761 DATE 7-19-88
LCS NO. EPA-LV: ICV 1-4

Compound	Required Detection Limits (CRDL)-ug/l	Instrument Detection Limits (IDL)-ug/l ICP/AA ID#ICP-2.5	Furnace ID#5000/BZ	Lab Control Sample ug/L mg/kg (circle one) True	Found	%R	
Metals:							
1. Aluminum	200	131		1980			
2. Antimony	60		2	1010			
3. Arsenic	10		1	47			
4. Barium	200	11		1980			
5. Beryllium	5	1		481			
6. Cadmium	5	4		489			
7. Calcium	5000	135		49800			
8. Chromium	10	10		506			
9. Cobalt	50	10		474			
10. Copper	25	14		542			
11. Iron	100	11		1990			
12. Lead	5	52	1	97.9			
13. Magnesium	5000	141		25000			
14. Manganese	15	2		513			
15. Mercury	0.2		0.2 CV	NR			
16. Nickel	40	12		496			
17. Potassium	5000	847		50200			
18. Selenium	5		1	104	106	102	
19. Silver	10	8		509			
20. Sodium	5000	1880		50700			
21. Thallium	10			97.3			
22. Vanadium	50	10		511			
23. Zinc	20	10		3100			
Other:							
Cyanide	10	NR	NR	200			

NR - Not Required

FORM VIII

Q. C. Report No. 10042
STANDARD ADDITION RESULTS

LAB NAME ANALYTICA INCORPORATED CASE No. 9761

DATE 7-19-88 Units: ug/L

EPA Sample #	Element	Matrix(1)	0 ADD ABS.	1 ADD CON.	1 ADD ABS(2)	2 ADD CON.	2 ADD ABS(2)	3 ADD CON.	3 ADD ABS(2)	Final CON.(3)	r*
LCS	Se	LA	24.7	10	35.2	20	45.2	30	53.1	26.5	0.998

(1) Matrix abbreviations: Low Solid, LS; Medium Solid, MS; Low Aqueous, LA; Medium Aqueous, MA.
(2) CON is the concentration added, ABS. is the instrument readout in absorbance or concentration.
(3) Concentration as determined by MSA.
* "r" is the correlation coefficient.
\+ Correlation coefficient is outside of control window of 0.995.

FORM IX

Q. C. Report No. 10042
ICP SERIAL DILUTIONS

LAB NAME ANALYTICA INCORPORATED

CASE NO. 9761

EPA Sample No. MEW 645

DATE 7-19-88

Lab Sample ID No. ——

Units ug/L

Matrix LA

Compound	Initial Sample Concentration(I)	Serial Dilution[1] Result(S)	% Difference[2]
Metals:			
1. Aluminum	[165]	[690]	NR
2. Antimony	NA	NA	NA
3. Arsenic	NA	NA	NA
4. Barium	[131]	[135]	NR
5. Beryllium	1U	5U	NR
6. Cadmium	4U	20U	NR
7. Calcium	80200	72000	10
8. Chromium	10U	50U	NR
9. Cobalt	10U	50U	NR
10. Copper	14U	70U	NR
11. Iron	[56]	[110]	NR
12. Lead	NA	NA	NA
13. Magnesium	22000	[21600]	1.8
14. Manganese	693	635	8.4
15. Nickel	12U	60U	NR
16. Potassium	[3400]	4240U	NR
17. Selenium	NA	NA	NA
18. Silver	8U	40U	NR
19. Sodium	6620	[10100]	NR
20. Thallium	NA	NA	NA
21. Vanadium	10U	50U	NR
22. Zinc	[19]	50U	NR
Other:			

[1] Diluted sample concentration corrected for 1:4 dilution (see Exhibit D)
[2] Percent difference - $\frac{|I - S|}{I} \times 100$

NR - Not Required, initial or diluted sample concentration less than 10 times IDL (see Exhibit E-7)
NA - Not Applicable, analyte not determined by ICP

IFB Amend. One

FORM X

QC Report No. 10042

HOLDING TIMES

LAB NAME ANALYTICA INCORPORATED

DATE 7-19-88

CASE NO. 9761

EPA Sample No.	Matrix	Date Received	Mercury Prep Date	Mercury Holding Time (Days)	CN Prep Date	CN Holding Time (Days)
MEW 644	LA	6-10-88	6-15-88	5	6-12-88	2
645						
646						
647						
648						
649						
MEW 650	LA	6-10-88	6-15-88	5	6-12-88	2

[1] Holding time is defined as number of days between the date received and the sample preparation date.

Form XI (Quarterly)
INSTRUMENT DETECTION LIMITS

LAB NAME CSMRI-Analytica, Inc. DATE 4-15-88

(ICP) Flame AA (Circle One) Model Number LEEMAN 2.5 Furnace AA Number

Element	Wavelength (nm)	CRDL (ug/L)	IDL (ug/L)	Element	Wavelength (nm)	CRDL (ug/L)	IDL (ug/L)
1. Aluminum	308.22	200	131P	13. Magnesium	277.98	5000	141P
2. Antimony		60		14. Manganese	257.61	15	2P
3. Arsenic		10		15. Mercury	254.00	0.2	0.2CV
4. Barium	233.53	200	11P	16. Nickel	231.60	40	12P
5. Beryllium	313.04	5	1P	17. Potassium	766.49	5000	847P
6. Cadmium	214.44	5	4P	18. Selenium		5	
7. Calcium	422.67	5000	135P	19. Silver	328.07	10	8P
8. Chromium	267.72	10	10P	20. Sodium	589.59	5000	~~1878P~~ 1880P BDH
9. Cobalt	228.62	50	10P	21. Thallium		10	
10. Copper	324.75	25	14P	22. Vanadium	292.40	50	10P
11. Iron	238.20	100	11P	23. Zinc	213.86	20	10P
12. Lead	220.35	5	52P				

Footnotes:
- Indicate the instrument for which the IDL applies with a "P" (for ICP), an "A" (for Flame AA), or an "F" (for Furnace AA) behind the IDL value.
- Indicate elements commonly run with background correction (AA) with a "B" behind the analytical wavelength.
- If more than one ICP/Flame or Furnace AA is used, submit separate Forms XI-XIII for each instrument.

COMMENTS: LDC/MILTON ROY SPECTROPHOTOMETER USED FOR MERCURY DETERMINATIONS.

CV = COLD VAPOR ATOMIC ABSORPTION

Lab Manager [signature]

Form XI (Quarterly)
INSTRUMENT DETECTION LIMITS

LAB NAME CSMRI-Analytica, Inc. DATE 4-15-88

ICP/Flame AA (Circle One) Model Number _____ Furnace AA Number PE 2380

Element	Wavelength (nm)	CRDL (ug/L)	IDL (ug/L)	Element	Wavelength (nm)	CRDL (ug/L)	IDL (ug/L)
1. Aluminum		200		13. Magnesium		5000	
2. Antimony	217.6 B	60	7F	14. Manganese		15	
3. Arsenic		10		15. Mercury		0.2	
4. Barium		200		16. Nickel		40	
5. Beryllium		5		17. Potassium		5000	
6. Cadmium		5		18. Selenium		5	
7. Calcium		5000		19. Silver		10	
8. Chromium		10		20. Sodium		5000	
9. Cobalt		50		21. Thallium	276.8B	10	1F
10. Copper		25		22. Vanadium		50	
11. Iron		100		23. Zinc		20	
12. Lead	283.3B	5	1F				

Footnotes:
- Indicate the instrument for which the IDL applies with a "P" (for ICP), an "A" (for Flame AA), or an "F" (for Furnace AA) behind the IDL value.
- Indicate elements commonly run with background correction (AA) with a "B" behind the analytical wavelength.
- If more than one ICP/Flame or Furnace AA is used, submit separate Forms XI-XIII for each instrument.

COMMENTS: DEUTERIUM ARC BACKGROUND CORRECTION.

Lab Manager [signature]

Form XI (Quarterly) PAGE THREE OF THREE
INSTRUMENT DETECTION LIMITS

LAB NAME CSMRI-Analytica, Inc. DATE 4-15-88

ICP/Flame AA (Circle One) Model Number _____ Furnace AA Number PE 5000

Element	Wavelength (nm)	CRDL (ug/L)	IDL (ug/L)	Element	Wavelength (nm)	CRDL (ug/L)	IDL (ug/L)
1. Aluminum		200		13. Magnesium		5000	
2. Antimony	217.6 B	60	2 F	14. Manganese		15	
3. Arsenic	193.8 B	10	1 F	15. Mercury		0.2	
4. Barium		200		16. Nickel		40	
5. Beryllium		5		17. Potassium		5000	
6. Cadmium		5		18. Selenium	196.0 B	5	1 F
7. Calcium		5000		19. Silver		10	
8. Chromium		10		20. Sodium		5000	
9. Cobalt		50		21. Thallium		10	
10. Copper		25		22. Vanadium		50	
11. Iron		100		23. Zinc		20	
12. Lead	283.3 B	5	1 F				

Footnotes:
- Indicate the instrument for which the IDL applies with a "P" (for ICP), an "A" (for Flame AA), or an "F" (for Furnace AA) behind the IDL value.
- Indicate elements commonly run with background correction (AA) with a "B" behind the analytical wavelength.
- If more than one ICP/Flame or Furnace AA is used, submit separate Forms XI-XIII for each instrument.

COMMENTS: ZEEMAN BACKGROUND CORRECTION.

Lab Manager [signature]

Form XII (Quarterly) (cont'd)

ICP Interelement Correction Factors

LABORATORY ANALYTICA, INC. ICP Model Number LEEMAN 2.5

DATE 4-15-88

Analyte	Analyte Wavelength (nm)	Interelement Correction Factors for: IRON							
1. Antimony									
2. Arsenic									
3. Barium									
4. Beryllium									
5. Cadmium									
6. Chromium									
7. Cobalt									
8. Copper									
9. Lead									
10. Manganese									
11. Mercury									
12. Nickel									
13. Potassium									
14. Selenium									
15. Silver	328.07	0.0000							
16. Sodium									
17. Thallium									
18. Vanadium									
19. Zinc									

COMMENTS: IRON ON SILVER CORRECTION APPLIED ONLY AT IRON CONCENTRATIONS GREATER THAN 16 mg/L IN SOLUTION.

Lab Manager [signature]

000027

Form XIII (Quarterly)
ICP Linear Ranges

LAB NAME ANALYTICA, INC. ICP Model Number LEEMAN 2.5

DATE 4-15-88

Analyte	Integration Time (Seconds)	Concen-tration (ug/L)	Analyte	Integration Time (Seconds)	Concen-tration (ug/L)
1. Aluminum	3	600000	13. Magnesium	3	800000
2. Antimony	NA		14. Manganese	2	100000
3. Arsenic	NA		15. Mercury	NA	
4. Barium	2	100000	16. Nickel	3	100000
5. Beryllium	2	25000	17. Potassium	3	400000
6. Cadmium	3	50000	18. Selenium	NA	
7. Calcium	3	800000	19. Silver	4	50000
8. Chromium	3	100000	20. Sodium	3	800000
9. Cobalt	2	100000	21. Thallium	NA	
10. Copper	2	100000	22. Vanadium	2	100000
11. Iron	2	400000	23. Zinc	2	50000
12. Lead	3	100000			

Footnotes: • Indicate elements not analyzed by ICP with the notation "NA".

COMMENTS:

Lab Manager D Hatt

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 7/25/88

SUBJECT: Review of Region V CLP Data Received for Review on 7-6-88

FROM: Curtis Ross, Director (5SCRL) Patrick J. Chunilla for
Central Regional Laboratory

TO: Data User: MPCA

We have reviewed the data for the following case(s).

SITE NAME: Belgrade muni. Well Field SMO Case No. 9761 SAS 3554E

EPA Data Set No. SFS244 No. of Samples: 4 D.U./Activity Numbers 4905 1C72222

CRL No. 88408513-S14, D02, R02

SMO Traffic No. EY630-632, 634

CLP Laboratory: Versar Hrs. Required for Review: 4 HRS

Following are our findings:

THIS CASE CONSIST OF 4 LOW WATER SAMPLES TESTED FOR VOA'S, BNA'S, & PESTICIDES. AREAS REQUIRING CONCERN HAVE BEEN ADDRESSED. SAMPLE EY 634 WAS TESTED FOR VOAS ONLY

Philip Somerville
ESAT - WESTON
7-20-88

( ) Data are acceptable for use.
(✓) Data are acceptable for use with qualifications referenced above. See Data Qualifier sheets and Calibration Outlier forms for flags and additional comments.
( ) Data are preliminary - pending verification by Contractor Laboratory. See Case Summary above.
( ) Data are unacceptable.

cc: Carla Dempsey, CLP Quality Assurance Officer, Analytical Operations Branch
James Petty, Chief Quality Assurance Section, EMSL, Las Vegas

DATA QUALIFIERS

Contractor: VERSAR

Case 9761/3554 E

Below is a summary of the out-of-control audits and the possible effect on the data for this case:

① HOLDING TIME

IN THE VOLATILE FRACTION ALL SAMPLES (EY 630-632, + 634) EXCEEDED THE HOLDING TIME REQUIREMENT BY 4 DAYS [SAMPLING DATE = 6-7-88, DATE ANALYZED = 6-18-88]. ALL POSITIVE AROMATICS SHOULD BE FLAGGED "J" AS ESTIMATES AND SAMPLE QUANTITATION LIMITS "UJ" AS ESTIMATES.

IN THE SEMI-VOLATILE FRACTION ALL SAMPLES WERE WITHIN Q.C. LIMITS FOR HOLDING TIMES.

ALL PESTICIDE SAMPLES (EY 630-632) WERE BEYOND THE HOLDING TIME LIMITS BY ONE (1) DAY FOR HOLDING TIMES (SAMPLED ON 6-7-88 & EXTRACTED ON 6-15-88). ALL POSITIVES ARE ESTIMATED AND FLAGGED "J" WHILE SAMPLE QUANTITATION LIMITS ARE FLAGGED "UJ" AS ESTIMATED.

② GC/MS TUNING & INSTRUMENT PERFORMANCE

IN THE VOLATILE & SEMI-VOLATILE FRACTIONS THE TUNING CRITERIA WAS ACHIEVED & WITHIN Q.C. LIMITS

THE PESTICIDE FRACTION ALSO ACHIEVED THE TUNING CRITERIA AND WAS WITHIN Q.C. LIMITS

③ CALIBRATION

THE VOLATILE & SEMI-VOLATILE OUTLIERS CAN BE FOUND ON THE CALIBRATION OUTLIER FORM (OF WHICH THIS CASE HAD FEW).

IN THE PESTICIDE FRACTION 4,4'-DDT EXCEEDED THE Q.C. LIMITS FOR CALIBRATION (CONTINUING) IN % D FOR IND A 6-17-88 @ 2212. ALL ASSOCIATED POSITIVE QUANTITATIVE RESULTS SHOULD BE FLAGGED "J" AS ESTIMATED.

Philip Somerville
(312) 353-2947

DATA QUALIFIERS

Contractor: VERSAR

Case 9761 / 3554 E

Below is a summary of the out-of-control audits and the possible effect on the data for this case:

④ BLANKS

THE VOLATILE BLANK V BLK 10 CONTAINED DETECTABLE LEVEL OF ACETONE, AND 2-BUTANONE. SAMPLES EY 630, 631, 632, & 634 ALL HAD DETECTABLE ACETONE LEVELS, BUT THEY WERE ALL < 10 x BLANK AND FLAGGED "U" AS UNDETECTED. SAMPLE EY 632 WAS NOT FLAGGED AT ALL BY THE LAB. SAMPLE EY 634 ALSO HAD DETECTABLE AMOUNTS OF 2-BUTANONE WHICH WAS < 10 x THE BLANK & FLAGGED "U" FOR UNDETECTED.

THE SEMI-VOLATILE BLANK CONTAINED DETECTABLE LEVELS OF DI-N-BUTYLPHTHALATE ONLY. ALL SAMPLES (EY 630-632) HAD DETECTABLE AMOUNTS OF DI-N-BUTYLPHTHALATE ALSO. THESE LEVELS WERE < 10 x THE BLANK & WERE FLAGGED "U" AS UNDETECTED

THE PESTICIDE BLANK DID NOT CONTAIN ANY DETECTABLE TCL COMPOUND.

⑤ SURROGATE RECOVERY

THE SURROGATE RECOVERIES FOR ALL SAMPLES IN EACH FRACTION WAS WITHIN Q.C. LIMITS

⑥ MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS/MSD)

IN THE VOLATILE AND PESTICIDE FRACTIONS THE MS/MSD RECOVERIES WERE ALL WITHIN Q.C. LIMITS.

IN THE SEMI-VOLATILE FRACTION (EY 630) 2,4-DINITROTOLUENE EXCEEDED THE QC LIMITS FOR MS/MSD % REC, WHILE 4-NITROPHENOL EXCEEDED THE LIMITS SET FOR MS % REC.

Philip Somerville
(312) 353-2947 7-20-88

DATA QUALIFIERS

Contractor: VERSAR

Case 9761 /3554 E

Below is a summary of the out-of-control audits and the possible effect on the data for this case:

⑥ (CONT)
IN THE UNSPIKED SAMPLE (EY 630) POSITIVE RESULTS ASSOCIATED WITH THESE COMPOUNDS SHOULD BE FLAGGED "J" AS ESTIMATES AND SAMPLE QUANTITATION LIMITS FLAGGED "UJ" AS ESTIMATES

⑦ FIELD DUPLICATES
THIS CASE CONTAINED ONE DUPLICATE (EY 631) AND ONE FIELD BLANK (EY 634). THE RESULTS OF THESE SAMPLES WERE COMPARABLE AND ACCEPTABLE

⑧ INTERNAL STANDARDS PERFORMANCE
THE INTERNAL STANDARDS CRITERIA WAS ACHIEVED AND WITHIN Q.C. LIMITS FOR THE VOLATILE AND THE SEMI-VOLATILE FRACTIONS

⑨ COMPOUND IDENTIFICATION
COMPOUND IDENTIFICATION WAS CARRIED OUT PROPERLY, GC/MS RESULTS SUBSTANTIATE THIS.

⑩ COMPOUND QUANTITATION & DETECTION LIMITS
COMPOUND QUANTITATION WAS CALCULATED CORRECTLY AND CONSISTENTLY THROUGHOUT. RESULTS WERE ACCEPTABLE.

Philip Somerville
(312) 353-2947

DATA QUALIFIERS

Contractor: VERSAR

Case 9761 / 3554 E

Below is a summary of the out-of-control audits and the possible effect on the data for this case:

(11) SYSTEM PERFORMANCE

SYSTEM PERFORMANCE WAS CONSISTENT AND ADEQUATE THROUGHOUT. THIS IS SUBSTANTIATED BY PREVIOUS INSTRUMENT CHECKS

(12) ADDITIONAL CASE SPECIFIC PROBLEMS

AREAS IN THE CASE REQUIRING ATTENTION HAVE BEEN ADDRESSED. THERE ARE NO MAJOR AREAS NEEDING CORRECTIVE ACTION (MAYBE HOLDING TIME) IMMEDIATELY. DATA IS GOOD & ACCEPTABLE.

Philip Somerville
(312) 353-2947
7-20-88

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION V
CALIBRATION OUTLIERS
VOLATILE HSL COMPOUNDS

CASE/SAS # 9761/3554E CONTRACTOR VERSAR

Instrument # Y	Init. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.		
DATE/TIME:	6-18-88														
	RF	%RSD	*	RF	%D	*	RF	%D	*	RF	%D	*	RF	%D	*
Chloromethane															
Bromomethane															
Vinyl Chloride															
Chloroethane															
Methylene Chloride															
Acetone															
Carbon Disulfide															
1,1-Dichloroethane															
1,1-Dichloroethene															
Trans-1,2-Dichloroethene															
Chloroform															
2-Butanone	0.04	13.70	P/J												
1,2-Dichloroethane															
1,1,1-Trichloroethane															
Carbon Tetrachloride															
Vinyl Acetate															
Bromodichloromethane															
1,2-Dichloropropane															
Trans-1,3-Dichloropropene															
Trichloroethene															
Dibromochloromethane															
1,1,2-Trichloroethane															
Benzene															
Cis-1,3-Dichloropropene															
2-Chloroethylvinylether															
Bromoform															
4-Methyl-2-Pentanone															
2-Hexanone															
Tetrachloroethene															
1,1,2,2-Tetrachloroethane															
Toluene															
Chlorobenzene															
Ethylbenzene															
Styrene															
m-Xylene															
o/p-Xylene															

AFFECTED SAMPLES:

V BLK 10
EY 630
TO
EY 632
EY 632 MS
EY 632 MSD
EY 634

Reviewer's Initials/Date: PS 7/20/88

* These flags should be applied to the analytes on the sample data sheets.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION V
CALIBRATION OUTLIERS
SEMIVOLATILE HSL COMPOUNDS
(Page 1)

CASE/SAS # 9761 / 3551 E CONTRACTOR VERSAR

Instrument # T	Init. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.		
DATE/TIME:	6-28-88			6-29-88 1230											
	RF	%RSD	*	RF	%D	*	RF	%D	*	RF	%D	*	RF	%D	*
Phenol															
bis(-2-Chloroethyl)Ether															
2-Chlorophenol															
1,3-Dichlorobenzene															
1,4-Dichlorobenzene															
Benzyl Alcohol															
1,2-Dichlorobenzene															
2-Methylphenol															
bis(2-Chloroisopropyl)Ether															
4-Methylphenol															
N-Nitroso-Di-n-Propylamine															
Hexachloroethane															
Nitrobenzene															
Isophorone															
2-Nitrophenol															
2,4-Dimethylphenol															
Benzoic Acid															
bis(2-Chloroethoxy)Methane															
2,4-Dichlorophenol															
1,2,4-Trichlorobenzene															
Naphthalene															
4-Chloroaniline															
Hexachlorobutadiene															
4-Chloro-3-Methylphenol															
2-Methylnaphthalene															
Hexachlorocyclopentadiene															
2,4,6-Trichlorophenol															
2,4,5-Trichlorophenol															
2-Chloronaphthalene															
2-Nitroaniline															
Dimethyl Phthalate															
Acenaphthylene															
3-Nitroaniline															
Acenaphthene															
2,4-Dinitrophenol															
4-Nitrophenol															
Dibenzofuran															

AFFECTED SAMPLES:

SBLK10
EY632
EY631
EY630
EY632MS
EY632MSD

Reviewer Initials/Date: PS 7/20/88

* These flags should be applied to the analytes on the sample data sheets.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION V
CALIBRATION OUTLIERS
SEMIVOLATILE HSL COMPOUNDS
Page 2

CASE/SAS # 9761 / 3554 E CONTRACTOR VERSAR

Instrument # T	Init. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.		
DATE/TIME:	6-28-88			6-29-88 1230											
	RF	%RSD	*	RF	%D	*	RF	%D	*	RF	%D	*	RF	%D	*
2,4-Dinitrotoluene															
2,6-Dinitrotoluene															
Diethylphthalate															
4-Chlorophenyl-phenylether															
Fluorene															
4-Nitroaniline															
4,6-Dinitro-2-Methylphenol															
N-Nitrosodiphenylamine															
4-Bromophenyl-phenylether															
Hexachlorobenzene															
Pentachlorophenol															
Phenanthrene															
Anthracene															
Di-n-Butylphthalate															
Fluoranthene															
Pyrene															
Butylbenzylphthalate															
Benzo(a)Anthracene															
bis(2-Ethylhexyl)Phthalate															
Chrysene															
Di-n-Octyl Phthalate															
Benzo(b)Fluoranthene															
Benzo(k)Fluoranthene															
Benzo(a)Pyrene															
Indeno(1,2,3-cd)Pyrene															
Dibenz(a,h)Anthracene															
Benzo(g,h,i) Perylene															

SEE PAGE 1 FOR AFFECTED SAMPLES.

* These flags should be applied to the analytes on the sample data sheets.

Reviewer's Initials/Date: PS 7/20/88

Case: 9761/3554 E

Contractor: VERSAR

TENTATIVELY IDENTIFIED COMPOUNDS MATCH ASSESSMENT

NOTE: Reviewer should note directly on Organic Analysis Data Sheet (OADS) those matches that in his opinion (based on contract criteria) are unreasonable.

CRITERIA

(1) Relative intensities of major ions (>10%) reference spectrum should be present in the sample spectrum.

(2) Relative intensities of major ions in sample spectrum should agree to within ± 20% of reference spectrum intensities.

(3) Molecular ions present in reference spectrum should be present in sample spectrum.

(4) Ions present in sample spectrum, but not in reference spectrum should be reviewed for possible background contamination or presence of coeluting interferences.

(5) Ions present in reference spectrum, but not in the sample spectrum should be reviewed for possible subtraction from the sample spectrum because of background contamination or coeluting interferences.

(6) If, in the reviewer's opinion, no valid identification can be made the compound should be labelled as "unknown" and the initials and date of the reviewer placed on the OADS.

PS 7/20/88

USEPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 ALEXANDRIA, VA 22313
703/557-2490 FTS-557-2490

CASE NO: 7761

SAS NO: 3554-E (IF APPLICABLE)

ORGANIC TRAFFIC REPORT

(FOR CLP USE ONLY)

TYPE OF ACTIVITY (CIRCLE ONE) ①
SUPERFUND—PA SI ESI RIFS RD RA ER NPLD O&M OTHER _____
NON-SUPERFUND—_____PROGRAM

AMPLE DESCRIPTION
(ENTER IN BOX A)
1. SURFACE WATER
2. GROUND WATER
3. LEACHATE
4. SOIL
5. SEDIMENT
6. OIL (SAS)
7. WASTE (SAS)

REGION NO: SAMPLING COMPANY ②

SAMPLER: (NAME)

SHIP TO: ③

Springfield VA 22151

ATTN:

SAMPLING DATE: ④

BEGIN: _____ END: _____

DATE SHIPPED: _____ CARRIER: _____ ⑤

AIRBILL NO:

DATE REC'D: 4/10/88 SDG NO: ⑥ EY630

REC'D BY: 794 RAS 400 SAS

LABORATORY CONTRACT NO. UNIT PRICE

68-01-7471

TRANSFER TO: DATE REC'D: ⑦

REC'D BY: CONTRACT NO./PRICE:

CLP SAMPLE NUMBER (FROM LABELS)	Ⓐ SAMPLE DESCRIPTION (FROM BOX 1) 1 2 3 4 5 6 7	Ⓑ CONCENTRATION L = LOW/MED, H = HIGH (SAS)	Ⓒ RAS ANALYSIS: VOLATILE	BASE/NEUT /ACID	PESTICIDE /PCB's		Ⓓ SPECIAL HANDLING	Ⓔ STATION LOCATION	Ⓕ SAMPLE CONDITION ON RECEIPT	Ⓖ HIGH CONC. PHASES (CHECK): SOLID	WATER—MIS LIQUID	NON WATER—MIS LIQUID
~~first sample in SDG~~												
EY630	2	L	X	X	X		Drinking Water DTL	MLB	OK			
EY631	2	L	X	X	X		Drinking Water DTL	MLB	↓			
EY632	2	L	X	X	X		[illegible]	[illegible]	↓			
EY634	2	L	X				[illegible]	[illegible]	↓			
last sample in SDG												
Lot 2 coolers shipped												

EPA Form 2075-7 (8-87)

100007

WHITE — SMO COPY PINK — CLIENT COPY WHITE — LAB COPY FOR RETURN TO SMO YELLOW — LAB COPY

SUPERFUND 5244

SAMPLE DATE 6/7-8/88
LOG IN DATE: 6/13/88
DUE DATE: 7/11/88

CENTRAL REGIONAL LABORATORY SAMPLE DATA REPORT
ORGANICS/INORGANICS
THIS FORM IS TO BE USED FOR SAMPLES SENT TO CONTRACT ONLY

CASE NUMBER/SAS No. 9761/3554E SITE NAME BELGRADE MUNICIPAL WELL FIELD (SIDE) LABORATORY VERSAR DATE SHIPPED 6/9/88

SUPERFUND DU NUMBER Y905 EPA RPM or OSC (S.M.S.)/(CES) _____ CERCLIS NUMBER _____ PAGE 1 OF 4

ACTIVITY NUMBER C72200

CRL LOG NUMBER	ORGANIC TRAFFIC REPORT NUMBER or SAS Packing List No.	INORGANIC TRAFFIC REPORT NUMBER	WATER OR LIQUIDS: ACID-BASE NEUTRAL CPDS ORGANIC SCAN UG/L TOX17574	VOLATILE ORGANIC ANALYSIS ORGANIC SCAN UG/L TOX17564	WATER POLYCHLORINATED BIPHENYLS UG/L PES 17144	WATER CHLORINATED PESTICIDES UG/L PES17134	TOTAL METALS IN WATER UG/L MET111	WATER CYANIDE UG/L MIN74919	NITRATE/NITRITE MG/L MIN7284	AMMONIA MG/L MIN7294	RESIDUE, FILTERABLE TDS MG/L MIN7362	RESIDUE, NON-FILT TSS MG/L MIN7372			SEDIMENTS or SOILS: ACID-BASE NEUTRAL CPDS ORGANIC SCAN MG/KG TOX215722	VOLATILE ORGANIC ANALYSIS ORGANIC SCAN MG/KG TOX215622	SEDIMENTS POLYCHLORINATED BIPHENYLS MG/KG PES211422	SEDIMENT CHLORINATED PESTICIDES MG/KG 211322	TOTAL METALS MG/KG MET413	CYANIDE MG/KG MIN44930	EP TOXICITY METALS MG/KG	AMMONIA MG/KG MIN42925				
88YL08S13	EY630	✓ ✓ ✓	X	X	X	X																				
88YL08D02	EY631	✓ ✓ ✓	X	X	X	X																				
88YL08S14	EY632	✓ ✓ ✓	X	X	X	X																				
88YL08R02	EY634	✓ ✓ ✓		X																						
		CC TBA																								

Versar INC.

July 01st, 1988

I. Narrative Case 9761/SAS3554E SDG#EY630
Client: EPA Region V - Curtis Ross
EPA Contract 68-01-7471
Versar Project 5070 - Batch 58

This report contains the CLP analytical data for the volatile and semivolatile organic low detection limit analysis of four (04) water samples contained in Case 9761. The samples listed below arrived intact at Versar by Federal Express on June 10th, 1988. Although results for volatiles (VOA) and semivolatiles (BNA) are reported individually, this one narrative applies to each separate fraction. A fraction narrative outlining pesticide and pesticide quality control analyses is also provided separately. This data is provided on a twenty-one day hard copy reporting basis as specified in SAS 3554E.

SAMPLE LIST

EY630 *
EY631
EY632
EY634 ** @

* - First SDG No. ** - Last SDG No.

@ - Volatile analysis only
>>>>>>>>>>>>>>>>>>>>><<<<<<<<<<<<<<<<<<<<<

GC/MS instrument calibrations using BFB and DFTPP met contract requirements for volatile and semivolatile analyses respectively. All SPCC and CCC criteria were met for the three point volatile initial calibration curves with the exception of 2-butanone and acrolein. The Region has accepted this problem as inherent in the method detection limit study. The increased sample volume (25.0 mL) decreases the purging efficiency of the sample.

All SPCC and CCC criteria were met for the three point semivolatile initial calibration curve and continuing calibration standards. Sample extraction and analysis for volatile and semi-volatile organics in the water samples occurred within specified holding times. All GC/MS analyses occurred during the twelve hour period following instrument calibration. Internal standard areas and associated retention times did not deviate outside specified windows.

VOLATILE ORGANICS

Volatile surrogate standard recovery values met specified criteria. Few volatile compounds were confirmed present in the water samples. No sample required dilution prior to analysis.

Versar INC.

One set of matrix spike and matrix spike duplicate (MS/MSD) quality control samples were analyzed. All MS/MSD recoveries and relative percent difference (RPD) values met specified QC limits. Acrolein and acrylonitrile analysis were requested in addition to the CLP compounds and have been added onto Form IA.

For the enhanced standard spectra, acetone and 2-butanone coelute with acrolein and 1,2-dichloroethane respectively.

SEMIVOLATILE ORGANICS

Semivolatile surrogates met specified recovery criteria. Few semivolatile compounds were confirmed present in the water samples. Target compound 4-nitrophenol could not be confirmed present by contract required GC/MS mass spectral identification and was reported on Form IB with an "X" flag.

No sample required dilution prior to analysis. Due to the requirement for low detection limits, the final volume of the semivolatile sample extracts was 0.5 mL. Data that is labeled as instrument "AC" should actually be designated as instrument "T".

One set of MS/MSD QC samples were analyzed and matrix spike compounds met recovery criteria with the exception of 2,4-dinitrotoluene and 4-nitrophenol. All RPD values met QC limits. CLP protocol does not require corrective action for MS/MSD QC outlier values.

During the extraction procedure for semivolatile compounds, an incorrect surrogate spiking standard was inadvertently used. A similar error also affected the matrix spike and matrix spike duplicate QC samples. Due to the wrong concentration of the standards used to spike each sample and the associated reagent blank, the ions of quantitation for the affected compounds were changed to quantify the area with a greater degree of accuracy. RAS spiking solutions of surrogates and matrix spikes were used at 100ppm and 200ppm for base-neutral and acid compounds, respectively, instead of the SAS spiking concentrations of 10ppm and 5ppm, respectively. The primary ions of quantitation could not be used due to instrument saturation. The changes made are outlined on the following page.

A special surrogate standard with a concentration of 50 ng/uL and 100ng/uL for base-neutral and acid compounds, respectively, was analyzed and used for the correct quantification of surrogate recoveries for each sample and associated QC analyses.

Versar INC.

Surrogate: Compound	1° ion of quantitation	2° ion of quantitation used
2-fluorobiphenyl	172	171
phenol d-5	99	42
2-fluorophenol	112	92
nitrobenzene d-5	82	128
2,4,6-tribromophenol	330	328
Matrix Spike:		
phenol	94	55
2-chlorophenol	128	62
n-nitroso-di-n-propyl amine	70	71
1,2,4-trichlorobenzene	152	75
4-chloro-3-methylphenol	107	78
acenaphthene	153	151
4-nitrophenol	65	64
2,4-dinitrotoluene	89	90
pyrene	202	201
1,4-dichlorobenzene	146	73

Ions of quantitation for any target compounds and surrogates not listed above were not changed. This modification does not impact the accuracy or integrity of the data. All low detection limit criteria specified by this SAS task for all HSL compounds were achieved.

Additional comments regarding the volatile and semivolatile analysis of these water samples can be found in the sample preparation package located in the last section of each report. Please contact either Clay Hamner, CLP Project Manager or me, should you have any questions or require additional information pertaining to the low detection limit analysis of these water samples.

CONTINUED!

2A
WATER VOLATILE SURROGATE RECOVERY

Lab Name: VERSAR Contract:68-01-7471

Lab Code: VERSAR Case No.:9761 SAS No.:3554E SDG No.:_EY630

	EPA SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#	OTHER	TOT OUT
01	EY630	98	95	95		0
02	EY631	98	96	94		0
03	EY632	95	94	98		0
04	EY634	97	95	94		0
05	VBLK10	99	97	97		0
06	EY632MS	97	98	96		0
07	EY632MSD	97	98	97		0
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	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

FORM II VOA-1

2C

WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name:VERSAR Contract:68-01-7471

Lab Code:VERSAR Case No.:9761 SAS No.:3554E SDG No.: EY630

	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	OTHER	TOT OUT
01	SBLK10	51	82	113	42	62	119		0
02	EY630	38	62	91	38	56	89		0
03	EY631	57	84	113	42	61	109		0
04	EY632	52	77	108	29	45	88		0
05	EY632MS	53	74	97	42	56	83		0
06	EY632MSD	53	74	96	29	37	59		0
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		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(35-114)
S2 (FBP)	= 2-Fluorobiphenyl	(43-116)
S3 (TPH)	= Terphenyl-d14	(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

2E
WATER PESTICIDE SURROGATE RECOVERY

Lab Name:_____VERSAR_____ Contract:68-01-7471

Lab Code:VERSAR Case No.:9761 SAS No.:3554E SDG No.:_EY630

	EPA SAMPLE NO.	S1 (DBC)#	OTHER
01	EY630	104	
02	EY631	107	
03	EY632	101	
04	EY632MS	104	
05	EY632MSD	102	
06	PBLK3012	105	
07			
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ADVISORY
QC LIMITS
(24-154)

S1 (DBC) = Dibutylchlorendate

Column used to flag recovery values

* Values outside of QC limits

D Surrogates diluted out

page _1 of _1

FORM II PEST-1

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Name: VERSAR Contract:68-01-7471

Lab Code: VERSAR Case No.: 9761 SAS No.:3554E SDG No.:EY630

Matrix Spike - EPA Sample No.:EY632 LOW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	#	QC LIMITS REC.
1,1-Dichloroethene	10	0	11	110		61-145
Trichloroethene	10	0	11	110		71-120
Benzene	10	0	11	110		76-127
Toluene	10	0	10	100		76-125
Chlorobenzene	10	0	10	100		75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	#	% RPD	#	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	10	12	120		9		14	61-145
Trichloroethene	10	11	110		0		14	71-120
Benzene	10	10	100		9		11	76-127
Toluene	10	11	110		9		13	76-125
Chlorobenzene	10	10	100		0		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: _____

FORM III VOA-1

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name:VERSAR Contract:68-01-7471

Lab Code:VERSAR Case No.:9761 SAS No.:3554E SDG No.: EY630

Matrix Spike - EPA Sample No.: _____EY632

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	200	0	73	36	12- 89
2-Chlorophenol	200	0	132	66	27-123
1,4-Dichlorobenzene	100	0	61	61	36- 97
N-Nitroso-di-n-prop.	100	0	89	89	41-116
1,2,4-Trichlorobenzene	100	0	64	64	39- 98
4-Chloro-3-methylphenol	200	0	128	64	23- 97
Acenaphthene	100	0	64	64	46-118
4-Nitrophenol	200	0	192	96 *	10- 80
2,4-Dinitrotoluene	100	0	120	120 *	24- 96
Pentachlorophenol	200	0	170	85	9-103
Pyrene	100	0	95	95	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	200	53	26	32	42	12- 89
2-Chlorophenol	200	94	47	34	40	27-123
1,4-Dichlorobenzene	100	58	58	5	28	36- 97
N-Nitroso-di-n-prop.	100	87	87	2	38	41-116
1,2,4-Trichlorobenzene	100	61	61	5	28	39- 98
4-Chloro-3-methylphenol	200	93	46	33	42	23- 97
Acenaphthene	100	62	62	3	31	46-118
4-Nitrophenol	200	140	70	31	50	10- 80
2,4-Dinitrotoluene	100	114	114 *	5	38	24- 96
Pentachlorophenol	200	125	62	31	50	9-103
Pyrene	100	89	89	7	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:__ 3 out of _ 22 outside limits

COMMENTS: _____

FORM III SV-1

3E

WATER PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name:_____VERSAR_____ Contract:68-01-7471

Lab Code:VERSAR Case No.: 9761 SAS No.:3554E SDG No.:_EY630

Matrix Spike - EPA Sample No.:50463

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Lindane	0.021	0	0.025	119	56-123
Heptachlor	0.021	0	0.023	110	40-131
Aldrin	0.021	0	0.023	110	40-120
Dieldrin	0.053	0	0.059	111	52-126
Endrin	0.053	0	0.048	91	56-121
4,4' DDT	0.053	0	0.063	119	38-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Lindane	0.020	0.021	105	13	15	56-123
Heptachlor	0.020	0.019	95	14	20	40-131
Aldrin	0.020	0.021	105	4	22	40-120
Dieldrin	0.051	0.052	104	7	18	52-126
Endrin	0.051	0.040	79	13	21	56-121
4,4' DDT	0.051	0.053	105	12	27	38-127

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

* Values outside of QC limits

RPD: 0 out of _6__ outside limits
Spike Recovery:0 out of __12__ outside limits

COMMENTS: QUANITATED FROM PRIMARY PACKED COLUMN 3%SP2100

FORM III PEST-1

4A

VOLATILE METHOD BLANK SUMMARY

Name:_____VERSAR_____ Contract:_68-01-7471

Lab Code:VERSAR Case No.:9761 SAS No.:_3554E SDG No.:EY630

Lab File ID: __Y1456 Lab Sample ID: ___VBLK10

Date Analyzed: 06/18/88 Time Analyzed: 1510

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

Instrument ID: Y

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	EY630	50461	Y1458	1652
02	EY631	50462	Y1459	1734
03	EY632	50463	Y1460	1814
04	EY632MS	50463MS	Y1461	1855
05	EY632MSD	50463MSD	Y1462	1936
06	EY634	50464	Y1463	2017
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COMMENTS:

FORM IV VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK10

Lab Name: Versar Contract: 68-01-7471

Lab Code: Versar Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER Lab Sample ID: VBLK10

Sample wt/vol: 25 (g/ml) ML Lab File ID: Y1456

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

% Moisture: not dec. 100 Date Analyzed: 06/18/88

Column: (pack/cap) PACK Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	2	U
74-83-9	Bromomethane	2	U
75-01-4	Vinyl Chloride	2	U
75-00-3	Chloroethane	2	U
75-09-2	Methylene Chloride	1	U
67-64-1	Acetone	3.9	
75-15-0	Carbon Disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
540-59-0	1,2-Dichloroethene (total)	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	1.2	J
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon Tetrachloride	1	U
108-05-4	Vinyl Acetate	2	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-Pentanone	2	U
591-78-6	2-Hexanone	2	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylene (total)	1	U
107-02-8	Acrolein	100	U
107-13-1	Acrylonitrile	50	U

FORM I VOA

100088

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK10

Lab Name: ___Versar_____ Contract: 68-01-7471

Code: _Versar___ Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER Lab Sample ID: _VBLK10

Sample wt/vol: 25 _(g/ml) ML Lab File ID: __Y1456

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

% Moisture: not dec. 100 Date Analyzed: ___06/18/88

Column: (pack/cap) _PACK Dilution Factor: _ 1

Number TICs found: _ 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
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FORM I VOA-TIC

4B

SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: VERSAR Contract: 68-01-7471

Lab Code: VERSAR Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Lab File ID: __T5416 Lab Sample ID: ___SBLK10

Date Extracted: 06/10/88 Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 06/29/88 Time Analyzed: 1504

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

Instrument ID: __T

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	EY632	50463	T5417	06/29/88
02	EY632MS	50463MS	T5419	06/29/88
03	EY632MSD	50463MSD	T5420	06/29/88
04	EY630	50461	T5421	06/29/88
05	EY631	50462	T5422	06/29/88
06				
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MENTS: _____

FORM IV SV

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK10

Lab Name: VERSAR Contract: 68-01-7471

Lab Code: VERSAR Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER (g/ml) ML Lab Sample ID: SBLK10

Sample wt/vol: 1000 Lab File ID: T5416

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

% Moisture: not dec. dec. Date Extracted: 06/10/88

Extraction: (SepF/Cont/Sonc) SepF Date Analyzed: 06/29/88

GPC Cleanup: (Y/N) ___ pH: Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	
108-95-2	Phenol	5	U
111-44-4	bis(2-Chloroethyl)ether	5	U
95-57-8	2-Chlorophenol	5	U
541-73-1	1,3-Dichlorobenzene	5	U
106-46-7	1,4-Dichlorobenzene	5	U
100-51-6	Benzyl alcohol	5	U
95-50-1	1,2-Dichlorobenzene	5	U
95-48-7	2-Methylphenol	5	U
108-60-1	bis(2-Chloroisopropyl)ether	5	U
106-44-5	4-Methylphenol	5	U
621-64-7	N-Nitroso-di-N-propylamine	5	U
67-72-1	Hexachloroethane	5	U
98-95-3	Nitrobenzene	5	U
78-59-1	Isophorone	5	U
88-75-5	2-Nitrophenol	5	U
105-67-9	2,4-Dimethylphenol	5	U
65-85-0	Benzoic acid	25	U
111-91-1	bis(2-Chloroethoxy)methane	5	U
120-83-2	2,4-Dichlorophenol	5	U
120-82-1	1,2,4-Trichlorobenzene	5	U
91-20-3	Naphthalene	5	U
106-47-8	4-Chloroaniline	5	U
87-68-3	Hexachlorobutadiene	5	U
59-50-7	4-Chloro-3-methylphenol	5	U
91-57-6	2-Methylnaphthalene	5	U
77-47-4	Hexachlorocyclopentadiene	5	U
88-06-2	2,4,6-Trichlorophenol	5	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	5	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	5	U
208-96-8	Acenaphthylene	5	U
606-20-2	2,6-Dinitrotoluene	5	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK10

Lab Name: VERSAR Contract: 68-01-7471

Lab Code: VERSAR Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER (g/ml) ML Lab Sample ID: SBLK10

Sample wt/vol: 1000 Lab File ID: T5416

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

% Moisture: not dec. dec. Date Extracted: 06/10/88

Extraction: (SepF/Cont/Sonc) SepF Date Analyzed: 06/29/88

GPC Cleanup: (Y/N) ___ pH: Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	5	U
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	5	U
121-14-2	2,4-Dinitrotoluene	5	U
84-66-2	Diethylphthalate	5	U
7005-72-3	4-Chlorophenyl-phenylether	5	U
86-73-7	Fluorene	5	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	5	U
101-55-3	4-Bromophenyl-phenylether	5	U
118-74-1	Hexachlorobenzene	5	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	5	U
120-12-7	Anthracene	5	U
84-74-2	Di-n-butylphthalate	1.4	J
206-44-0	Fluoranthene	5	U
129-00-0	Pyrene	5	U
85-68-7	Butylbenzylphthalate	5	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	5	U
218-01-9	Chrysene	5	U
117-81-7	bis(2-Ethylhexyl)phthalate	5	U
117-84-0	Di-n-octylphthalate	5	U
205-99-2	Benzo(b)fluoranthene	5	U
207-08-9	Benzo(k)fluoranthene	5	U
50-32-8	Benzo(a)pyrene	5	U
193-39-5	Indeno(1,2,3-cd)pyrene	5	U
53-70-3	Dibenz(a,h)anthracene	5	U
191-24-2	Benzo(g,h,i)perylene	5	U

(1) - Cannot be separated from Diphenylamine

200142

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK10

Lab Name: VERSAR Contract: 68-01-7471

Lab Code: VERSAR Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER (g/ml) ML Lab Sample ID: SBLK10

Sample wt/vol: 1000 Lab File ID: T5416

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

% Moisture: not dec. dec. Date Extracted: 06/10/88

Extraction: (SepF/Cont/Sonc) SepF Date Analyzed: 06/29/88

GPC Cleanup: (Y/N) ___ pH: Dilution Factor: 1.

Number TICs found: 2 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN FLUOROMETHOXYBENZENE	7.02	2	J
2. 138-86-3	LIMONENE	8.90	2	J
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FORM I SV-TIC

4C

PESTICIDE METHOD BLANK SUMMARY

Lab Name:_____VERSAR_____ Contract:68-01-7471

Lab Code:VERSAR Case No.:9761 SAS No.:3554E SDG No.: EY630

Lab Sample ID: ___PBLK3012 Lab File ID: _____

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

Date Extracted: 06/15/88 Extraction: (SepF/Cont/Sonc)__CONT

Date Analyzed (1): 06/17/88 Date Analyzed (2): _06/21/88

Time Analyzed (1): 1720 Time Analyzed (2): _1257

Instrument ID (1): L Instrument ID (2): _M

GC Column ID (1): 3%SP2100 GC Column ID (2): _DB-5

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

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	EY630	50461	06/17/88	06/21/88
02	EY631	50462	06/17/88	06/21/88
03	EY632	50463	06/17/88	06/21/88
04	EY632MS	50463MS	06/17/88	06/21/88
05	EY632MSD	50463MSD	06/17/88	06/21/88
06				
07				
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26				

COMMENTS: _____

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLK3012

Lab Name: VERSAR, INC. Contract: 68-01-7471

Lab Code: VERSAR Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER Lab Sample ID: PBLK3012

Sample wt/vol: 1000 (g/ml) ML Lab File ID: ____

Level: (low/med) LOW Date Received: 06/10/88

% Moisture: not dec. _____ dec. _____ Date Extracted: 06/15/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/17/88

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.010	U
319-85-7	beta-BHC	0.005	U
319-86-8	delta-BHC	0.005	U
58-89-9	gamma-BHC (Lindane)	0.005	U
76-44-8	Heptachlor	0.030	U
309-00-2	Aldrin	0.005	U
1024-57-3	Heptachlor Epoxide	0.005	U
959-98-8	Endosulfan I	0.010	U
60-57-1	Dieldrin	0.010	U
72-55-9	4,4'-DDE	0.005	U
72-20-8	Endrin	0.010	U
33213-65-9	Endosulfan II	0.010	U
72-54-8	4,4'-DDD	0.020	U
1031-07-8	Endosulfan Sulfate	0.10	U
50-29-3	4,4'-DDT	0.020	U
72-43-5	Methoxychlor	0.020	U
53494-70-5	Endrin Ketone	0.030	U
5103-71-9	alpha-Chlordane	0.020	U
5103-74-2	gamma-Chlordane	0.020	U
8001-35-2	Toxaphene	0.25	U
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	0.10	U
11096-82-5	Aroclor-1260	0.10	U

300092

Judy Kell 6/21/88

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY630

Lab Name: Versar Contract: 68-01-7471

Lab Code: Versar Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER Lab Sample ID: 50461

Sample wt/vol: 25 (g/ml) ML Lab File ID: Y1458

Level: (low/med) LOW Date Received: 06/10/88

% Moisture: not dec. 100 Date Analyzed: 06/18/88

Column: (pack/cap) PACK Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	2	U
74-83-9	Bromomethane	2	U
75-01-4	Vinyl Chloride	2	U
75-00-3	Chloroethane	2	U
75-09-2	Methylene Chloride	1	U
67-64-1	Acetone	75 ~~4.0~~	~~U~~ — PS 7/26/88
75-15-0	Carbon Disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
540-59-0	1,2-Dichloroethene (total)	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	2	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon Tetrachloride	1	U
108-05-4	Vinyl Acetate	2	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1.3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-Pentanone	2	U
591-78-6	2-Hexanone	2	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylene (total)	1	U
107-02-8	Acrolein	100	U
107-13-1	Acrylonitrile	50	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EY630

Lab Name: Versar Contract: 68-01-7471

Lab Code: Versar Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER Lab Sample ID: 50461

Sample wt/vol: 25 (g/ml) ML Lab File ID: Y1458

Level: (low/med) LOW Date Received: 06/10/88

% Moisture: not dec. 100 Date Analyzed: 06/18/88

Column: (pack/cap) PACK Dilution Factor: 1

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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IS conc = 50 SAMPLE # EY630

PK #	RET. TIME	TIC RIC	IS RIC	B	CONC (ug/l) or (ug/Kg)
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	RETENTION TIME	RIC
IS#1		
IS#2		
IS#3		

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY631

Lab Name: Versar Contract: 68-01-7471

Lab Code: Versar Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER Lab Sample ID: 50462

Sample wt/vol: 25 (g/ml) ML Lab File ID: Y1459

Level: (low/med) LOW Date Received: 06/10/88

% Moisture: not dec. 100 Date Analyzed: 06/18/88

Column: (pack/cap) PACK Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	2	U
74-83-9	Bromomethane	2	U
75-01-4	Vinyl Chloride	2	U
75-00-3	Chloroethane	2	U
75-09-2	Methylene Chloride	1	U
67-64-1	Acetone	75 ~~4.3~~	~~U~~ PS 7/20/88
75-15-0	Carbon Disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
540-59-0	1,2-Dichloroethene (total)	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	2	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon Tetrachloride	1	U
108-05-4	Vinyl Acetate	2	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1.3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-Pentanone	2	U
591-78-6	2-Hexanone	2	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylene (total)	1	U
107-02-8	Acrolein	100	U
107-13-1	Acrylonitrile	50	U

100026

FORM I VOA

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EY631

Name: Versar Contract: 68-01-7471

Lab Code: Versar Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER Lab Sample ID: 50462

Sample wt/vol: 25 (g/ml) ML Lab File ID: Y1459

Level: (low/med) LOW Date Received: 06/10/88

% Moisture: not dec. 100 Date Analyzed: 06/18/88

Column: (pack/cap) PACK Dilution Factor: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

IS conc = 50 SAMPLE # EY631

PK #	RET. TIME	TIC RIC	IS RIC	B	CONC (ug/l) or (ug/Kg)
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	RETENTION TIME	RIC
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IS#2		
IS#3		

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
EY632

Lab Name: Versar Contract: 68-01-7471

Lab Code: Versar Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER Lab Sample ID: 50463

Sample wt/vol: 25 (g/ml) ML Lab File ID: Y1460

Level: (low/med) LOW Date Received: 06/10/88

% Moisture: not dec. 100 Date Analyzed: 06/18/88

Column: (pack/cap) PACK Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	2	U
74-83-9	Bromomethane	2	U
75-01-4	Vinyl Chloride	2	U
75-00-3	Chloroethane	2	U
75-09-2	Methylene Chloride	1	U
67-64-1	Acetone	~~2~~ 75	U — PS 7/20/88
75-15-0	Carbon Disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
540-59-0	1,2-Dichloroethene (total)	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	2	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon Tetrachloride	1	U
108-05-4	Vinyl Acetate	2	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1.3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-Pentanone	2	U
591-78-6	2-Hexanone	2	U
127-18-4	Tetrachloroethene	1.4	
79-34-5	1,1,2,2-Tetrachloroethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylene (total)	1	U
107-02-8	Acrolein	100	U
107-13-1	Acrylonitrile	50	U

100038

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EY632

Lab Name: Versar Contract: 68-01-7471

Lab Code: Versar Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER Lab Sample ID: 50463

Sample wt/vol: 25 (g/ml) ML Lab File ID: Y1460

Level: (low/med) LOW Date Received: 06/10/88

% Moisture: not dec. 100 Date Analyzed: 06/18/88

Column: (pack/cap) PACK Dilution Factor: 1

Number TICs found: 2 CONCENTRATION UNITS: (ug/l or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	594-82-1	BUTANE, 2,2,3,3-TETRAMETHYL-	23.6833	2	J
2.		UNKNOWN	24.3833	1	J
3.					
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FORM I VOA-TIC

IS conc = 10 SAMPLE # EY632

PK #	RET. TIME	TIC RIC	IS RIC	B	CONC (ug/l) or (ug/Kg)
1	23.68	102912	480768	1	2.140575
2	24.38	45312	480768	1	0.942492
3					
4					
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	RETENTION TIME	RIC	
IS#1	10.09	240640	15.125
IS#2	20.16	532480	22.695
IS#3	25.23	480768	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
EY634

Lab Name: Versar Contract: 68-01-7471

Lab Code: Versar Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER Lab Sample ID: 50464

Sample wt/vol: 25 (g/ml) ML Lab File ID: Y1463

Level: (low/med) LOW Date Received: 06/10/88

% Moisture: not dec. 100 Date Analyzed: 06/18/88

Column: (pack/cap) PACK Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	2	U
74-83-9	Bromomethane	2	U
75-01-4	Vinyl Chloride	2	U
75-00-3	Chloroethane	2	U
75-09-2	Methylene Chloride	1	U
67-64-1	Acetone	75 ~~5.3~~	~~B~~ U — PS
75-15-0	Carbon Disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
540-59-0	1,2-Dichloroethene (total)	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	50 ~~1.5~~	~~B~~ U — PS
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon Tetrachloride	1	U
108-05-4	Vinyl Acetate	2	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-Pentanone	2	U
591-78-6	2-Hexanone	2	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylene (total)	1	U
107-02-8	Acrolein	100	U
107-13-1	Acrylonitrile	50	U

7/26/88

100053

FORM I VOA

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EY634

Lab Name: Versar Contract: 68-01-7471

Lab Code: Versar Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER Lab Sample ID: 50464

Sample wt/vol: 25 (g/ml) ML Lab File ID: Y1463

Level: (low/med) LOW Date Received: 06/10/88

% Moisture: not dec. 100 Date Analyzed: 06/18/88

Column: (pack/cap) PACK Dilution Factor: 1

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
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30.					

FORM I VOA-TIC

IS conc = 10 SAMPLE # EY634

PK #	RET. TIME	TIC RIC	IS RIC	B	CONC (ug/l) or (ug/Kg)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

	RETENTION TIME	RIC
IS#1		
IS#2		
IS#3		

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY630

Lab Name: VERSAR Contract: 68-01-7471

Lab Code: VERSAR Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER (g/ml) ML Lab Sample ID: 50461

Sample wt/vol: 1010 Lab File ID: T5421

Level: (low/med) LOW Date Received: 06/10/88

% Moisture: not dec. dec. Date Extracted: 06/10/88

Extraction: (SepF/Cont/Sonc) SepF Date Analyzed: 06/29/88

GPC Cleanup: (Y/N) ___ pH: Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	
108-95-2	Phenol	5	U
111-44-4	bis(2-Chloroethyl)ether	5	U
95-57-8	2-Chlorophenol	5	U
541-73-1	1,3-Dichlorobenzene	5	U
106-46-7	1,4-Dichlorobenzene	5	U
100-51-6	Benzyl alcohol	5	U
95-50-1	1,2-Dichlorobenzene	5	U
95-48-7	2-Methylphenol	5	U
108-60-1	bis(2-Chloroisopropyl)ether	5	U
106-44-5	4-Methylphenol	5	U
621-64-7	N-Nitroso-di-N-propylamine	5	U
67-72-1	Hexachloroethane	5	U
98-95-3	Nitrobenzene	5	U
78-59-1	Isophorone	5	U
88-75-5	2-Nitrophenol	5	U
105-67-9	2,4-Dimethylphenol	5	U
65-85-0	Benzoic acid	25	U
111-91-1	bis(2-Chloroethoxy)methane	5	U
120-83-2	2,4-Dichlorophenol	5	U
120-82-1	1,2,4-Trichlorobenzene	5	U
91-20-3	Naphthalene	5	U
106-47-8	4-Chloroaniline	5	U
87-68-3	Hexachlorobutadiene	5	U
59-50-7	4-Chloro-3-methylphenol	5	U
91-57-6	2-Methylnaphthalene	5	U
77-47-4	Hexachlorocyclopentadiene	5	U
88-06-2	2,4,6-Trichlorophenol	5	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	5	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	5	U
208-96-8	Acenaphthylene	5	U
606-20-2	2,6-Dinitrotoluene	5	U

200010

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY630

Lab Name: VERSAR Contract: 68-01-7471

Lab Code: VERSAR Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER (g/ml) ML Lab Sample ID: 50461

Sample wt/vol: 1010 Lab File ID: T5421

Level: (low/med) LOW Date Received: 06/10/88

% Moisture: not dec. dec. Date Extracted: 06/10/88

Extraction: (SepF/Cont/Sonc) SepF Date Analyzed: 06/29/88

GPC Cleanup: (Y/N) ___ pH: Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	5	U
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	2.8	J X
132-64-9	Dibenzofuran	5	U
121-14-2	2,4-Dinitrotoluene	5	U
84-66-2	Diethylphthalate	5	U
7005-72-3	4-Chlorophenyl-phenylether	5	U
86-73-7	Fluorene	5	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	5	U
101-55-3	4-Bromophenyl-phenylether	5	U
118-74-1	Hexachlorobenzene	5	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	5	U
120-12-7	Anthracene	5	U
84-74-2	Di-n-butylphthalate	2 ~~1.3~~	~~JB~~ J
206-44-0	Fluoranthene	5	U
129-00-0	Pyrene	5	U
85-68-7	Butylbenzylphthalate	5	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	5	U
218-01-9	Chrysene	5	U
117-81-7	bis(2-Ethylhexyl)phthalate	5	U
117-84-0	Di-n-octylphthalate	5	U
205-99-2	Benzo(b)fluoranthene	5	U
207-08-9	Benzo(k)fluoranthene	5	U
50-32-8	Benzo(a)pyrene	5	U
193-39-5	Indeno(1,2,3-cd)pyrene	5	U
53-70-3	Dibenz(a,h)anthracene	5	U
191-24-2	Benzo(g,h,i)perylene	5	U

(1) - Cannot be separated from Diphenylamine

PS 7/20/88

200011

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY630

Lab Name: VERSAR Contract: 68-01-7471

Lab Code: VERSAR Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER (g/ml) ML Lab Sample ID: 50461

Sample wt/vol: 1010 Lab File ID: T5421

Level: (low/med) LOW Date Received: 06/10/88

% Moisture: not dec. dec. Date Extracted: 06/10/88

Extraction: (SepF/Cont/Sonc) SepF Date Analyzed: 06/29/88

GPC Cleanup: (Y/N) ___ pH: Dilution Factor: 1

Number TICs found: 2 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN FLUOROMETHOXYBENZENE	7.05	2	J B
2. 138-86-3	LIMONENE	8.93	2	J B
3.				
4.				
5.				
6.				
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FORM I SV-TIC

	SCAN #	RIC	IS RIC	B	CONC
.	423	11359	127488	0.99	1.764151920
.	536	14927	127488	0.99	2.318293486
3.					
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6.					
7.					
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10.					
1 .					
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14.					
1 .					
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17.					
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24.					
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27.					
29.					
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30.					

SCAN RATE = 1
IS CONC (ng/ul) = 20

	SCAN #	RIC	
1	515	127488	623.5
2	732	153856	899
3	1066	110336	1209
4	1352	100736	1613.5
5	1875	30176	2044
6	2213	10960	

SAMPLE # EY630
FILE T5421

200013

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY631

Lab Name:VERSAR Contract:68-01-7471

Lab Code:VERSAR Case No.:9761 SAS No.:3554E SDG No.: EY630

Matrix: (soil/water)WATER (g/ml)ML Lab Sample ID: 50462

Sample wt/vol: 990 Lab File ID: T5422

Level:(low/med) LOW Date Received: 06/10/88

% Moisture: not dec. dec. Date Extracted: 06/10/88

Extraction: (SepF/Cont/Sonc) SepF Date Analyzed: 06/29/88

GPC Cleanup: (Y/N)___ pH: Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	
108-95-2	Phenol	5	U
111-44-4	bis(2-Chloroethyl)ether	5	U
95-57-8	2-Chlorophenol	5	U
541-73-1	1,3-Dichlorobenzene	5	U
106-46-7	1,4-Dichlorobenzene	5	U
100-51-6	Benzyl alcohol	5	U
95-50-1	1,2-Dichlorobenzene	5	U
95-48-7	2-Methylphenol	5	U
108-60-1	bis(2-Chloroisopropyl)ether	5	U
106-44-5	4-Methylphenol	5	U
621-64-7	N-Nitroso-di-N-propylamine	5	U
67-72-1	Hexachloroethane	5	U
98-95-3	Nitrobenzene	5	U
78-59-1	Isophorone	5	U
88-75-5	2-Nitrophenol	5	U
105-67-9	2,4-Dimethylphenol	5	U
65-85-0	Benzoic acid	25	U
111-91-1	bis(2-Chloroethoxy)methane	5	U
120-83-2	2,4-Dichlorophenol	5	U
120-82-1	1,2,4-Trichlorobenzene	5	U
91-20-3	Naphthalene	5	U
106-47-8	4-Chloroaniline	5	U
87-68-3	Hexachlorobutadiene	5	U
59-50-7	4-Chloro-3-methylphenol	5	U
91-57-6	2-Methylnaphthalene	5	U
77-47-4	Hexachlorocyclopentadiene	5	U
88-06-2	2,4,6-Trichlorophenol	5	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	5	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	5	U
208-96-8	Acenaphthylene	5	U
606-20-2	2,6-Dinitrotoluene	5	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY631

Lab Name: VERSAR Contract: 68-01-7471

Lab Code: VERSAR Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER (g/ml) ML Lab Sample ID: 50462

Sample wt/vol: 990 Lab File ID: T5422

Level: (low/med) LOW Date Received: 06/10/88

% Moisture: not dec. dec. Date Extracted: 06/10/88

Extraction: (SepF/Cont/Sonc) SepF Date Analyzed: 06/29/88

GPC Cleanup: (Y/N) ___ pH: Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	5	U
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	5	U
121-14-2	2,4-Dinitrotoluene	5	U
84-66-2	Diethylphthalate	0.30	J
7005-72-3	4-Chlorophenyl-phenylether	5	U
86-73-7	Fluorene	5	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	5	U
101-55-3	4-Bromophenyl-phenylether	5	U
118-74-1	Hexachlorobenzene	5	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	5	U
120-12-7	Anthracene	5	U
84-74-2	Di-n-butylphthalate	2 ~~1.1~~	~~JB~~ U — PS 7/20/88
206-44-0	Fluoranthene	5	U
129-00-0	Pyrene	5	U
85-68-7	Butylbenzylphthalate	5	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	5	U
218-01-9	Chrysene	5	U
117-81-7	bis(2-Ethylhexyl)phthalate	5	U
117-84-0	Di-n-octylphthalate	5	U
205-99-2	Benzo(b)fluoranthene	5	U
207-08-9	Benzo(k)fluoranthene	5	U
50-32-8	Benzo(a)pyrene	5	U
193-39-5	Indeno(1,2,3-cd)pyrene	5	U
53-70-3	Dibenz(a,h)anthracene	5	U
191-24-2	Benzo(g,h,i)perylene	5	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY631

Lab Name: VERSAR Contract: 68-01-7471

Lab Code: VERSAR Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER (g/ml) ML Lab Sample ID: 50462

Sample wt/vol: 990 Lab File ID: T5422

Level: (low/med) LOW Date Received: 06/10/88

% Moisture: not dec. dec. Date Extracted: 06/10/88

Extraction: (SepF/Cont/Sonc) SepF Date Analyzed: 06/29/88

GPC Cleanup: (Y/N) ___ pH: Dilution Factor: 1

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN FLUOROMETHOXYBENZENE	7.05	3	J B
2. 138-86-3	LIMONENE	8.93	2	J B
3.				
4.				
5.				
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30.				

FORM I SV-TIC

	SCAN #	RIC	IS RIC	B	CONC
1.	423	16159	123776	1.01	2.637117050
2.	536	14063	123776	1.01	2.295053968
3.					
4.					
5.					
6.					
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25.					
26.					
27.					
28.					
29.					
30.					

SCAN RATE = 1
IS CONC (mg/ul) = 20

SCAN #	RIC	
1	515	123776	623.5
2	732	151552	899
3	1066	109312	1208.5
4	1351	104064	1612.5
5	1874	31488	2043
6	2212	12336	

SAMPLE # EY631
FILE T5422

200036

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY632

Lab Name: VERSAR Contract: 68-01-7471

Lab Code: VERSAR Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER (g/ml) ML Lab Sample ID: 50463

Sample wt/vol: 1010 Lab File ID: T5417

Level: (low/med) LOW Date Received: 06/10/88

% Moisture: not dec. dec. Date Extracted: 06/10/88

Extraction: (SepF/Cont/Sonc) SepF Date Analyzed: 06/29/88

GPC Cleanup: (Y/N) ___ pH: Dilution Factor: 1

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

MOVE CURSOR TO COMPOUND IN COLUMN X AND HIT E

CAS NO.	COMPOUND		
108-95-2	Phenol	5	U
111-44-4	bis(2-Chloroethyl)ether	5	U
95-57-8	2-Chlorophenol	5	U
541-73-1	1,3-Dichlorobenzene	5	U
106-46-7	1,4-Dichlorobenzene	5	U
100-51-6	Benzyl alcohol	5	U
95-50-1	1,2-Dichlorobenzene	5	U
95-48-7	2-Methylphenol	5	U
108-60-1	bis(2-Chloroisopropyl)ether	5	U
106-44-5	4-Methylphenol	5	U
621-64-7	N-Nitroso-di-N-propylamine	5	U
67-72-1	Hexachloroethane	5	U
98-95-3	Nitrobenzene	5	U
78-59-1	Isophorone	5	U
88-75-5	2-Nitrophenol	5	U
105-67-9	2,4-Dimethylphenol	5	U
65-85-0	Benzoic acid	25	U
111-91-1	bis(2-Chloroethoxy)methane	5	U
120-83-2	2,4-Dichlorophenol	5	U
120-82-1	1,2,4-Trichlorobenzene	5	U
91-20-3	Naphthalene	5	U
106-47-8	4-Chloroaniline	5	U
87-68-3	Hexachlorobutadiene	5	U
59-50-7	4-Chloro-3-methylphenol	5	U
91-57-6	2-Methylnaphthalene	5	U
77-47-4	Hexachlorocyclopentadiene	5	U
88-06-2	2,4,6-Trichlorophenol	5	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	5	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	5	U
208-96-8	Acenaphthylene	5	U
606-20-2	2,6-Dinitrotoluene	5	U

200056

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY632

Name: VERSAR Contract: 68-01-7471

Lab Code: VERSAR Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER (g/ml) ML Lab Sample ID: 50463

Sample wt/vol: 1010 Lab File ID: T5417

Level: (low/med) LOW Date Received: 06/10/88

% Moisture: not dec. dec. Date Extracted: 06/10/88

Extraction: (SepF/Cont/Sonc) SepF Date Analyzed: 06/29/88

GPC Cleanup: (Y/N) ___ pH: Dilution Factor: 1

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

CAS NO.	COMPOUND		
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	5	U
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	5	U
121-14-2	2,4-Dinitrotoluene	5	U
84-66-2	Diethylphthalate	5	U
7005-72-3	4-Chlorophenyl-phenylether	5	U
86-73-7	Fluorene	5	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	5	U
101-55-3	4-Bromophenyl-phenylether	5	U
118-74-1	Hexachlorobenzene	5	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	5	U
120-12-7	Anthracene	5	U
84-74-2	Di-n-butylphthalate	2 ~~10~~	~~JB~~ U — PS 7/20/88
206-44-0	Fluoranthene	5	U
129-00-0	Pyrene	5	U
85-68-7	Butylbenzylphthalate	5	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	5	U
218-01-9	Chrysene	5	U
117-81-7	bis(2-Ethylhexyl)phthalate	5	U
117-84-0	Di-n-octylphthalate	5	U
205-99-2	Benzo(b)fluoranthene	5	U
207-08-9	Benzo(k)fluoranthene	5	U
50-32-8	Benzo(a)pyrene	5	U
193-39-5	Indeno(1,2,3-cd)pyrene	5	U
53-70-3	Dibenz(a,h)anthracene	5	U
191-24-2	Benzo(g,h,i)perylene	5	U

(1) - Cannot be separated from Diphenylamine

200057

FORM I SV-2

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY632

Lab Name: VERSAR Contract: 68-01-7471

Lab Code: VERSAR Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER (g/ml) ML Lab Sample ID: 50463

Sample wt/vol: 1010 Lab File ID: T5417

Level: (low/med) LOW Date Received: 06/10/88

% Moisture: not dec. dec. Date Extracted: 06/10/88

Extraction: (SepF/Cont/Sonc) SepF Date Analyzed: 06/29/88

GPC Cleanup: (Y/N) ___ pH: Dilution Factor: 1

Number TICs found: 10

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	5.43	2	J
2.		UNKNOWN	6.55	10	J
3.		UNKNOWN FLUOROMETHOXYBENZENE	7.05	3	J B
4.	138-86-3	LIMONENE	8.93	3	J B
5.		UNKNOWN	11.10	8	J
6.		UNKNOWN	11.45	6	J
7.		UNKNOWN	14.77	3	J
8.	74367-33-2	PROPANOIC ACID, 2-METHYL-, 2,	15.37	2	J
9.		UNKNOWN	16.63	3	J
10.		UNKNOWN	18.22	2	J
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

FORM I SV-TIC

	SCAN #	RIC	IS RIC	B	CONC
1.	326	14223	122752	0.99	2.294181764
2.	393	60799	122752	0.99	9.806929418
3.	423	15679	122752	0.99	2.529035779
4.	536	16015	122752	0.99	2.583232859
5.	666	70655	165120	0.99	8.472438226
6.	687	53375	165120	0.99	6.400345203
7.	886	23519	165120	0.99	2.820228924
8.	922	15375	122496	0.99	2.485183189
9.	998	16367	122496	0.99	2.645528017
10.	1093	11343	122496	0.99	1.833459051
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

SCAN RATE = 1
IS CONC (ng/ul) = 20

	SCAN #	RIC	
1	514	122752	623
2	732	165120	899
3	1066	122496	1208.5
4	1351	112896	1612.5
5	1874	38016	2041.5
6	2209	13072	

SAMPLE # EY632
FILE T5417

200059

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY630

Lab Name: VERSAR, INC. Contract: 68-01-7471

Code: VERSAR Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER Lab Sample ID: 50461

Sample wt/vol: 1000 (g/ml) ML Lab File ID: ____

Level: (low/med) LOW Date Received: 06/10/88

% Moisture: not dec. _____ dec. _____ Date Extracted: 06/15/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/17/88

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.010	U
319-85-7	beta-BHC	0.005	U
319-86-8	delta-BHC	0.005	U
58-89-9	gamma-BHC (Lindane)	0.005	U
76-44-8	Heptachlor	0.030	U
309-00-2	Aldrin	0.005	U
1024-57-3	Heptachlor Epoxide	0.005	U
959-98-8	Endosulfan I	0.010	U
60-57-1	Dieldrin	0.010	U
72-55-9	4,4'-DDE	0.005	U
72-20-8	Endrin	0.010	U
33213-65-9	Endosulfan II	0.010	U
72-54-8	4,4'-DDD	0.020	U
1031-07-8	Endosulfan Sulfate	0.10	U
50-29-3	4,4'-DDT	0.020	U
72-43-5	Methoxychlor	0.020	U
53494-70-5	Endrin Ketone	0.030	U
5103-71-9	alpha-Chlordane	0.020	U
5103-74-2	gamma-Chlordane	0.020	U
8001-35-2	Toxaphene	0.25	U
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	0.10	U
11096-82-5	Aroclor-1260	0.10	U

Judy Reid 6/24/88

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY631

Lab Name: VERSAR, INC. Contract: 68-01-7471

Lab Code: VERSAR Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER Lab Sample ID: 50462

Sample wt/vol: 970 (g/ml) ML Lab File ID: ____

Level: (low/med) LOW Date Received: 06/10/88

% Moisture: not dec. _____ dec. _____ Date Extracted: 06/15/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/17/88

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.010	U
319-85-7	beta-BHC	0.005	U
319-86-8	delta-BHC	0.005	U
58-89-9	gamma-BHC (Lindane)	0.005	U
76-44-8	Heptachlor	0.030	U
309-00-2	Aldrin	0.005	U
1024-57-3	Heptachlor Epoxide	0.005	U
959-98-8	Endosulfan I	0.010	U
60-57-1	Dieldrin	0.010	U
72-55-9	4,4'-DDE	0.005	U
72-20-8	Endrin	0.010	U
33213-65-9	Endosulfan II	0.010	U
72-54-8	4,4'-DDD	0.020	U
1031-07-8	Endosulfan Sulfate	0.10	U
50-29-3	4,4'-DDT	0.020	U
72-43-5	Methoxychlor	0.020	U
53494-70-5	Endrin Ketone	0.030	U
5103-71-9	alpha-Chlordane	0.020	U
5103-74-2	gamma-Chlordane	0.020	U
8001-35-2	Toxaphene	0.25	U
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	0.10	U
11096-82-5	Aroclor-1260	0.10	U

300014

6/21/88

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EY632

Lab Name: VERSAR, INC. Contract: 68-01-7471

Code: VERSAR Case No.: 9761 SAS No.: 3554E SDG No.: EY630

Matrix: (soil/water) WATER Lab Sample ID: 50463

Sample wt/vol: 1000 (g/ml) ML Lab File ID: ____

Level: (low/med) LOW Date Received: 06/10/88

% Moisture: not dec. _____ dec. _____ Date Extracted: 06/15/88

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/17/88

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.010	U
319-85-7	beta-BHC	0.005	U
319-86-8	delta-BHC	0.005	U
58-89-9	gamma-BHC (Lindane)	0.005	U
76-44-8	Heptachlor	0.030	U
309-00-2	Aldrin	0.005	U
1024-57-3	Heptachlor Epoxide	0.005	U
959-98-8	Endosulfan I	0.010	U
60-57-1	Dieldrin	0.010	U
72-55-9	4,4'-DDE	0.005	U
72-20-8	Endrin	0.010	U
33213-65-9	Endosulfan II	0.010	U
72-54-8	4,4'-DDD	0.020	U
1031-07-8	Endosulfan Sulfate	0.10	U
50-29-3	4,4'-DDT	0.020	U
72-43-5	Methoxychlor	0.020	U
53494-70-5	Endrin Ketone	0.030	U
5103-71-9	alpha-Chlordane	0.020	U
5103-74-2	gamma-Chlordane	0.020	U
8001-35-2	Toxaphene	0.25	U
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	0.10	U
11096-82-5	Aroclor-1260	0.10	U

300021 6/21/88

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 6-30-88

SUBJECT: Review of Region V CLP Data
Received for Review on 6-23-88

FROM: Curtis Ross ,Director (55CRL)
Central Regional Laboratory

TO: Data User : MPCA

We have reviewed the data for the following case(s).

SITE NAME: BELGRADEMUN.WELL FIELD. SMO case No. 9761SAS3846

EPA Data Set No. SF5244 No.of Samples: 3 D.U/Activity Numbers Y905/C722ZZ

CRL No. 88YL08S13,S14,D03

SMO Traffic No. MEW651-653

CLP Laboratory: CHEMTECH Hrs.required for Review 2

Following are our findings:

This review covers 3 low water samples analyzed for metals and cyanide. Spike recovery for Ag is 120%. All Ag data are acceptable,due to samples concentrations less than IDL.

All other QC data are acceptable.

6.30.88

(X) Data are acceptable for use.
( ) Data are acceptable for use with qualifications noted above.
( ) Data are preliminary-pending verification by Contract Laboratory.
( ) Data are unacceptable.

cc: Carla Dempsey, Quality Assurance Officer, EPA Support Services
James Petty,Chief Quality Assurance Research,EMSL,Las Vegas

EPA FORM 1320-6 (Rev. 5/87)

QC EXCEPTION SUMMARY REPORT

CASE # 9761/SAS3846
DATA SET # 5244
LAB Q.C. #
DATE: 6.29.88

SITE Belgrade Mun Well
LAB Chemtech
REVIEWED BY [illegible]

MATRIX: 3W
CONC. : 3V

WATER SAMPLE SPK.
WATER SAMPLE DUP.
SOIL SAMPLE SPK.
SOIL SAMPLE DUP.

	OVERALL CASE QC									MATRIX SPECIFIC QC						SAMPLE SPECIFIC QC		FIELD QC			REGIONAL QC			OTHER/ COMMENTS
	Holding Time	Cal Blanks	Init Cal ver	Contin. Cal ver	Prep Blk AQ	Prep Blk SOL	ICS %R	LCS % AQ	LCS % SOL	Sol Dup RPD	Sol Spk. %R	AQ Dup RPD	AQ Spk. %R	Ser Dilu AQ	Ser Dilu SOL	GFAA Dup	GFAA Spike	Blank	Dup RPD	Spike %R	Blind Blank	Blind Spike %R	Split Sample RPD	
Aluminum																								
Antimony																								
Arsenic																								
Barium																								
Beryllium																								
Cadmium																								
Calcium																								
Chromium																								
Cobalt																								
Copper																								
Iron																								
Lead																								
Magnesium																								
Manganese																								
Mercury																								
Nickel																								
Potassium																								
Selenium													120											
Silver																								
Sodium																								
Thallium																								
Tin																								
Vanadium																								
Zinc																								
Cyanide																								

USEPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 ALEXANDRIA, VA 22313
703/557-2490 FTS-557-2490

CASE NO: 9761 | SAS NO: (IF APPLICABLE) 3846-E

INORGANIC TRAFFIC REPORT

(FOR CLP USE ONLY)

TYPE OF ACTIVITY (CIRCLE ONE) ①
SUPERFUND—PA (SI) ESI RIFS RD RA ER
NPLD O&M OTHER
NON-SUPERFUND— PROGRAM

SITE NAME: BELGRADE MUNICIPAL WELL FIELD
CITY, STATE: BELGRADE, MN SITE SPILL ID: ZZ

REGION NO: V SAMPLING COMPANY: ② MPCA
SAMPLER: (NAME) REBECCA COFFEEN

SHIP TO: ③ Chemtech Consulting Group (CHEM)
360 West 11th Street
New York, NY 10014
ATTN: David Williams

SAMPLING DATE: ④
BEGIN: 6/7/88 END: 6/8/88
DATE SHIPPED: 6/9/88 CARRIER: Fed. Ex
AIRBILL NO: 6820695663

SAMPLE DESCRIPTION (ENTER IN BOX A) ⑤
1. SURFACE WATER
2. GROUND WATER
3. LEACHATE
4. SOIL
5. SEDIMENT
6. OIL (SAS)
7. WASTE (SAS)

DOUBLE VOLUME REQUIRED FOR MATRIX SPIKE/DUPLICATE AQUEOUS SAMPLE

SHIP MEDIUM AND HIGH CONCENTRATION SAMPLES IN PAINT CANS

SEE REVERSE FOR ADDITIONAL INSTRUCTIONS

CLP SAMPLE NUMBER (FROM LABELS)	⑥ SAMPLE DESCRIPTION (FROM BOX 1)	⑦ CONCENTRATION L = LOW/CM = MED H = HIGH (SAS)	⑧ RAS ANALYSIS: TOTAL METALS	CYANIDE	DISSOLVED METALS	HIGH ONLY (SAS): SULFIDE	pH	CONDUCTIVITY	OXIDANTS	⑨ SPECIAL HANDLING	⑩ STATION LOCATION
MEW 651	2	L	X	X						Drinking Water DTL	MW8
MEW 652	2	L	X	X						Drinking Water DTL	MW9
MEW 653	2	L	X	X						Drinking Water DTL	MW10
1 of 1		coolers Shipped									
Sampling complete											

EPA Form 2075-6 (8-87)

WHITE — SMO COPY PINK — CLIENT COPY WHITE — LAB COPY FOR RETURN TO SMO YELLOW — LAB COPY

SUPERFUND 5244

SAMPLE DATE 6/...
LOG IN DATE 6/13/88
DUE DATE 7/11/88

CENTRAL REGIONAL LABORATORY SAMPLE DATA REPORT
ORGANICS/INORGANICS
THIS FORM IS TO BE USED FOR SAMPLES SENT TO CONTRACT ONLY

CASE NUMBER/SAS No. 9761/3846E SITE NAME BELGRADE MUNICIPAL WELL FIELD (SI08) LABORATORY CHEMTECH DATE SHIPPED 6/9/88

SUPERFUND DU NUMBER 4905 EPA RPM or OSC (S.M.S.)/(CES) _____ CERCLIS NUMBER _____ PAGE 4 OF 4

ACTIVITY NUMBER C72200

CRL LOG NUMBER	ORGANIC TRAFFIC REPORT NUMBER	INORGANIC TRAFFIC REPORT NUMBER or SAS Packing List No.	WATER OR LIQUIDS: ACID-BASE NEUTRAL CPDS ORGANIC SCAN UG/L TOX17574	VOLATILE ORGANIC ANALYSIS ORGANIC SCAN UG/L TOX17564	WATER POLYCHLORINATED BIPHENYLS UG/L PES 17144	WATER CHLORINATED PESTICIDES UG/L PES17134	TOTAL METALS IN WATER UG/L MET111	WATER CYANIDE UG/L MIN74919	NITRATE/NITRITE MG/L MIN7284	AMMONIA MG/L MIN7294	RESIDUE, FILTERABLE TDS MG/L MIN7362	RESIDUE, NON-FILT TSS MG/L MIN7372			SEDIMENTS or SOILS: ACID-BASE NEUTRAL CPDS ORGANIC SCAN MG/KG TOX215722	VOLATILE ORGANIC ANALYSIS ORGANIC SCAN MG/KG TOX215622	SEDIMENTS POLYCHLORINATED BIPHENYLS MG/KG PES211422	SEDIMENT CHLORINATED PESTICIDES MG/KG 211322	TOTAL METALS MG/KG MET413	CYANIDE MG/KG MIN44930	EP TOXICITY METALS MG/KG	AMMONIA MG/KG MIN42925				
88YL08S13	✓	MEW651	✓	✓			X	X																		
88YL08D02	✓	MEW652	✓	✓			X	X																		
88YL08S14	✓	MEW653	✓	✓			X	X																		
	Date																									

WA85-0839 - AMENDMENT THREE (3)
U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

Date 6/22/88 EH

COVER PAGE
INORGANIC ANALYSES DATA PACKAGE

Lab Name Chemtech Consulting Group Case No. 9761/3846 E
SOW No. 788 Q.C. Report No. 62-1298

Sample Numbers

EPA No.	Lab ID No.	EPA No.	Lab ID No.
MEW 651	62-1298-01		
652	02		
653	03		

Comments:

RECEIVED JUN 23 1988 U.S. EPA CENTRAL REGIONAL LAB

ICP interelement and background corrections applied? Yes X No ___.
If yes, corrections applied before X or after ___ generation of raw data.

Footnotes:

NR - Not required by contract at this time
Form I:
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract-required detection limit, report the value in brackets (i.e., [10]). Indicate the analytical method used with P (for ICP), A (for Flame AA) or F (for Furnace AA).
U - Indicates element was analyzed for but not detected. Report with the instrument detection limit value (e.g., 10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
N - Indicates spike sample recovery is not within control limits.
* - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is less than 0.995
M - Indicates duplicate injection results exceeded control limits.

Indicate method used: P for ICP; A for Flame AA and F for Furnace.

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEW-651

Date 6/22/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME Chemtech Consulting Group

CASE NO. 9761/3846 E

SOW NO. 785

Lab Receipt Date 6/10/88

LAB SAMPLE ID. NO. G2-1298-01

QC REPORT NO. G2-1298

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

(ug/L) or mg/kg dry weight (Circle One)

1.	Aluminum	100 U P	13.	Magnesium	20200 P
2.	Antimony	5.0 U Pa ~~P~~ F S	14.	Manganese	27 P
3.	Arsenic	5.0 F S	15.	Mercury	0.20
4.	Barium	227 P	16.	Nickel	11 U P
5.	Beryllium	2.0 U P	17.	Potassium	[1800] A
6.	Cadmium	0.50 U ~~P~~ F S	18.	Selenium	2.0 U F S
7.	Calcium	66000 P	19.	Silver	5.0 U P N
8.	Chromium	4.0 U P	20.	Sodium	17200 P
9.	Cobalt	6.0 U P	21.	Thallium	2.0 U F S
10.	Copper	34 P	22.	Vanadium	4.0 U P
11.	Iron	1170 P	23.	Zinc	[10] P
12.	Lead	4.4 F S		Percent Solids (%)	
	Cyanide	10 U			

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Color: Before- Colorless After- Colorless. Clarity: Clear

Lab Manager [signature]

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEW-652

Date 6/22/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME Chemtech Consulting Group
CASE NO. 9761/3846 E
SOW NO. 785
Lab Receipt Date 6/10/88
LAB SAMPLE ID. NO. G2-1298-02
QC REPORT NO. G2-1298

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

(ug/L) or mg/kg dry weight (Circle One)

1.	Aluminum	100 U P	13.	Magnesium	20800 P
2.	Antimony	5.0 U Pa ~~F~~ S	14.	Manganese	22 P
3.	Arsenic	5.0 U F S	15.	Mercury	0.20 U
4.	Barium	252 P	16.	Nickel	11 U P
5.	Beryllium	2.0 U P	17.	Potassium	[1400] A
6.	Cadmium	0.50 U Pa ~~F~~ S	18.	Selenium	2.0 U F S
7.	Calcium	67900 P	19.	Silver	5.0 U P N
8.	Chromium	4.0 U P	20.	Sodium	17700 P
9.	Cobalt	6.0 U P	21.	Thallium	2.0 U F S
10.	Copper	28 P	22.	Vanadium	4.0 U P
11.	Iron	1120 P	23.	Zinc	[10] P
12.	Lead	4.3 F S		Percent Solids (%)	
	Cyanide	10 U			

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Color: Before- Colorless After- Colorless Clarity: Clear

Lab Manager [signature]

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEW-653

Date 6/27/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME Chemtech Consulting Group

CASE NO. 9761/3846 E

SOW NO. 785

Lab Receipt Date 6/10/88

LAB SAMPLE ID. NO. G2-1298-03

QC REPORT NO. G2-1298

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

(ug/L) or mg/kg dry weight (Circle One)

1.	Aluminum	100 U P	13.	Magnesium	22800 P
2.	Antimony	5.0 U Pa ~~P~~ F S	14.	Manganese	616 P
3.	Arsenic	5.0 U F S	15.	Mercury	0.20 U
4.	Barium	139 P	16.	Nickel	11 U P
5.	Beryllium	2.0 U P	17.	Potassium	[1400] A
6.	Cadmium	0.50 U Pa ~~P~~ F S	18.	Selenium	2.0 U F S
7.	Calcium	86100 P	19.	Silver	5.0 U P N
8.	Chromium	4.0 U P	20.	Sodium	6110 P
9.	Cobalt	6.0 U P	21.	Thallium	2.0 U F S
10.	Copper	48 P	22.	Vanadium	4.0 U P
11.	Iron	800 P	23.	Zinc	[19] P
12.	Lead	15 F S		Percent Solids (%)	
	Cyanide	10 U			

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Color: Before-Colorless After-Colorless. Clarity: Clear

Lab Manager [signature]

QC EXCEPTION SUMMARY REPORT

CASE # 9761/SAS3896
DATA SET # 5244
LAB Q.C. #
DATE: 6.29.88

SITE Belgrade Mun Well
LAB Chemtech
REVIEWED BY Udo Leam

MATRIX: 3W
CONC. : 3V

WATER SAMPLE SPK.
WATER SAMPLE DUP.
SOIL SAMPLE SPK.
SOIL SAMPLE DUP.

	OVERALL CASE QC									MATRIX SPECIFIC QC						SAMPLE SPECIFIC QC		FIELD QC			REGIONAL QC			OTHER / COMMENTS
	Holding Time	Cal Blanks	Init Calver	Contin Calver	Prep Blk AQ	Prep Blk SOL	ICS %R	LCS % AQ	LCS % SOL	Sol Dup RPD	Sol Spk. %R	AQ Dup RPD	AQ Spk. %R	Ser Dilu AQ	Ser Dilu SOL	GFAA Dup	GFAA Spike	Blank	Dup RPD	Spike %R	Blind Blank	Blind Spike %R	Split Sample RPD	
Aluminum																								
Antimony																								
Arsenic																								
Barium																								
Beryllium																								
Cadmium																								
Calcium																								
Chromium																								
Cobalt																								
Copper																								
Iron																								
Lead																								
Magnesium																								
Manganese																								
Mercury																								
Nickel																								
Potassium																								
Selenium													120											
Silver																								
Sodium																								
Thallium																								
Tin																								
Vanadium																								
Zinc																								
Cyanide																								

Form III

Q. C. Report No. G2-1298

BLANKS

LAB NAME Chemtech Consulting Group

DATE 6/22/88 EH

CASE NO. 9761/3846E

UNITS ug/L

Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank[1] Matrix: L. WATER ug/L	Matrix: 2
Metals:							
1. Aluminum	100 U	100 U	100 U	100 U	100 U	100 U	
2. Antimony	5.0 U	5.0 U	5.0 U	5.0 U		NR	
3. Arsenic	5.0 U	5.0 U	5.0 U	5.0 U		NR	
4. Barium	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	
5. Beryllium	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	
6. Cadmium	0.50 U	0.50 U	0.50 U	0.50 U		NR	
7. Calcium	500 U	500 U	500 U	500 U	500 U	500 U	
8. Chromium	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	
9. Cobalt	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	
10. Copper	9.0 U	9.0 U	9.0 U	9.0 U	9.0 U	9.0 U	
11. Iron	100 U	100 U	100 U	100 U	100 U	100 U	
12. Lead	2.0 U	2.0 U	2.0 U	2.0 U		NR	
13. Magnesium	500 U	500 U	500 U	500 U	500 U	500 U	
14. Manganese	7.0 U	7.0 U	7.0 U	7.0 U	7.0 U	7.0 U	
15. Mercury	0.20 U	0.20 U				0.20 U	
16. Nickel	11 U	11 U	11 U	11 U	11 U	11 U	
17. Potassium	500 U	500 U	500 U			500 U	
18. Selenium	2.0 U	2.0 U	2.0 U	2.0 U		NR	
19. Silver	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	
20. Sodium	597 U	597 U	597 U	597 U	597 U	597 U	
21. Thallium	2.0 U	2.0 U	2.0 U	2.0 U		NR	
22. Vanadium	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	
23. Zinc	7.0 U	7.0 U	7.0 U	7.0 U	7.0 U	7.0 U	
Other: LEAD(P)	21 U	21 U	21 U	21 U	21 U	21 U	
Cyanide	10 U	10 U				10 U	

[1] Reporting Units: aqueous, ug/L; solid, mg/kg

Form V-A

Q. C. Report No. G2-1298

SPIKE SAMPLE RECOVERY

LAB NAME Chemtech Consulting Group

DATE 6/22/94

CASE NO. 9761/3846 E

EPA Sample No. MEW 652

Lab Sample ID No. G2-1298-02

Units ug/L

Matrix LOW WATER

Compound	Control Limit %R	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	%R[1]
Metals:					
1. Aluminum	(85-115) ~~75-125~~ Pa	1900	100 U	2000	95
2. Antimony	-			500	NR
3. Arsenic	-			20	NR
4. Barium	-	2240	252	2000	99
5. Beryllium	-	51	2.0 U	50	102
6. Cadmium	-			50	NR
7. Calcium	-			---	NR
8. Chromium	-	198	4.0 U	200	99
9. Cobalt	-	489	6.0 U	500	98
10. Copper	-	283	28	250	102
11. Iron	-	2080	1120	1000	96
12. Lead	-			20	NR
13. Magnesium	-			---	NR
14. Manganese	-	217	22	200	98
15. Mercury	(80 -120)	1.0	0.20 U	1.0	100
16. Nickel	(85 -115)	396	11 U	400	99
17. Potassium	-			---	NR
18. Selenium	-			20	NR
19. Silver	-	60	5.0 U	50	120 N
20. Sodium	-			---	NR
21. Thallium	-			50	NR
22. Vanadium	-	489	4.0 U	500	98
23. Zinc	-	219	(10)	200	104
Other: LEAD (P)		522	21 U	500	104
Cyanide	(80 -120)	109	10 U	100	109

[1] %R = [(SSR - SR)/SA] x 100

"N" - out of control

"NR" - Not required

Comments:

Form V-B

C. C. Report No. G2-1298

SPIKE SAMPLE RECOVERY

LAB NAME Chemtech Consulting Group

DATE 6/22/88

CASE NO. 9761/3846E

EPA Sample No. MEW 652

Lab Sample ID No. G2-1298-02 (POS#

Units ug/L

Matrix LOW WATER

Compound	Control Limit %R	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	%R[1]
Metals: 1. Aluminum	(85-115) ~~75-125~~ Pm			2000	
2. Antimony	-			500	
3. Arsenic	-			20	
4. Barium	-			2000	
5. Beryllium	-			50	
6. Cadmium	-			50	
7. Calcium	-	119000	67900	50000	102
8. Chromium	-			200	
9. Cobalt	-			500	
10. Copper	-			250	
11. Iron	-			1000	
12. Lead	-			20	
13. Magnesium	-	46900	20800	25000	104
14. Manganese	-			200	
15. Mercury	(80-120)			1.0	
16. Nickel	(85-115)			400	
17. Potassium	-	19600	[1400]	20000	91
18. Selenium	-			20	
19. Silver	-			50	
20. Sodium	-	66900	17700	50000	98
21. Thallium	-			50	
22. Vanadium	-			500	
23. Zinc	-			200	
Other: LEAD(P)				500	
Cyanide	(80-120)			100	

[1] %R = [(SSR - SR)/SA] x 100

"N" - out of control

"NR" - Not required

Comments:

Form VI

Q. C. Report No. 62-1298

DUPLICATES

LAB NAME Chemtech Consulting Group

DATE 6/22/88

CASE NO. 9761/3846E
EPA Sample No. MEW 651
Lab Sample ID No. 1298-01
Units ug/L

Matrix Low WATER

Compound	Control Limit[1]	Sample(S)	Duplicate(D)	RPD[2]
Metals:				
1. Aluminum		100U	100U	NC
2. Antimony		5.0U	5.0U	NC
3. Arsenic	±5.0	5.0	8.6	53
4. Barium	±50	227	225	0.88
5. Beryllium		2.0U	2.0U	NC
6. Cadmium		0.50U	0.50U	NC
7. Calcium	±20%	66000	67300	2.0
8. Chromium		4.0U	4.0U	NC
9. Cobalt		6.0U	6.0U	NC
10. Copper	±10	34	27	23
11. Iron	±20%	1170	1180	0.85
12. Lead	±2.0	4.4	5.0	13
13. Magnesium	±20%	20200	20400	0.98
14. Manganese	±10	27	29	7.1
15. Mercury	±0.20	0.20	0.20	0.0
16. Nickel		11U	11U	NC
17. Potassium		[1800]	[1900]	NC
18. Selenium		2.0U	2.0U	NC
19. Silver		5.0U	5.0U	NC
20. Sodium	±20%	17200	17100	0.58
21. Thallium		2.0U	2.0U	NC
22. Vanadium		4.0U	4.0U	NC
23. Zinc		[10]	[9.2]	NC
Other: LEAD(P)		21U	21U	NC
Cyanide		10U	10U	NC

* Out of Control

[1] To be added at a later date.

[2] RPD = [|S - D|/((S + D)/2)] x 100

NC - Non calculable RPD due to value(s) less than CRDL

Form VII

Q. C. Report No. G_2-1298

INSTRUMENT DETECTION LIMITS AND

LABORATORY CONTROL SAMPLE.

LAB NAME Chemtech Consulting Group CASE NO. 9761/3846 E DATE 6/22/88

Compound	Required Detection Limits (CRDL)-ug/L	Instrument Detection Limits (IDL) - ug/L ICP/AA ID #: 9000	Furnace ID #: 1	2	3	4	Lab Control Sample ug/L True	Found	%R
Metals: 1. Aluminum.	100	100					990	916	92
2. Antimony	5		5.0	5.0	5.0	5.0	505		NR
3. Arsenic	5		5	~~5~~	~~5~~	~~5~~	49		NR
4. Barium	50	5					990	981	99
5. Beryllium	5	2					240	257	107
6. Cadmium	0.5	5	0.5	0.5	0.5	0.5	244		NR
7. Calcium	1000	500					24900	25400	102
8. Chromium	10	4					253	254	100
9. Cobalt	10	6					237	251	106
10. Copper	10	9					271	264	97
11. Iron	100	100					995	962	97
12. Lead	2		~~2~~	~~2~~	~~2~~	~~2~~	49		NR
13. Magnesium	1000	500					12500	12700	102
14. Manganese	10	7					256	246	96
15. Mercury	0.2	0.15					5.2		NR
16. Nickel	20	11					248	251	101
17. Potassium	2000	500*					10000	9300	93
18. Selenium	2		2	2	2	~~2~~	104		NR
19. Silver	5	5					254	234	92
20. Sodium	1000	597					25350	25200	99
21. Thallium	2		~~2~~	2	2	2	49		NR
22. Vanadium	10	4					256	256	100
23. Zinc	20	7					1550	1540	99
Other Lead(P)	5	21					2255	2270	101
Cyanide	10	NR	NR				100	104	104

NR- Not required

AA ID # 1. Hitachi
2. P.E. 30/30
3. P.E. 5000
4. P.E. 30/30Z

* Hitachi Flame